

Advanced Natural Gas Vehicle Training

Module 3: John Deere Computerized Engine Management System

Lesson 8: Computer Controlled Valves

Lecture: 20 Minutes

Lab: 25 Minutes

Classroom Instructional Objectives:

Upon completion of this unit of instruction the student will be able to:

- Explain the operational characteristics of the throttle actuator.
- Explain the relationship between throttle valve position and TPS voltage output.
- Explain how to use the John Deere Operation and Diagnostic Manual.
- Explain how to perform fault code diagnostic routines.
- Explain how to perform no fault code diagnostic routines.
- List the fault codes specific to John Deere computer controlled valves.
- Analyze John Deere wiring diagram sections specific to electronic controlled valves.
- Explain how to test the throttle actuator valve using a lab scope and scan tool.
- Explain how to test the throttle actuator valve for opens and shorts using a multi-meter.

Key Classroom Objectives:

- Explain the operational strategy used by the ECM to control engine RPM.
- Compare and contrast the operation of the foot pedal position sensor 1 and 2 and the position of the throttle actuator valve.
- Explain how to use the John Deere Operation and Diagnostic Manual.
- Explain how to perform fault code diagnostic routines.
- Explain how to perform no fault code diagnostic routines.
- Use John Deere diagnostic manual to locate specifications.
- List the fault codes specific to John Deere computer controlled valves.
- Analyze John Deere wiring diagram sections specific to the throttle actuator valve.
- Explain how to test the throttle actuator using a lab scope
- Explain how to test the throttle actuator using a scan tool.
- Stress the value of correctly using a multi-meter to test electric/electronic devices.

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Lab Skill Objectives:

Upon completion of this unit of instruction the student will be able to:

- Locate the throttle actuator valve using a component locator sheet.
- Demonstrate how to use the John Deere Operation and Diagnostic Manual to solve driveability complaints.
- Perform fault code diagnostic routines.
- Perform no fault code diagnostic routines.
- Retrieve fault codes specific to John Deere computer controlled valves.
- Use the John Deere diagnostic manual to locate specifications.
- Test the throttle actuator valve using a lab scope and scan tool.
- Read and analyze John Deere wiring diagram sections specific to electric controlled valves.

Key Lab Points:

- Demonstrate how to use the John Deere Operation and Diagnostic Manual.
- Demonstrate how to perform fault code diagnostic routines.
- Explain how to perform no fault code diagnostic routines.
- List the fault codes specific to John Deere computer controlled valves.
- Explain how to use John Deere diagnostic manual to review specifications.
- Demonstrate how to test the throttle actuator valve using a lab scope and scan tool.
- Demonstrate how to test the circuitry related to the throttle actuator valve.
- Explain how to read John Deere wiring diagram section/s specific to electric controlled valves.

Classroom Materials:

- Attendance sheet
- Power Point presentation CD
- Lap-top
- Projector
- Instructor's guide
- White board marking pens
- Projection screen

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Handouts:

- Power Point slide materials
- Lab activity sheet 30
- Wiring diagram

Instructor's notes:
