

Small Engines and Powertrains II



UNIT 1: Safe Working Practices

ESSENTIAL QUESTION

BIG IDEAS

What are the practices to create a safe working environment with the tools and machines used to repair engines and powertrains?

Students will:

- demonstrate the safe use of tools and machines associated with engine and powertrain work
- Provide preventive maintenance to tools and machines associated with engine and powertrain work
- follow the safety procedures outlined in OSHA guidelines

GUIDING QUESTIONS

- Content
 - What are the tools and machines most commonly used to work on engines and powertrains?
 - What does preventive maintenance of the tools and machines most commonly used to work on engines and powertrains look like?
 - What are the safety procedures outlined by OSHA guidelines that should be applied in an engine and powertrain workshop?
- Process
 - What does the safe use of the tools and machines most commonly used to work on engines and powertrains look like?

FOCUS STANDARDS

- 1.1 Perform preventive maintenance on tools and equipment.
- 1.2 Follow safety procedures as outlined in OSHA guidelines

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UNIT 2: Engine and Powertrain Operation and Repair

ESSENTIAL QUESTION

How are small engines and powertrains built, serviced and repaired?

BIG IDEAS

Students will:

- Perform various diagnostic tests on systems of small engines and powertrains
- Perform service on and troubleshoot the various systems of small engines and powertrains
- Explain the principles of hydraulics
- Prepare service orders and cost estimates for service provided to small gas engines and powertrains

GUIDING QUESTIONS

- Content
 - What are the primary service and troubleshooting components when working with small gas engines and powertrains?
- Process
 - What are the various diagnostic tests to perform on the systems of small engines and powertrains?
 - What is the process for determining the cost of service and how do you adequately prepare service order paperwork?
- Reflective
 - What are the advantages and disadvantages of alternative power systems?

FOCUS STANDARDS

- 1.3 Perform electrical system service, diagnostics, and testing.
- 1.4 Perform fuel system service and diagnosis.
- 1.5 Perform ignition system service and diagnosis.
- 1.6 Describe and explain the principles of multiple cylinder engines.
- 1.7 Perform starting and charging system service and diagnosis.

- 1.8 Demonstrate advanced troubleshooting techniques
- 1.9 Research and discuss the advantages and disadvantages of alternative power systems.
- 1.10 Prepare a repair order and estimate required time and materials to accomplish service procedure.
- 1.11 Discuss/Explain the principles of hydraulics.
- 1.12 Perform troubleshooting techniques.