Engine

Inspection and Verification - Engine Performance

NOTE: *There are 2 diagnostic paths that can be followed depending on the type of engine concern. Carry out Inspection and Verification - Engine Performance or Inspection and Verification - NVH.*

Some engines and transmissions are equipped with PTLP (powertrain limiting and protection) strategy that will limit power under various conditions to protect the engine and the transmission.

1. Verify the customer concern.
2. Visually inspect for obvious signs of mechanical or electrical damage.
3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. **NOTE:** *Make sure to use the latest scan tool software release.*

   If the cause is not visually evident, connect the scan tool to the DLC.
5. **NOTE:** *The VCM LED prove out confirms power and ground from the DLC are provided to the VCM.*

   If the scan tool does not communicate with the VCM:
   - check the VCM connection to the vehicle.
   - check the scan tool connection to the VCM.
   - check for No Power To The Scan Tool, to diagnose no power to the scan tool.
     REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).
6. If the scan tool does not communicate with the vehicle:
   - verify the ignition key is in the ON position.
   - verify the scan tool operation with a known good vehicle.
   - to diagnose no response from the PCM,
     REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).
7. Carry out the network test.
   - If the scan tool responds with no communication for one or more modules,
     REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).
   - If the network test passes, retrieve and record continuous memory DTCs.
8. Clear the continuous DTCs and carry out the self-test diagnostics for the PCM.
9. If the DTCs retrieved are related to the concern, refer to the appropriate 303-14 section.
10. If no DTCs related to the concern are retrieved, GO to Symptom Chart - Engine Performance.

Inspection and Verification - NVH

1. NVH symptoms should be identified using the diagnostic tools and techniques that are available. For a list of these techniques, tools, an explanation of their uses and a glossary of common terms,
   REFER to: Noise, Vibration and Harshness (NVH) (100-04 Noise, Vibration and Harshness, Diagnosis and Testing).
   Since it is possible that any one of multiple systems may be the cause of the symptom, it may be necessary to use a process of elimination type of diagnostic approach to pinpoint the responsible system.
2. Verify the customer concern by operating the engine to duplicate the condition.
3. Check the engine oil level and check the oil for contamination. Low engine oil level or contaminated oil are a common cause of engine noise. If the oil is contaminated, the source of the contamination must be identified and repaired as necessary.
4. Visually inspect for obvious signs of mechanical damage.
5. If the inspection reveals obvious concerns that can be readily identified, repair as necessary.
6. **NOTE:** *Make sure to use the latest scan tool software release.*

   If the cause is not visually evident, connect the scan tool to the DLC.
7. **NOTE:** *The VCM LED prove out confirms power and ground from the DLC are provided to the VCM.*

   If the scan tool does not communicate with the VCM:
   - check the VCM connection to the vehicle.
   - check the scan tool connection to the VCM.
   - check for No Power To The Scan Tool, to diagnose no power to the scan tool.
     REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).
8. If the scan tool does not communicate with the vehicle:
   - verify the ignition key is in the ON position.
   - verify the scan tool operation with a known good vehicle.
   - to diagnose no response from the PCM,
     REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).
9. Carry out the network test.
   - If the scan tool responds with no communication for one or more modules,
     REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).
   - If the network test passes, retrieve and record continuous memory DTCs.
10. Clear the continuous DTCs and carry out the self-test diagnostics for the PCM.
11. If the DTCs retrieved are related to the concern, go to the appropriate 303-14 section.
12. If no DTCs related to the concern are retrieved, continue the inspection and verification if a noise concern is related to the engine. For vibration concerns and noise concerns such as powertrain mounts, air intake system and starter GO to Symptom Chart - NVH.

In some cases, a noise may be a normal characteristic of that engine type. In other cases the noise may require further investigation. Comparing the noise to a similar year/model vehicle equipped with the same engine will aid in determining if the noise is normal or abnormal.

Once a customer concern has been identified as an abnormal engine noise, it is critical to determine the location of the specific noise. Use the EngineEAR/ChassisEAR or stethoscope (the noise will always be louder closer to the noise source) to isolate the location of the noise to one of the following areas.

- Fuel injector(s)
- Upper end of engine
- Lower end of engine
- Front of engine
- Rear of engine