Light Vehicle Diesel Engines, 1st Edition
Chapter 9

Name_____

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

1) What are the advantages and disadvantages of turbocharging?

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2) What turbocharger control valves are needed for proper engine operation?

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3) What items should be checked as part of a visual inspection of the turbocharger system?

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4) Why is a variable geometry turbocharger used?

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5) What are some turbocharger-related faults that can cause the diesel engine to produce less than normal power?

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1) Advantage—A turbocharger uses the heat of the exhaust gases to power a turbine wheel, and therefore, does not directly reduce engine power. Disadvantage—The use of a turbocharger increases the number of parts and the complexity of the engine.
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2) A wastegate is a valve similar to a door that can open and close. It is a bypass valve at the exhaust inlet to the turbine, which allows all of the exhaust into the turbine, or it can route part of the exhaust past the turbine to the exhaust system.
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3) A visual inspection is one of the first things that a service technician should perform when checking on a possible turbocharger fault. The items to check include:
1. The air filter
2. Intake manifold(s), variable intake manifold(s), gaskets, actuators, temperature and pressure sensors, and connections.
3. The air inlet system for leaks or other faults, such as accident or road debris damage.
4. The exhaust manifold(s), gaskets, piping, mufflers, and mounting hardware.
5. The turbocharger itself for evidence of damage.
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4) A variable geometry turbocharger (VGT) is used on many diesel engines for boost control. Boost pressure is controlled independently of engine speed, and a wastegate is not needed. A VGT is able to accurately match turbocharger boost levels to power demands without overboosting and with less lag time compared to a wastegate system.
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5) The limp mode which results in the engine commanded to produce less power is to prevent further damage to the vehicle and will remain until the code is cleared or repaired.
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