

## NO.19 EXHAUST SMOKE [LF]

B3E010318881W21

19	EXHAUST SMOKE
DESCRIPTION	Blue, black, or white smoke from exhaust system
POSSIBLE CAUSE	<b>Blue smoke (Burning oil):</b> <ul style="list-style-type: none"> <li>• PCV valve malfunction</li> <li>• Engine internal oil leakage</li> </ul>
	<b>White smoke (Water in combustion):</b> <ul style="list-style-type: none"> <li>• Cooling system malfunction (coolant loss)</li> <li>• Engine internal coolant leakage</li> </ul>
	<b>Black smoke (Rich fuel mixture):</b> <ul style="list-style-type: none"> <li>• Air cleaner restriction</li> <li>• Intake-air system is collapsed or restricted.</li> <li>• Fuel return line is restricted.</li> <li>• Excessive fuel pressure</li> <li>• Improper engine compression</li> <li>• Injector fuel leakage</li> <li>• Ignition system malfunction</li> </ul>
	<b>Warning</b> <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. (See <a href="#">BEFORE SERVICE PRECAUTION [ZJ, Z6, LF]</a>.) (See <a href="#">AFTER SERVICE PRECAUTION [ZJ, Z6, LF]</a>.)</li> </ul>
	<b>Caution</b> <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	What color is smoke coming from the exhaust system?	Blue	Burning oil is indicated. Go to the next step.
		White	Water in combustion is indicated. Go to Step 3.
			Rich fuel mixture is indicated.

		Black	Go to Step 4.
2	Remove and shake the PCV valve. Does the PCV valve rattle?	Yes	Inspect for the following: <ul style="list-style-type: none"> <li>• Damaged valve guide, stems or valve seals</li> <li>• Blocked oil drain passage in cylinder head</li> <li>• Piston ring is not seated, seized or worn.</li> <li>• Damaged cylinder bore</li> </ul> If other drivability symptoms are present, return to diagnostic index to service any additional symptoms.
		No	Replace the PCV valve.
3	Does the cooling system hold pressure?	Yes	Inspect for the following: <ul style="list-style-type: none"> <li>• Cylinder head gasket leakage</li> <li>• Intake manifold gasket leakage</li> <li>• Cracked or porous engine block</li> </ul> If other drivability symptoms are present, return to diagnostic index to service any additional symptoms.
		No	Inspect for cause.
4	Inspect for the following: <ul style="list-style-type: none"> <li>• Air cleaner restriction</li> <li>• Collapsed or restricted intake-air system</li> <li>• Restricted fuel return line</li> </ul> Are all items normal?	Yes	Go to the next step.
		No	Service if necessary. Repeat Step 4.
5	Connect the WDS or equivalent to the DLC-2. Retrieve any continuous memory, KOEO and KOER DTCs using WDS or equivalent. Are there any DTCs displayed?	Yes	<b>DTC is displayed:</b>  Go to the appropriate DTC inspection. (See <a href="#">DTC TABLE [LF]</a> .)
		No	<b>No DTC is displayed:</b>  Go to the next step.
6	Install fuel pressure gauge between the fuel pipe and fuel distributor. Start the engine and idle it. Measure fuel line pressure during idle. Is fuel line pressure correct during idle? (See <a href="#">FUEL LINE PRESSURE INSPECTION [ZJ, Z6, LF]</a> .)	Yes	Go to the next step.
		No	<b>Low:</b>  Inspect the fuel line for clogging. • If there is no malfunction, replace the fuel pump unit. (See <a href="#">FUEL PUMP UNIT REMOVAL/INSTALLATION [ZJ, Z6, LF]</a> .)  <b>High:</b>  Replace the fuel pump unit. (See <a href="#">FUEL PUMP UNIT REMOVAL/INSTALLATION [ZJ, Z6, LF]</a> .)
7	Is strong blue spark visible at each disconnected high-tension lead while cranking the engine?	Yes	Inspect spark plugs and CMP sensor. (See <a href="#">SPARK PLUG REMOVAL/INSTALLATION [LF]</a> .) (See <a href="#">CAMSHAFT POSITION (CMP) SENSOR INSPECTION [LF]</a> .)
		No	Inspect following: <ul style="list-style-type: none"> <li>• High-tension leads</li> <li>• Ignition coil and connector</li> </ul>
8	Verify test results. • If normal, return to diagnostic index to service any additional symptoms. (See <a href="#">ENGINE SYMPTOM TROUBLESHOOTING [LF]</a> .) • If malfunction remains, inspect related Service information perform repair or diagnosis.		

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|  | <ul style="list-style-type: none"><li>- If vehicle repaired, troubleshooting completed.</li><li>- If vehicle not repaired or additional diagnostic information not available, replace the PCM.</li></ul> (See <a href="#">PCM REMOVAL/INSTALLATION [LF]</a> .) |
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