-SQA- SCOTTISH QUALIFICATIONS AUTHORITY

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NATIONAL CERTIFICATE MODULE DESCRIPTOR

-Module Number-	**2210631**	**-Session-1991-92**
-Superclass-	**XS**	

-Title- **STEERING SYSTEMS: HEAVY VEHICLE 2 ($X^1/_2$)**

-DESCRIPTION-

Purpose

This module is designed to develop the skills and knowledge required to diagnose faults in manual and assisted steering systems and to assess accurately the condition and carry out adjustments. It is aimed at those intending to pursue a career in the vehicle repair industry.

This module is also designed to complement RTITB modules HV240B and HV241C and will provide the student with the necessary knowledge and skills to prepare for skills tests.

It should be noted that adequate supporting industrial experience will also be necessary.

Preferred Entry Level

Modules numbered 94370 through to 94379 inclusive.
CD05 Steering Systems: Heavy Vehicle 1.

Outcomes

The student should:

1. identify steering system faults;
2. inspect, measure and report on steering system and components;
3. measure and adjust steering system components.

Assessment Procedures

Acceptable performance in this 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 STEERING SYSTEM FAULTS**

PCs

(a) The identification of steering system faults within a steering layout is correct in terms of:

(i) steering wander;
(ii) unbalanced steering;
(iii) heavy steering;
(iv) abnormal tyre wear;
(v) de-centralised steering wheel.

(b) The identification of steering system faults within an assisted steering system is correct in terms of:

(i) loss of power assistance;
(ii) loss of steering fluid;
(iii) excessive noise.

IA Objective Test

The student will be presented with an objective test to test the recall of knowledge relating to the identification of steering system faults.

The objective test could take the form of a matching exercise or short answer questions. The test will take the form of 8 items corresponding to the Performance Criteria and allocated as follows:

(a)	steering system faults	- 5
(b)	assisted steering system faults	- 3

Satisfactory achievement of the Outcome will be based on all Performance Criteria being met. This will be demonstrated by the student producing 5 correct responses from (a) and 3 correct responses from (b) above.

OUTCOME 2 **INSPECT, MEASURE AND REPORT ON STEERING SYSTEMS AND COMPONENTS**

PCs

(a) The procedures followed for inspecting, measuring and reporting on steering systems and components are in accordance with appropriate technical data corresponding to the vehicle.

(b) The procedures followed for the performance testing of specified components are in accordance with appropriate technical data corresponding to the vehicle.

IA Practical Exercise/Assignment Report

A. Practical Exercise

The student will be presented with a practical exercise in a workshop environment to test the application of knowledge and skills relating to the inspection and measurement of steering systems and components.

Each student should inspect and measure where required the following:

(i) steering wheel;
(ii) steering column and bushes;
(iii) steering column lock operation;
(iv) steering column universal joints;
(v) steering box manual;
(vi) steering box power;
(vii) king pin and bushes;
(viii) front hubs;
(ix) drop arm;
(x) drag link and ball joints;
(xi) track rod ends;
(xii) power steering - filter;
(xiii) power steering - reservoir;
(xiv) power steering - pipes;
(xv) power steering - pump;
(xvi) power steering - ram.

B. Assignment Report

The student will be presented with an assignment report to test the application of knowledge relating to reporting on steering systems and components.

The assignment report will be based on the practical exercise and the student will be expected to report on the serviceability of all the systems and components above.

Satisfactory achievement of the Outcome will be based on all Performance Criteria being met. This will be demonstrated by the student successfully completing all tasks specified in the practical exercise and satisfactorily completing the assignment report on all of the tasks from the practical exercise.

OUTCOME 3 **MEASURE AND ADJUST STEERING SYSTEM COMPONENTS**

PCs

(a) The procedures followed for the measurement of steering system components are correct in terms of steering geometry values.
(b) The procedures followed for the adjustment of steering system components are correct in terms of steering geometry values.

IA Practical Exercise

The student will be presented with a practical exercise to test the application of knowledge and skills relating to the measurement and adjustment of steering system components.

The practical exercise will consist of a series of tasks undertaken in a workshop environment with access to relevant manufacturers' data and publications.

The student should measure and adjust the following where appropriate.

(i) wheel alignment;
(ii) castor angle;
(iii) camber angle;
(iv) KPI;
(v) toe-out-on turns;
(vi) steering lock step;
(vii) steering wheel position;
(viii) front to rear axle alignment.

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

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

CONTENT/CONTEXT

Safety regulations and safe working practices should be followed at all times.

Corresponding to Outcomes 1-3:

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

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

SUGGESTED LEARNING AND TEACHING APPROACHES

The practical elements of this module should be undertaken in a workshop environment with an adequate range of vehicles and components to be covered. The student should have access to service information, special tools and equipment for the satisfactory performance of the practical exercise.

A suitable checklist should be used to record the student's performance in the practical exercise.

09/02/98 JH/CD