

Engine Hesitation

Fault Description:

For a 2007 Audi Q7 SUV, with mileage of 20,000km and engine model: VR6 3.6LFSI, the engine MIL on instrument lights up and engine acceleration is poor.

Fault Diagnosis:

- 1) This problem happened after an engine startup. When testing the engine system by diagnostic tool, the fault code "Hall Sensor G40 Signal Implausible" is found in memory of engine control unit J623. Hall sensor circuit is tested to be normal. During trail run after clear DTC by diagnostic tool, there's an obvious acceleration hesitation. The engine MIL lights up again after driving a certain distance.
- 2) When using diagnostic tool to test, the fault code "Hall Sensor G40 Signal Implausible" appears once again. There are two possibilities of Hall sensor fault. One is the Hall sensor, engine control unit or related circuit fault, the other is the engine port timing or Hall sensor gear mounted position error. Engine VR6 has two Hall camshaft position sensors G40 and G163 (Figure 1) with same part number. Since the circuit of Hall sensor G40 is tested to be normal, exchange the 2 camshaft position sensors and clear DTC to try again. The fault still exists and G40 implausible signal also appears.



Figure 1

- 3) Take down Intake Manifold, High Pressure Fuel Rail and Valve Chamber Cover to check whether the port timing is normal. It is then found the camshaft chain tension is not good. Remove the Rear Timing Cover and find the fixing bolt of chain wheel used to connect crankshaft chain and camshaft chain is broken (Figure 2). This exactly caused the loosening of

chain wheel and chain and the port timing deviation. The chain wheel does not break off because the engine design is compact, and the Rear Timing Cover is close to chain wheel with a groove locking it. Besides, the Rear Timing Cover has been grinded another groove (Figure 3), thus the engine does not give obvious abnormal noise.



Figure 2



Figure 3

- 4) .Clear Fault: Replace timing chain, chain wheel, chain wheel bolt and rear timing cover. Run the car again to confirm the fault has been cleared.