MODULE MEC3120: POWER ASSISTING

Level: Advanced

Theme: Guidance and Control Systems

Prerequisite: MEC2100 Power Assist Accessories

Module Description: Students further develop their knowledge of the purpose, operation, service and repair of pneumatic, hydraulic and electric power assist devices.

Module Parameters: Access to vacuum/pressure gauges, electrical test equipment and related resources.

Supporting Module: MEC2120 Hydraulic Accessories

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 established safety and care procedures when working with power assists	• observed performance related to: – personal safety when working with power assist systems – safe use of equipment and tools – safety and care of vehicles, parts, equipment and materials – clean-up and workstation organization. *Assessment Tool* *Assessment Checklist: Health and Safety, MECH&S* *Standard* *Performance rating of 3 on each criteria*	10
• identify applications of power assist components to various vehicle systems and determine the rationale for each application	• observed performance related to: – identification of power assist systems such as pressure pumps, vacuum and electric motors – identification of components of power assist systems – analysis of the purpose and rationale for using power assist systems. *Assessment Tool* *Task Assessment Checklist: Power Assisting, Part 1, MEC3120–1* *Standard* *Performance rating of 3 on each criteria*	20

MODULE MEC3120: POWER ASSISTING (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will: • perform service and repair procedures to pneumatic, hydraulic and electric power assist devices according to manufacturers' recommendations	*Assessment of student achievement should be based on:* • measured performance related to: – service and repair to pneumatic, hydraulic and electric components – following recommended servicing/repairing procedures – making accurate measurements. *Assessment Tool* *Task Assessment Checklist: Power Assisting, Part 2, 3, 4, MEC3120–1* *Standard* *Performance rating of 3 on each criteria*	70
• demonstrate basic competencies.	• observations of individual effort and interpersonal interaction 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 established lab procedures.	
Identification/ Function	• describe situations in vehicle system design where power assist mechanisms are used • define the advantages of power assist over manual control and identify the type of power assist most appropriate for use in a particular situation such as steering or brakes.	
Identify/Analyze	• complete an inspection of a hydraulic power assist device using manufacturer's prescribed diagnostic procedures • estimate the repair costs for a defective or broken hydraulic assist and confer with the teacher or vehicle owner regarding the repair requirements	Consider a steering, braking system.

Concept	Specific Learner Expectations	Notes
Identify/Analyze (continued)	*The student should:* • complete an inspection of a pneumatic assist device or system using prescribed diagnostic procedures • prepare an estimate of the repair requirements of a pneumatic assist and confer with the teacher or vehicle owner regarding the repair needs • complete an inspection of an electric assist device using a prescribe diagnostic procedure • prepare an estimate of the repair requirements for an electric assist device and confer with the teacher or vehicle owner regarding the required repairs.	Vacuum assist brakes. Consider load levelling devices.
Inspect/Repair	• complete a repair procedure to an electric assist device or system • complete a repair procedure on a hydraulic assist unit • complete a repair procedure on a pneumatic assist unit or system.	This could be a seal, hose, pump, reservoir or valve repair. Repairs could include any aspect of the system or device.
Careers	• identify further education and work opportunities related to power assist devices.	