

NO.8 ENGINE RUNS ROUGH/ROLLING IDLE [ZJ, Z6]

B3E010318881W41

8	ENGINE RUNS ROUGH/ROLLING IDLE
DESCRIPTION	<ul style="list-style-type: none"> • The engine speed fluctuates between the specified idle speed and lower speed and the engine shakes excessively. • The idle speed is too slow and the engine shakes excessively.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Air leakage from intake-air system parts • A/C system operation is improper • Erratic signal to ignition coil • Spark plug malfunction • Purge solenoid valve malfunction • IAC valve improper operation • Idle learning of IAC system is not completed • EGR valve malfunction • Erratic or no signal from CMP sensor • Low engine compression • Improper valve timing • Improper variable valve timing control system operation • Erratic signal from CKP sensor • Improper air/fuel mixture ratio control operation (abnormal signal from MAF sensor, front HO2S or rear HO2S) • Open or short circuit in PCM GND circuit • Poor fuel quality • PCV valve malfunction • Air cleaner restriction • Restriction in exhaust system • Disconnected electrical connectors • Inadequate fuel pressure • Fuel pump body mechanical malfunction • Improper load signal input • Fuel line restriction or clogging • Improper fuel injection control operation • Fuel leakage from fuel injector • Fuel injector clogging • Engine overheating • Vacuum leakage • Pressure regulator malfunction (built-in fuel pump unit) <p>Warning</p> <p>The following troubleshooting flow chart contains the fuel system diagnosis and repair procedures. Read the following warnings before performing the fuel system services:</p> <ul style="list-style-type: none"> • Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. • 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 the "BEFORE SERVICE PRECAUTION" and "AFTER SERVICE PRECAUTION" described in this manual. <p>(See BEFORE SERVICE PRECAUTION [ZJ, Z6, LF].) (See AFTER SERVICE PRECAUTION [ZJ, Z6, LF].)</p> <p>Caution</p> <ul style="list-style-type: none"> • If there is foreign material on the connecting area of the quick release connector, it might damage the connector or fuel pipe. To prevent this, disconnect the connector

and clean the connecting area before connecting.

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Warm up the engine. Idle the engine for 5 min. Is the symptom disappeared?	Yes	Troubleshooting completed. (Cause of this symptom is that the idle learning of IAC system is not completed.)
		No	Go to the next step.
2	Verify the following: • External fuel shut off or accessory (kill switch, alarm etc.) • Fuel quality (such as proper octane, contamination, winter/summer blend) • No air leakage from intake-air system • Proper sealing of intake manifold and components attached to intake manifold: IAC valve, EGR valve • Ignition wiring • Electrical connections • Fuses • Smooth operation of throttle valve • PCM GND circuit (PCM terminal 1AZ, 1BC, 1BD, 1BG and/or 1BH) Are all items normal?	Yes	Go to the next step.
		No	Service if necessary. Repeat Step 2.
3	Connect the WDS or equivalent to the DLC-2. Retrieve any continuous memory, KOEO and KOER using WDS or equivalent. Are there any DTCs displayed?	Yes	DTC is displayed: Go to the appropriate DTC inspection. (See DTC TABLE [ZJ, Z6].)
		No	No DTC is displayed: Go to the next step.
4	Is the engine overheating?	Yes	Go to symptom troubleshooting "No.17 Cooling system concerns - Overheating". (See NO.17 COOLING SYSTEM CONCERNS-OVERHEATING [ZJ, Z6].)
		No	Go to the next step.
5	Connect WDS or equivalent to DLC-2. Access MAF PID. Drive vehicle with monitoring PID. Is MAF PID within specification? (See PCM INSPECTION [ZJ, Z6].)	Yes	Go to the next step.
		No	Inspect for open or short circuit of MAF sensor and related wiring harness.
6	<p>Note</p> <p>• Following test is for engine running rough idle with the A/C on concerns. If other symptoms exist, go to the next step.</p> <p>Connect pressure gauge to the A/C low and high pressure side lines. Start the engine and idle it. Turn the A/C switch on. Measure low side and high side pressures. Are pressures within specifications? (See REFRIGERANT PRESSURE CHECK.)</p>	Yes	Go to the next step.
		No	If the A/C is always on, go to symptom troubleshooting "No.24 A/C is always on or A/C compressor runs continuously". (See NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY [ZJ, Z6].) For other symptoms, inspect following: • Refrigerant charging amount • Condenser fan operation

