Electric and Hybrid Electric Vehicles, 1st Edition

Chapter 16

NAME _____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

1. How can it be determined if the inverter is located inside or outside an A/C compressor?

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   _____
   _____
   _____

2. What type of refrigerant oil is used in an electrically powered A/C compressor?

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3. What is the difference in the parts between a TXV and orifice tube A/C system?

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4. What is the purpose of the auxiliary water (coolant) pump?

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5. What are the advantages of a heat pump HVAC System?

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   _____

Answer Key
Testname: EV1SHORT16

1. Three wires carry high- voltage AC from an external inverter to power the motor used to power the A/C compressor. If the compressor has two high-voltage wires from the battery pack the compressor itself includes an inverter to convert direct current DC to AC.
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2. Hybrid vehicle A/C systems that use electrically driven compressors must use POE (polyol ester) oil, unlike all other compressors. PAG (polyalkylene glycol) oil, which is used in non-hybrid vehicles, is slightly conductive and can cause deterioration of the insulation on the windings of the compressor motor.
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3. A thermostatic expansion valve (TXV) system uses a receiver-drier in the high-pressure side. An orifice tube system has an accumulator on the low-pressure side between the evaporator and the com- pressor suction port.
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4. An auxiliary water (coolant) pump is a DC motor-operated water pump that is used to circulate coolant to the heater core to help keep the cabin warm. The auxiliary water pump does not operate all the time. The BCM or controlling module will control and regulate the pump.
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5. Many automakers use a heat pump to maximize the range an electric vehicle can travel by scavenging waste heat to warm the cabin. A heat pump is more efficient than PTC/electric resistance heating.
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