-SQA-SCOTTISH QUALIFICATIONS AUTHORITY

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NATIONAL CERTIFICATE MODULE DESCRIPTOR

-Module Number- **0094388** **-Session-1989-90**
-Superclass- **XS**

-Title- **SUSPENSION SYSTEMS (MECHANICAL): REMOVAL, REPLACEMENT AND ADJUSTMENT OF COMPONENTS**

-DESCRIPTION-

Purpose

This module is designed to develop the necessary skills and knowledge required to carry out removal replacement and adjustment of Suspension Systems.

It is aimed at those intending to pursue a career in the motor vehicle repair industry. The module is also designed to complement RTITB module LV201B Suspension Systems: Removal, Replacement and Adjustment of Components and 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.

Preferred Entry Level

Modules numbered 94370 through 94378 inclusive.

Learning Outcomes

The student should:

1. identify suspension components by name, function and location;
2. outline the operation of suspension systems;
3. remove and replace suspension components;
4. measure and adjust suspension geometry.

Content/ Context

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

Corresponding to Learning 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 suspension 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.

Where a training programme includes module 94382 Steering Systems (Unassisted) it is suggested that it should be taught in conjunction with this module.

Assessment Procedures

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

The following abbreviations are used below:

LO Learning Outcome
IA Instrument of Assessment
PC Performance Criteria

LO1 IDENTIFY SUSPENSION COMPONENTS BY NAME, FUNCTION AND LOCATION

PC The student:

(a) names the components used in a suspension system;
(b) states the function and location of components used in suspension systems;
(c) identifies different types of suspension layout.

IA Objective test

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

The test will consist of the identification by name, location and function of 5 main suspension components corresponding to performance criteria's (a) and (b) and the identification of 4 different mechanical suspension layout/types for performance criteria (c).

Satisfactory achievement of the learning outcome will be based on all performance criteria being met. This will be demonstrated by the student producing at least 4 correct responses corresponding to performance criteria's (a) and (b) and 3 correct responses for performance criteria (c).

LO2 OUTLINE THE OPERATION OF SUSPENSION SYSTEMS

PC The student:

(a) states the purpose of a suspension system;
(b) outlines the design principles used in suspension systems;
(c) outlines the advantages and disadvantages of different suspension systems;
(d) lists a number of common faults that may occur in suspension systems;
(e) states the effects of individual suspension faults.

IA Short Answer Question

The student will be presented with a series of short answer questions to test the recall of knowledge relating to mechanical suspension systems.

The test will consist of 18 items allocated as follows:

(a)	purpose	2
(b)	outline of design principles	4
(c)	advantages/disadvantages	4
(d)	common faults	4
(e)	fault effects	4

Satisfactory achievement of the learning outcome will be based on all performance criteria being met. This will be demonstrated by the student producing at least 1 correct response for (a), 3 correct responses for (b), (c), (d) and (e) above.

LO3 REMOVE AND REPLACE SUSPENSION COMPONENTS

PC The student:

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

IA Practical Exercise

The student will be presented with a series of practical exercises in a workshop environment to test the recall of knowledge and application of skills relating to the removal and replacement of suspension components in accordance with recommended procedures. These procedures may be found in a variety of technical publications including manufacturers' workshop manuals and service bulletins. Each student should undertake all the tasks from the following list:

(I) removal and refitting of coil spring
(ii) removal and refitting of leaf spring
(iii) removal and refitting of strut insert
(iv) removal and refitting suspension damper
(v) removal and refitting of ball joint
(vi) removal and refitting of hub assembly (including bearings/seals)
(vii) removal and refitting of anti-roll bar
(viii) removal and refitting of track control arm

Satisfactory achievement of the learning outcome will be based on all performance criteria being met. A suitable checklist may be used to record student performance.

LO4 MEASURE AND ADJUST SUSPENSION GEOMETRY

PC The student:

(a) follows recommended procedures outlined in technical data for carrying out each task;
(b) prepares vehicle and equipment for carrying out checks;
(c) follows all safe working practices relevant to the task;
(d) uses tools appropriate to the task to obtain accurate results.

IA Practical assignment

The student will be presented with a practical assignment in a workshop environment to test the recall of knowledge and application of skills relating to measuring and adjusting suspension geometry in accordance with recommended procedures. These procedures may be found in a variety of technical publications including manufacturers' workshop manuals and service bulletins. Each student should undertake all the tasks from the following list:

(I) measure and adjust front wheel alignment
(ii) measure and adjust front toe-out on turns
(iii) measure and record front camber
(iv) measure and record front caster
(v) measure and record front king pin inclination
(vi) measure and record rear wheel alignment
(vii) measure and record rear camber
(viii) measure and record trim height (front & rear)

Satisfactory achievement of the learning outcome will be based on all performance criteria being met. This will be demonstrated by the student producing a completed assignment sheet detailing:

(a) manufacturers' settings;
(b) measured readings;
(c) error for tasks (i); (ii); (iii); (iv); (v);
(d) measured reading only for tasks (vi); (vii); and (viii).