
Vehicle Electrification System Standards

X. Vehicle Cabin HVAC Systems

X.b Vehicle Cabin HVAC Systems Components

Overview:

Vehicle Cabin HVAC Systems Components

- Electric Air Conditioning Compressor
 - Coolant Chiller System
 - Electric Cabin PTC Heater
 - Immersion Type
 - Air-to-Air
 - Electric Battery Pack PTC Heater (external)
 - Immersion Type
 - Grid Type
 - Electric Battery Pack PTC Heater (internal)
 - Immersion Type
 - Electric Grid Type
 - A/C - Indirect Battery Pack Cooling
 - Coolant Pump (12V)
 - Coolant (Glycol & Deionized Water)
 - Coolant Reservoir
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Description:

Electrified vehicle cabin and battery pack HVAC systems is one of the most critical systems on the vehicle. The systems can determine the performance of the vehicle in hot or cold weather, how quickly the battery pack ages, and the comfort level of occupants in the vehicle passenger compartment. It is crucial that technicians know



the components that comprise these HVAC systems to ensure they understand the cause and effect for service and diagnostics.

Outcome (Goal):

The Students will be able to Identify all cabin and High Voltage battery pack HVAC components, trace High Voltage wire/cable system routing of all electrical harnesses, and identify low voltage cooling system components and electrical circuits.

Objective:

Students shall be able to:

1. Identify all components that comprise the HVAC system
 2. Trace the routing of all electrical wire/cable, communications harness, and cooling system for the cabin and High Voltage battery pack HVAC systems to determine all components that comprise the systems
 3. Describe, by using a circuit diagram, the function of each vehicle cabin HVAC system component
 4. Describe, by using a circuit diagram, the function of each High Voltage Battery Pack HVAC system component.
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Task:

1. Given a vehicle topology diagram or live vehicle, the Students will be able to identify all cabin and battery pack HVAC system components
 2. Given a vehicle diagram, Students will be able to trace the High voltage electrical and coolant inputs and outputs of all cabin and High Voltage battery pack HVAC systems
 3. When provided a worksheet, the students will match HVAC whole words to an acronym list
 4. When provided a list of definitions, students will match them to the parts list nomenclature.
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To comment or offer suggestions on this standard, contact Ken Mays:

Ken Mays	NEVTEX
541-383-7753	kmays@cocc.edu

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