7	<p>Note</p> <ul style="list-style-type: none"> • Following test is for engine running rough with the P/S on. If other symptoms exist, go to the next step. <p>Connect WDS or equivalent to DLC-2. Start the engine and idle it. Access PSP PID. Inspect if PSP PID is On while turning steering wheel right to left. Is PSP PID normal?</p>	Yes	Inspect the PSP switch operation and wiring harness between the PSP switch connector and the PCM connector terminal 2AC.
		No	Go to the next step.
8	Visually inspect the CKP sensor and teeth of the crankshaft pulley. Are the CKP sensor and teeth of the crankshaft pulley normal?	Yes	Go to the next step.
		No	Replace the malfunctioning part.
9	<p>Measure gap between the CKP sensor and teeth of crankshaft pulley.</p> <p>Specification</p> <p>0.5-1.5 mm {0.02-0.05 in}</p> <p>Is gap within specification?</p>	Yes	Go to the next step.
		No	Replace the crankshaft pulley.
10	Inspect the ignition coil related wiring harness condition (intermittent open or short circuit) for all cylinders. Are wiring harness conditions normal?	Yes	Go to the next step.
		No	Repair the wiring harnesses.
11	Inspect the spark plug condition. Is the spark plug wet, covered with carbon or grayish white?	Yes	<p>Spark plug is wet or covered with carbon:</p> <p>Inspect for fuel leakage from the fuel injector.</p> <p>Spark plug is grayish white:</p> <p>Inspect for clogged the fuel injector.</p>
		No	Install spark plugs on original cylinders. Go to the next step.
12	Start the engine and disconnect the IAC valve connector. Does engine speed drop or the engine stall?	Yes	Go to the next step.
		No	Inspect the IAC valve and wiring harness. (See IDLE AIR CONTROL (IAC) VALVE INSPECTION [ZJ, Z6].)
13	<p>Install fuel pressure gauge between the fuel pipe and the fuel distributor. Start the engine and idle it. Measure fuel line pressure during idle. Is fuel line pressure correct during idle? (See FUEL LINE PRESSURE INSPECTION [ZJ, Z6, LF].)</p>	Yes	Go to the next step.
		No	<p>Low:</p> <p>Inspect the fuel line for clogging.</p> <ul style="list-style-type: none"> • If there is no malfunction, replace fuel pump unit. <p>(See FUEL PUMP UNIT REMOVAL/INSTALLATION [ZJ, Z6, LF].)</p> <p>High:</p> <p>Replace the fuel pump unit.</p> <p>(See FUEL PUMP UNIT REMOVAL/INSTALLATION [ZJ, Z6, LF].)</p>
		Yes	Go to the next step.

14	Visually inspect the fuel injector, O-ring, and fuel line for fuel leakage. Service if necessary. Does fuel line pressure hold after the ignition switch is turned off? (See FUEL LINE PRESSURE INSPECTION [ZJ, Z6, LF] .)	No	Inspect the pressure regulator diaphragm condition. • If condition is normal, inspect the fuel injector. (See FUEL INJECTOR INSPECTION [ZJ, Z6, LF] .) • If condition is not normal, replace fuel pump unit. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [ZJ, Z6, LF] .)
15	Connect the WDS or equivalent to the DLC-2. Start the engine and idle it. Access O2S11 PID. Is O2S11 PID normal? • More than 0.45 V when accelerator pedal is suddenly depressed: rich condition • Less than 0.45 V during fuel cut: lean condition	Yes	Go to the next step.
		No	Inspect and repair or replace the front HO2S, wiring harness, connector or terminal, then go to the next step. (See FRONT HEATED OXYGEN SENSOR (HO2S) INSPECTION [ZJ, Z6] .)
16	Disconnect the vacuum hose between the purge solenoid valve and the intake manifold from the purge solenoid valve side. Plug the opening end of vacuum hose. Start the engine. Does engine condition improve?	Yes	Inspect if the purge solenoid valve is stuck open mechanically. Inspect EVAP control system. (See Purge Control System Inspection .)
		No	Go to the next step.
17	Remove and shake the PCV valve. Does the PCV valve rattle?	Yes	Go to the next step.
		No	Replace the PCV valve.
18	Visually inspect the exhaust system part. Is there any deformed exhaust system part?	Yes	Replace the suspected part.
		No	Go to the next step.
19	Visually inspect the CMP sensor and teeth of camshaft pulley. Are the CMP sensor and teeth of the camshaft pulley normal?	Yes	Go to the next step.
		No	Replace the malfunctioning part.
20	Inspect engine condition while tapping the EGR valve housing. Does engine condition improve?	Yes	Replace the EGR valve. (See EGR VALVE REMOVAL/INSTALLATION [ZJ, Z6] .)
		No	Go to the next step.
21	Inspect variable valve timing control system operation. (See Variable Valve Timing Control System Operation Inspection .) Does variable valve timing control system work properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part.
22	Is engine compression correct? (See COMPRESSION INSPECTION [ZJ, Z6] .)	Yes	Remove EGR valve and visually inspect for mechanically stuck EGR valve. If there is no malfunction, inspect valve timing. (See Timing Chain Installation Note .)
		No	Inspect for cause.
23	Verify test results. • If normal, return to diagnostic index to service any additional symptoms. (See ENGINE SYMPTOM TROUBLESHOOTING [ZJ, Z6] .) • If malfunction remains, inspect related Service information perform repair or diagnosis.		

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| | <ul style="list-style-type: none">- If vehicle repaired, troubleshooting completed.- If vehicle not repaired or additional diagnostic information not available, replace the PCM. <p>(See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [ZJ, Z6].)</p> |
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