
Vehicle Electrification System Standards

VIII. DC – DC Converters Systems

VIII.e DC-DC Converter Diagnostics & Service

Overview:

DC-DC Converter Diagnostics and Service

- Scan Tool PIDs
- Scan Tool Special Function (Bidirectional) Tests
- Testing Output Current
- Testing Output Ripple
- Testing Output Voltage Ripple

Description:

The DC-DC Converter provides low, high or, low & high voltage electrical power to the vehicle electrical system. During the service life of the DC-DC Converter there will be failure modes that will occur, and these failures must be tested and confirmed by a technician using specific testing processes and equipment.

Outcome (Goal):

Students will be able to test to the DC-DC Converter system using specified processes and equipment to confirm its output current and voltage regulation performance throughout its entire output range.

Objective:

Utilizing a test vehicle, students shall be able to complete the following DC-DC Converter tests:



1. Output Current and Ripple
 2. Voltage Regulation and Ripple
 3. Scan Tool Special Function Output Control.
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Task:

Using a test vehicle and lab worksheets, students will be able to:

1. Test DC-DC Converter Current Output and Ripple using a Load Tester and Current Clamp, and Oscilloscope (or Voltmeter with Snap-Shot feature)
 2. Test DC-DC Converter Voltage Regulation and Ripple using a Load Tester and Oscilloscope
 3. Monitor DC-DC Converter PIDs with a Scan Tool during Current Output testing to compare commanded vs. actual output performance
 4. Utilize Scan Tool Output Control functions to test CAN communications to control the DC-DC Converter output
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