

NO.8 ENGINE RUNS ROUGH/ROLLING IDLE [LF]

B3E010318881W10

8	ENGINE RUNS ROUGH/ROLLING IDLE
DESCRIPTION	<ul style="list-style-type: none"> • Engine speed fluctuates between specified idle speed and lower speed and engine shakes excessively. • Idle speed is too slow and 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 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 • Erratic signal from CKP sensor • Improper air/fuel ratio mixture ratio control operation (abnormal signal from MAF sensor or HO2S) • 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 fuel system diagnosis and repair procedures. Read 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 "BEFORE SERVICE PRECAUTION" and "AFTER SERVICE PRECAUTION" described in this manual. (See BEFORE SERVICE PRECAUTION [ZJ, Z6, LF].) (See AFTER SERVICE PRECAUTION [ZJ, Z6, LF].) <p>Caution</p> <ul style="list-style-type: none"> • 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.

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 following: • External fuel shut off or accessory (such as kill switch, alarm) • 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: EGR valve, IAC 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 [LF] .)
		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 [LF] .)
		No	Go to the next step.
5	Connect the WDS or equivalent to the DLC-2. Access MAF PID. Drive vehicle with monitoring PID. Is MAF PID within specification? (See PCM INSPECTION [LF] .)	Yes	Go to the next step.
		No	Inspect for open or short circuit of MAF sensor and related wiring harness.
6	Note • Following test is for engine running rough idle with A/C on concerns. If other symptoms exist, go to the next step. Connect pressure gauge to A/C low and high pressure side lines. Start engine and run it at idle. Turn A/C switch on. Measure low side and high side pressures. Are pressures within specifications? (See REFRIGERANT PRESSURE CHECK .)	Yes	Go to the next step.
		No	If 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 [LF] .) For other symptoms, inspect the following: • Refrigerant charging amount • Condenser fan operation
	Note		

7	<ul style="list-style-type: none"> Following test is for engine running rough with P/S on. If other symptoms exist, go to the next step. Start engine and idle it. Access PSP PID. Inspect if PSP PID is On while turning the steering wheel right to left. Is PSP PID normal?	Yes	Inspect the EHPAS. • If there is no malfunction, inspect the following wiring harnesses: - Between PCM terminal 1AI and EHPAS module terminal 1F - Between PCM terminal 1AM and EHPAS module terminal 1D
		No	Go to the next step.
8	Visually inspect the CKP sensor and teeth of crankshaft pulley. Are the CKP sensor and teeth of crankshaft pulley normal?	Yes	Go to the next step.
		No	Replace the malfunctioning part.
9	Measure the gap between the CKP sensor and teeth of crankshaft pulley. Specification 0.5-1.9 mm {0.020-0.75 in} Is the gap within the specification?	Yes	Go to the next step.
		No	Adjust the CKP sensor. (See CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [LF].)
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 spark plug condition. Is the spark plug wet, covered with carbon or grayish white?	Yes	Spark plug is wet or covered with carbon: Inspect for fuel leakage from injector. Spark plug is grayish white: Inspect for clogged fuel injector.
		No	Install spark plugs on original cylinders. Go to the next step.
12	Start engine and disconnect IAC valve connector. Does rpm drop or engine stall?	Yes	Go to the next step.
		No	Inspect IAC valve and wiring harness. (See IDLE AIR CONTROL (IAC) VALVE INSPECTION [LF].)
13	Install fuel pressure gauge between fuel pipe and fuel distributor. Start engine and run it at idle. Measure fuel line pressure at idle. Is fuel line pressure correct at idle? (See FUEL LINE PRESSURE INSPECTION [ZJ, Z6, LF].)	Yes	Go to the next step.
		No	Low: Inspect the fuel line for clogging. • If there is no malfunction, replace the fuel pump unit. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [ZJ, Z6, LF].) High: Replace the fuel pump unit. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [ZJ, Z6, LF].)
14	Visually inspect for fuel leakage at fuel injector, O-ring, and fuel line. Service as necessary. Does fuel line pressure hold after ignition	Yes	Go to the next step.
		No	Inspect fuel injector. • If fuel injector is normal, replace the fuel pump unit.

	switch is turned off? (See FUEL LINE PRESSURE INSPECTION [ZJ, Z6, LF].)		(See FUEL PUMP UNIT REMOVAL/INSTALLATION [ZJ, Z6, LF].)
15	Connect the WDS or equivalent to the DLC-2. Warm up the engine and idle it. Access O2S11 PID. Is O2S11 PID normal? • More than 0.45 V when the 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 [LF].)
16	Disconnect the vacuum hose between purge valve and intake manifold from purge valve side. Plug opening end of vacuum hose. Start engine. Does engine condition improve?	Yes	Inspect if the purge valve is stuck open mechanically. Inspect EVAP control system.
		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 part.
		No	Go to the next step.
19	Visually inspect the CMP sensor and teeth of camshaft. Are CMP sensor and teeth of camshaft 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.
		No	Go to the next step.
21	Is engine compression correct?	Yes	Inspect valve timing.
		No	Inspect for causes.
22	Verify test results. • If normal, return to diagnostic index to service any additional symptoms. (See ENGINE SYMPTOM TROUBLESHOOTING [LF].) • If malfunction remains, inspect related Service information perform repair or diagnosis. - If vehicle repaired, troubleshooting completed. - If vehicle not repaired or additional diagnostic information not available, replace the PCM. (See PCM REMOVAL/INSTALLATION [LF].)		