MODULE MEC2150: SUSPENSION SYSTEMS

Level: Intermediate

Theme: Suspension and Structural Systems

Prerequisite: MEC1150 Ride & Control Systems

Module Description: Students develop the knowledge, skills and attitudes necessary to service and maintain vehicle suspension systems.

Module Parameters: Access to suspension systems, specialized suspension tools and related resources.
Note: Customer work must be checked by certified technician.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• demonstrate safe work practices when working on suspension systems	• observed performance related to: – safe use of equipment, tools, materials, and supplies when working on suspension systems – use of personal protective equipment – use of safety devices and materials to protect vehicle against damage. *Assessment Tool* *Task Assessment Checklist: Suspension Systems, Part 1, MEC2150–1* *Standard* *Performance rating of 2 on each criteria*	15
• identify the purpose and function of suspension parts	• observed performance related to: – identification of suspension parts – a statement of the purpose and function of suspension parts. *Assessment Tool* *Task Assessment Checklist: Suspension Systems, Part 2, MEC2150–1* *Standard* *Performance rating of 2 on each criteria*	15

MODULE MEC2150: SUSPENSION SYSTEMS (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• identify worn or defective suspension parts	• observed performance on a given vehicle: – identification of worn and defective suspension components – determining reason for worn and/or defective suspension components – determining driveability problems caused by worn/defective suspension parts – identify tolerances and indicators of defective parts. *Assessment Tool* *Task Assessment Checklist: Suspension Systems, Part 3, MEC2150–1* *Standard* *Performance rating of 2 on each criteria*	25
• service a suspension system	• observed performance related to: – service of a suspension system – use of tools/ equipment/materials and resources – removal and replacement of suspension components. *Assessment Tool* *Task Assessment Checklist: Suspension Systems, Part 4, MEC2150–1* *Standard* *Performance rating of 2 on each criteria*	45
• demonstrate basic competencies.	• observations of individual effort and interpersonal exploration during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

Concept	Specific Learner Expectations	Notes
Health/Safety Hazards	*The student should:* • demonstrate knowledge of and follow lab safety procedures when working on suspensions components.	Be aware that coil springs exert a tremendous force, and special procedures and equipment are required to prevent serious injury when servicing.
Identification/ Function	• describe the basic types of front and rear suspensions used on motor vehicles; e.g., short, long arm suspension and MacPherson strut • compare the advantages and disadvantages of using separate and integral frames in relation to suspension design, repair and servicing • explain the advantage of using a: – solid "I" beam – split "I" beam – independent front suspension and a: • rigid • independent rear suspension • explain why it is important to reduce the amount of unsprung weight • list the positive and negative features of using coil, leaf, torsion, rubber biscuit and air springs • explain the meaning of spring rate and travel • list basic types and describe operation of shock absorbers, mounting techniques and methods of testing • explain how shock absorber ratio is calculated.	Compare gas shocks to oil-filled shock absorbers.
Inspect/Service	• describe typical wheel bearing faults; e.g., bent cage, etching, overheating and worn seal • repack a front or rear wheel bearing • lubricate suspension joints where necessary • inspect suspension components for damage and wear • explain how ball joints are checked for wear.	

MODULE MEC2150: SUSPENSION SYSTEMS (continued)

Concept	Specific Learner Expectations	Notes
Inspect/Service and Repair	*The student should:* • remove and replace: – a shock absorber – a coil spring – a ball joint – a strut.	On road-licenced vehicle, have final inspection done by certified personnel Review hazards associated with work on suspension components.
Consumer Awareness	• identify the appropriate lifting and towing procedures relative to electronically controlled suspension systems.	
Careers	• identify further education, working conditions and career opportunities.	