

-SQA- SCOTTISH QUALIFICATIONS AUTHORITY

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

NATIONAL CERTIFICATE MODULE DESCRIPTOR

-Module Number- 2210410
-Superclass- XS

-Session-1990-91

-Title- TORQUE CONVERTOR AND AUTOMATIC GEARBOX:CONDITION ASSESSMENT AND FAULT DIAGNOSIS (x¹/₂)

-DESCRIPTION-

Purpose This module is designed to develop the necessary skills and knowledge required to diagnose faults in Torque Convertors and Automatic Gearboxes and to assess accurately the condition of related components. 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 LV224C Transmission System: Torque Convertor and Automatic Gearbox Condition Assessment and Fault Diagnosis and will provide the student with the necessary knowledge and skills to prepare for the RTITB skills test. It should be noted that adequate supporting industrial experience will also be necessary.

Preferred Entry Level Module number 2210400 Transmission system Torque Convertor and Automatic Gearbox:Removal, Replacement and Adjustment of Components.

Outcomes The student should:

1. identify faults related to torque convertors and automatic gearboxes;
2. assess condition of torque convertors and automatic gearboxes on vehicles;
3. inspect and report on torque convertor assembly and dismantled automatic gearbox components.

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 FAULTS RELATED TO TORQUE CONVERTORS AND AUTOMATIC GEARBOXES

PCs

- (a) The identification of common faults in torque convertors, automatic gearboxes and linkages is correct.
- (b) The identification of the effects of faults in torque convertors, automatic gearboxes and linkages is correct.
- (c) The identification of the causes of faults in torque convertors, automatic gearboxes and linkages is correct.

IA

The student will be presented with an objective test to test the recall of knowledge relating to torque convertor and automatic gearbox faults.

The test will consist of objective questions, possibly short answer questions, comprising of three parts allocated as follows:

- (a) identification of 5 faults
- (b) effects of 5 faults
- (c) causes of 5 faults

The following is a list of common faults:

obstruction to selector lever movement
 malfunction in the starter motor isolator circuit
 no drive in specified selection positions
 loss of gear change
 flare
 slip
 gear change inappropriate for speed or condition
 rough gear change
 abnormal creeping
 abnormal mechanical noises
 failure to achieve acceptable stall test specification
 slow acceleration
 knock-down inoperative or delayed

parking facility inoperative
 oil leaks at gearbox, torque convertor or filler tube
 oil loss without external leaks
 contaminated fluid
 ineffective engine braking
 overheating

Satisfactory achievement of the Outcome will be based on all Performance Criteria being met. This will be demonstrated by the student producing at least 5 correct responses from (a) and 3 each from (b) and (c) to match the responses given for (a).

OUTCOME 2 ASSESS CONDITION OF TORQUE CONVERTORS AND AUTOMATIC GEARBOXES ON VEHICLES

- PCs
- (a) Recommended procedures outlined in technical data for carrying out each task are followed.
 - (b) Safe working practices relevant to the task are followed.
 - (c) Vehicle protection as appropriate to the task is used.
 - (d) Tools appropriate to the task are used.

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 inspection and assessment of the condition of torque convertors and automatic gearboxes and linkages on vehicles 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 the inspection of torque convertors, automatic gearboxes and linkages without dismantling and report on the following:

transmission fluid
 results from carrying out stall test
 road test.

Satisfactory achievement of the Outcomes will be based on all Performance Criteria being met. This will be demonstrated by the student producing an accurate report on each of the above items. It is important that at least 25% of the above items have faults for diagnostic purposes. A suitable checklist may be used to record student performance.

**OUTCOME 3 INSPECT AND REPORT ON TORQUE CONVERTOR
ASSEMBLY AND DISMANTLED AUTOMATIC
GEARBOX COMPONENTS**

- PCs (a) Components are examined and any defects reported.
 (b) Safe working practices relevant to the task are followed.

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 inspection, assessment and reporting condition of torque convertor and automatic gearbox components. Each student should undertake the inspection of each of the following components and report on their condition:

transmission cases and castings
clutch, drive and thrust plates
brake bands
oil pump
gears, gear sets and splines
shafts and splines

It is important that at least 70% of the above components have faults for identification.

Satisfactory achievement of the Outcome will be based on all Performance Criteria being met. This will be demonstrated by the student producing an accurate report on all the components inspected. A suitable checklist will be used to indicate student performance in each task.

**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 1-3:

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 assessing the condition and diagnosing defects in torque convertors and automatic gearboxes, 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.

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