

## NO.14 POOR FUEL ECONOMY [LF]

B3E010318881W16

| 14             | POOR FUEL ECONOMY  |
|----------------|--|
| DESCRIPTION    | Fuel economy is unsatisfactory.  |
| POSSIBLE CAUSE | <ul style="list-style-type: none"> <li>• Contaminated air cleaner element</li> <li>• Variable intake-air control malfunction</li> <li>• Engine cooling system malfunction</li> <li>• Weak spark</li> <li>• Poor fuel quality</li> <li>• Erratic or no signal from CMP sensor</li> <li>• Clutch slippage (MTX)</li> <li>• Improper ATF level (ATX)</li> <li>• Variable tumble control malfunction</li> <li>• Improper coolant level</li> <li>• Inadequate fuel pressure</li> <li>• Spark plug malfunction</li> <li>• PCV valve malfunction</li> <li>• Brake dragging</li> <li>• Improper valve timing due to jumping out of timing belt</li> <li>• Contaminated MAF sensor</li> <li>• Improper engine compression</li> <li>• Exhaust system clogging</li> </ul>   |
|                | <p><b>Warning</b></p> <p>The following troubleshooting flow chart contains fuel system diagnosis and repair procedures. Read following warnings before performing fuel system services:</p> <ul style="list-style-type: none"> <li>• Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel.</li> <li>• Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete "BEFORE SERVICE PRECAUTION" and "AFTER SERVICE PRECAUTION" described in this manual.</li> </ul> <p>(See <a href="#">BEFORE SERVICE PRECAUTION [ZJ, Z6, LF]</a>.)<br/> (See <a href="#">AFTER SERVICE PRECAUTION [ZJ, Z6, LF]</a>.)</p> <p><b>Caution</b></p> <ul style="list-style-type: none"> <li>• Disconnecting/connecting quick release connector without cleaning it may possibly cause damage to fuel pipe and quick release connector. Always clean quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.</li> </ul> |

### Diagnostic procedure

| STEP | INSPECTION  | RESULTS | ACTION                                  |
|------|---|---------|---|
| 1    | Inspect the following:<br>• Air cleaner element for contamination<br>• ATF level (ATX)<br>• Fuel quality<br>• Coolant level<br>• Brake dragging<br>• Clutch slippage (MTX)<br>Are all items normal? | Yes     | Go to the next step.                    |
|      |   | No      | Service if necessary.<br>Repeat Step 1. |

|    |   |     |   |
|----|---|-----|---|
| 2  | Connect the WDS or equivalent to the DLC-2.<br>Retrieve any continuous memory, KOEO and KOER DTCs using WDS or equivalent.<br>Are there any DTCs displayed?   | Yes | <b>DTC is displayed:</b><br>Go to the appropriate DTC inspection.<br>(See <a href="#">DTC TABLE [LF]</a> .)   |
|    |   | No  | <b>No DTC is displayed:</b><br>Go to the next step.   |
| 3  | Access ECT PID.<br>Drive the vehicle while monitoring PID.<br>(See <a href="#">PCM INSPECTION [LF]</a> .)<br>Is PID within specification?   | Yes | Go to the next step.  |
|    |   | No  | Inspect for coolant leakage, cooling fan and thermostat operation.  |
| 4  | Perform the spark test.<br>(See <a href="#">Spark Test</a> .)<br>Is strong blue spark visible at each cylinder?   | Yes | Go to the next step.  |
|    |   | No  | Repair or replace malfunctioning part according to spark test result.   |
| 5  | Install fuel pressure gauge between the fuel pipe and the fuel distributor.<br>Start the engine and idle it.<br>Measure fuel line pressure during idle.<br>Is fuel line pressure correct during idle?<br>(See <a href="#">FUEL LINE PRESSURE INSPECTION [ZJ, Z6, LF]</a> .)   | Yes | Go to the next step.  |
|    |   | No  | <b>Low:</b><br>Inspect the fuel line for clogging.<br>• If there is no malfunction, replace the fuel pump unit<br>(See <a href="#">FUEL PUMP UNIT REMOVAL/INSTALLATION [ZJ, Z6, LF]</a> .)<br><br><b>High:</b><br>Replace the fuel pump unit.<br>(See <a href="#">FUEL PUMP UNIT REMOVAL/INSTALLATION [ZJ, Z6, LF]</a> .) |
| 6  | Inspect variable tumble control operation.<br>(See <a href="#">Variable Tumble Control Operation Inspection</a> .)<br>Does the variable tumble control function properly?   | Yes | Go to the next step.  |
|    |   | No  | Repair or replace the malfunctioning part.  |
| 7  | Inspect variable intake-air control operation.<br>(See <a href="#">Variable Intake-air Control Operation Inspection</a> .)<br>Does the variable intake-air control function properly?   | Yes | Go to the next step.  |
|    |   | No  | Repair or replace the malfunctioning part.  |
| 8  | Remove and shake the PCV valve.<br>Does the PCV valve rattle?   | Yes | Go to the next step.  |
|    |   | No  | Replace the PCV valve.  |
| 9  | Visually inspect the exhaust system part.<br>Is there any deformed exhaust system part?   | Yes | Replace the suspected part.   |
|    |   | No  | Go to the next step.  |
| 10 | Inspect for contaminated MAF sensor.<br>Is there any contamination?   | Yes | Go to the next step.  |
|    |   | No  | Inspect for cause.  |
| 11 | Inspect the MAF sensor for contamination.<br>Is there any contamination?  | Yes | Replace the MAF sensor.   |
|    |   | No  | Go to the next step.  |
| 12 | Is engine compression correct?  | Yes | Inspect valve timing.   |
|    |   | No  | Inspect for cause.  |
| 13 | Verify test results.<br>• If normal, return to diagnostic index to service any additional symptoms.<br>(See <a href="#">ENGINE SYMPTOM TROUBLESHOOTING [LF]</a> .)<br>• If malfunction remains, inspect related Service information perform repair or diagnosis.<br><br>- If vehicle repaired, troubleshooting completed.<br>- If vehicle not repaired or additional diagnostic information not available, replace the PCM. |     |   |

(See [PCM REMOVAL/INSTALLATION \[LF\]](#).)