

2025 Agriculture Small Engine Repair

Program Standards

CONTENT STANDARD 1.0: PROFESSIONAL ORGANIZATIONS AND LEADERSHIP

Performance Standard 1.1: Student Leadership in Career Technical Student Organizations (CTSO) and Professional Associations

- 1.1.1 Explore the role of professional organizations and/or associations in the ag small engine repair industry.
- 1.1.2 Define the value, role, and opportunities provided through career technical student organizations.
- 1.1.3 Engage in career exploration and leadership development.

Performance Standard 1.2: Supervised Agricultural Experiences

- 1.2.1 Maintain SAE record books.
- 1.2.2 Describe the proficiency award areas related to the SAE program area.
- 1.2.3 Describe necessary steps to receive higher degrees in FFA.

CONTENT STANDARD 2.0: SAFETY

Performance Standard 2.1: Workplace Safety

- 2.1.1 Describe general shop safety rules and procedures.
- 2.1.2 Describe safe procedures for handling tools and equipment.
- 2.1.3 Describe ventilation requirements and related hazards when working within the lab/shop area.
- 2.1.4 Describe marked safety areas and related safety requirements.
- 2.1.5 Identify the location and the types of fire extinguishers and other fire safety equipment.
- 2.1.6 Describe procedures for using fire extinguishers and other safety equipment.
- 2.1.7 Describe the location and use of eye wash stations.
- 2.1.8 Describe the location and need for posted evacuation routes.
- 2.1.9 Describe requirements for personal protective equipment (e.g., safety glasses, ear protection, gloves, footwear) when working in the lab/shop.
- 2.1.10 Describe clothing requirements when working safely in the lab/shop.
- 2.1.11 Describe the location and contents of safety data sheets (SDS).
- 2.1.12 Describe requirements for handling, storage, and disposal of hazardous and flammable waste and materials.

CONTENT STANDARD 3.0: TOOLS AND FASTENERS

Performance Standard 3.1: Basic Tools

- 3.1.1 Identify the correct tool for a specific application or repair.
- 3.1.2 Identify whether a tool or repair uses standard or metric designation.
- 3.1.3 Demonstrate safe handling and use of tools.
- 3.1.4 Describe the need for cleaning, storing, maintaining, and removing (i.e., lockout/tagout) tools and equipment.

Performance Standard 3.2: Fasteners

- 3.2.1 Define fastener terms.
- 3.2.2 Identify threaded and non-threaded fasteners and their intended applications.
- 3.2.3 Select correct fasteners for a repair.
- 3.2.4 Rethread tapped holes and damaged fasteners.
- 3.2.5 Describe seized nut and bolt removal methods.
- 3.2.6 Demonstrate torque methods.

Performance Standard 3.3: Precision Measuring Instruments

- 3.3.1 Define measurement terms.
- 3.3.2 Identify measuring instruments.
- 3.3.3 Demonstrate precision measuring techniques, including using precision measuring equipment.

CONTENT STANDARD 4.0: BASIC ELECTRICAL

Performance Standard 4.1: Basic Electrical Theory and System

- 4.1.1 Interpret common electrical schematic symbols
- 4.1.2 Identify components of a basic electrical system.
- 4.1.3 Describe basic electrical theory.
- 4.1.4 Describe basic electrical circuits and their applications.
- 4.1.5 Demonstrate procedures for using a multimeter.

CONTENT STANDARD 5.0: ENGINES

Performance Standard 5.1: Basic Engine Principles and Design

- 5.1.1 Identify engine type and application.
- 5.1.2 Interpret various engine model codes.
- 5.1.3 Define *horsepower*, *torque*, and *displacement*.

Performance Standard 5.2: Operation of a 2-Stroke Engine

- 5.2.1 Define 2-stroke engine theory of operation.
- 5.2.2 Identify 2-stroke engine components and their functions.
- 5.2.3 Describe 2-stroke engine operation.
- 5.2.4 Diagnose and repair a 2-stroke engine.
- 5.2.5 Diagnose 2-stroke engine problems.
- 5.2.6 Describe 2-stroke engine rebuild procedures.
- 5.2.7 Perform a 2-stroke engine failure analysis.
- 5.2.8 Disassemble a 2-stroke engine, inspecting condition of components.

Performance Standard 5.3: Operation of a 4-Stroke Engine

- 5.3.1 Define 4-stroke engine theory of operation.
- 5.3.2 Identify 4-stroke engine components and their functions.
- 5.3.3 Describe 4-stroke engine operation.
- 5.3.4 Diagnose and repair a 4-stroke engine.
- 5.3.5 Diagnose 4-stroke engine problems.
- 5.3.6 Describe 4-stroke engine rebuild procedures.
- 5.3.7 Perform a 4-stroke engine failure analysis.
- 5.3.8 Disassemble a 4-stroke engine, inspecting condition of components.

Performance Standard 5.4: Cooling and Lubrication Systems

- 5.4.1 Identify types of cooling and lubrication systems.
- 5.4.2 Identify the components and function of a cooling system.
- 5.4.3 Identify the components and function of a lubrication system.
- 5.4.4 Identify types of oils and their applications.

Performance Standard 5.5: Fuel Systems

- 5.5.1 Define types of fuel systems.
- 5.5.2 Describe fuel system theory.
- 5.5.3 Identify fuel system components and their functions.
- 5.5.4 Service fuel systems components.
- 5.5.5 Diagnose and repair fuel system malfunctions.

Performance Standard 5.6: Governor Systems

- 5.6.1 Identify types of governor systems and their components.
- 5.6.2 Describe governor system theory, operation, and adjustments.
- 5.6.3 Diagnose and repair governor system malfunctions.

Performance Standard 5.7: Ignition Systems

- 5.7.1 Identify common types of ignition systems and theory of operation.
- 5.7.2 Identify components and functions of an ignition system.
- 5.7.3 Diagnose and repair ignition system malfunctions.

Performance Standard 5.8: Charging Systems

- 5.8.1 Identify common types of charging systems and theory of operation.
- 5.8.2 Identify components and functions of a charging system.
- 5.8.3 Diagnose and repair charging system malfunctions.

Performance Standard 5.9: Starting Systems

- 5.9.1 Identify common types of starting systems and theory of operation.
- 5.9.2 Identify components and functions of a starting system.
- 5.9.3 Diagnose and repair starting system malfunctions.

CONTENT STANDARD 6.0: MAINTENANCE

Performance Standard 6.1: Maintenance Programs

- 6.1.1 Describe a periodic engine maintenance program.
- 6.1.2 Describe a periodic equipment maintenance program (e.g., blade sharpening, belts, chains, cables).
- 6.1.3 Research owner's manuals, service schedules, and manufacturer's data to perform periodic maintenance.

CONTENT STANDARD 7.0: PARTS AND SERVICE MANAGEMENT

Performance Standard 7.1: Parts and Service Operation

- 7.1.1 Access and locate parts information.
- 7.1.2 Complete a work order/invoice.
- 7.1.3 Describe methods for providing customer service.