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GROUP: Exhaust

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SUBJECT:

Turbocharger, Charge Air Cooler, and Exhaust Gas Recirculation Systems Diagnosis on OM642 Engines

MODELS:

2006 - 2007	(LE)	300C/300C Touring (International Markets)
2005 - 2007	(WH)	Grand Cherokee (International Markets)
2007	(WK)	Grand Cherokee
2006 - 2007	(XH)	Commander (International Markets)

DISCUSSION:

The turbocharger, charge air cooler and exhaust gas recirculation systems operate with one another and must be tested as a complete system. It is important that all components of the air intake system be thoroughly tested any time a symptom is present for one of these components.

It is typical to notice a small amount of engine oil in the air intake system. This comes from the crankcase ventilation and may weep out of hose connections that are not clamped properly. This does not mean that the turbocharger requires replacement.

If DTC's or the performance of the vehicle lead to the determination that the boost pressure and/or mass air flow values are out of range, the systems listed below should be inspected.

NOTE: Also a continuous air leak may result in an intermittent symptom. The ECM monitors the sensor readings continuously but only sets a DTC or reduces the engine torque when these readings are outside of the tolerances, which may occur under certain driving conditions.

Inspect the following:

- Air intake system and Charge Air Cooler plumbing: Loose or broken hoses or fittings may create an air leak resulting in a loss of pressure and mass air flow. Refer to detailed service information available in TechCONNECT, under: Service Info, 11 - Exhaust System, Turbocharger System, Charge Air Cooler And Plumbing, Diagnosis & Testing, Charge Air Cooler System Leaks. (A smoke machine does not create enough pressure to find a leak in the air intake system).
- Turbo Resonator: Inspect the resonator (muffler, connected to the turbocharger) for air leaks at the seam between the two shells.



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- Charge Air Cooler: A charge air cooler damaged by tools or external debris may leak air.
- Mass Air Flow Sensor (MAF): The mass air flow, measured and provided by the MAF is critical for calculations performed by the ECM and may result in several DTC's related to the air intake system if not accurate.
- Turbocharger: See Turbocharger Diagnostic Procedure below. Consider that an operating turbocharger creates a flow sound, which is normal and does not require replacement. Other sounds like whistling are potentially caused by the resonator or improper line connections.
- Exhaust Gas Recirculation (EGR) valve: A sticking EGR valve influences the mass air flow causing implausibility with MAF, displaying one or more DTC's. For diagnostic procedures, refer to detailed DTC information available in TechCONNECT, Refer to 9 - Engine Electrical Diagnostics - Diesel. If no DTC's are displayed, refer to: 9 - Engine Electrical Diagnostics - Diesel > Checking The EGR System.

TURBOCHARGER DIAGNOSTIC PROCEDURE:

CAUTION: Do NOT try to move the actuator mechanism by pushing or pulling the connecting rod. There is a worm gear attached to the actuator mechanism, which doesn't allow any movement from its output side.

For diagnosis procedures, refer to detailed service information available in TechCONNECT, Refer to 9 - Engine Electrical Diagnostics - Diesel, Checking The Boost Servo Motor.

If step 5 of the diagnostic procedure indicates replace the Boost Pressure Servo Motor, then the Turbocharger/Boost Pressure Servo Motor unit must be replaced as an assembly.

NOTE: Never replace the Boost Pressure Servo Motor actuator only. The adjustment of the actuator mechanism is set at the factory with special equipment, and is critical for proper operation.

POLICY:

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