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## Vehicle Electrification System Standards

### III. High Voltage Vehicle Safety Systems

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#### III.c High Voltage Interlock Systems

##### OEM Acronyms:

HVIL – High Voltage Interlock

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##### Description:

The HVIL circuit is a discrete wire or CAN-based safety system that permits the hybrid, vehicle, or battery pack controller to determine if the high voltage system is being breached while powered ON by monitoring the status of a connector or switch that is attached to or part of a high voltage component.

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##### Outcome (Goal):

Students will locate and identify each component that utilizes an HVIL connection.

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##### Objective:

When provided with a hybrid, plug-in, or electric vehicle, students will determine if the HVIL circuit is operating properly.

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##### Task:

Students will breach one high voltage component on a vehicle that uses the HVIL circuit and determine if the vehicle will fail to power ON the high voltage system after the vehicle has been cycled OFF and then ON again.

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**Required Special Tools and/or Equipment to Complete Task:**

OEM service information; serial data tool; PPE; hand tools.

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**Instructor Demonstrations (System Operation, Testing, Servicing, Repair):**

The instructor shall utilize a training vehicle to demonstrate where the HVIL is located, its operation when breached, how serial data tool messages will change when the breach occurs, how the high voltage system will be disabled, and how associated DTCs will be logged when breaching the circuit is executed.

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**Information Resources to support Tasks, Demonstrations, Repairs, etc.:**

OEM service information

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**Suggested Vehicle for Tasks and Demonstrations:**

Available vehicles

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**Governing Standards (Safety, Testing, Diagnostics or Repair):**

FMVSS 305 (?); Best Practice

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**Industry Resource Organization:**

- Society of Automotive Engineers (SAE)
  - Institute of Electrical & Electronic Engineers (IEEE)
  - International Electrotechnical Commission (IEC)
  - American Society for Testing and Materials (ASTM)
  - Occupational Safety & Health Administration (OSHA)
  - National Fire Protection Association (NFPA)
  - Underwriters Laboratories (UL)
  - √ Federal Motor Vehicle Safety Standard (FMVSS)
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