



COMPACT EQUIPMENT

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ASSOCIATE SUPERINTENDENT CONTACT INFORMATION

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PURPOSE

The goal of the Compact Equipment Skills activity is to evaluate students' ability to perform tasks related to small gasoline and diesel engines with a horsepower rating of 30 or less. Participants will work with compact engines as well as the tools and equipment associated with them.

Students should be familiar with using precision measuring instruments, specialty tools for compact engines, general mechanics tools, and the principles of theory and repair related to compact engines.

GENERAL INFORMATION

The activity may involve problem-solving and calculations. A calculator is highly recommended.

Participants in this activity will be expected to work with compact engines so that the engines operate optimally. Students might be asked to complete an activity that includes one or more of the following skills.

POSSIBLE ACTIVITIES FOR THE 2024 EVENT

Note: Compact Equipment is defined here as being 30 horsepower or less.

- Select and use appropriate tools and instruments to disassemble and reassemble valve train systems accurately and precisely.
- Identify components of engine valving systems commonly associated with compact equipment.
- Identify manufacturer specifications (as found in operator's manuals).

Competencies

- Identify compact engines and engine parts.
- Interpret compact engine model numbers.
- Apply knowledge of diesel engine valving systems as they relate to compact equipment.
- Identify components in a typical diesel engine system.

Agriculture, Food and Natural Resources Content Standards

- CS.08.02.01.a. Use the appropriate procedures for the use and operation of specific tools and equipment.
- CS.08.02.01.b. Demonstrate safety precautions when using tools for a specific task around bystanders.
- PST.03.01 Troubleshoot, service, and repair components of internal combustion engines using manufacturers' guidelines.
- PST.03.01.01.a. Identify components and systems of internal combustion engines.
- PST.03.01.01.c. Evaluate service and repair needs for internal combustion engines using a variety of performance tests (e.g., manuals, computer-based diagnostics, etc.).
- PST.03.01.02.c. Inspect, analyze, and repair internal combustion engines used in AFNR power, structural, and technical systems.

Suggested Resources for Activity

In addition to the general references specified for the Agricultural Technology and Mechanical Systems CDE, the following references are suggested for the Compact Equipment Skill Activity. Note: Specific references are listed below, but others may be added at a later date:

Please review the general references for the Agricultural Technology and Mechanical Systems CDE (ATMS handbook can be found at FFA.org) <https://ffa.box.com/v/2025-Ag-Tech-Mech-Sys-Handbook76>

- Koel, L., Mazur, G., Moniz, B. J, and Radcliff, B. (2019). *Agricultural Technical Systems and Mechanics* (2nd) Ed.
- Herren, R. V. (2010). *Agricultural Mechanics: Fundamentals & Applications*, (6th or 7th ed.) Clifton, Park NY: Delmar.

Other Reference Material *Additional Manuals may be posted at a later date.*

- [KD225 440 Service Manual](#)
- [Owners Manual KD225](#)