

2012 - Mazda6 - Engine

NO.13 KNOCKING/ PINGING-ACCELERATION/ CRUISE [MZR 2.5]

13	KNOCKING/PINGING—ACCELERATION/CRUISE
DESCRIPTION	• Sound is produced when air/fuel mixture is ignited by something other than spark plug. (e.g. hot spot in combustion chamber)
POSSIBLE CAUSE	• Engine overheating due to cooling system malfunction • Erratic signal to PCM ▪ ECT sensor or related wiring harness malfunction ▪ IAT sensor or related wiring harness malfunction ▪ MAF sensor or related wiring harness malfunction • PCM DTC is stored. • CMP signal malfunction ▪ Loose installation CMP sensor and/or damaged pulse wheel • CKP signal malfunction ▪ Loose installation CKP sensor and/or pulse wheel • Low engine compression • Excessive or insufficient fuel pressure ▪ Fuel pump relay or fuel pump circuit malfunction ▪ Restriction in fuel line ▪ Pressure regulator malfunction (built-into fuel pump unit) ▪ Fuel pump malfunction • KS malfunction • Improper valve timing • Poor fuel quality (i.e. Fuel RON is not specified, excessive cleaning agents added in fuel.) WARNING: The following troubleshooting flow chart contains the fuel system diagnosis and repair procedures. Read the following warnings before performing the fuel system services: • 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 \[MZR 2.5\]](#).) (See [AFTER SERVICE PRECAUTION \[MZR 2.5\]](#).)

CAUTION:

- **Disconnecting/ connecting the quick release connector without cleaning it may possibly cause damage to the fuel pipe and the quick release connector. Always clean the 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	INSPECT COOLING SYSTEM FOR MALFUNCTION • Access the PCM PID ECT using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [MZR 2.5].) • Verify the ECT PID is less than 116 °C { 241 °F } during driving. • Is the ECT PID less than the specification?	Yes	Go to the next step.
		No	Inspect the cooling system for the cause of the overheating. Repair or replace the malfunctioning part according to the inspection results.
2	INSPECT IAT SENSOR AND MAF SENSOR SIGNALS CAUTION: • While performing this step, always operate the vehicle in a safe and lawful manner. • When the M-MDS is used to observe monitor system status while driving, be sure to	Yes	Go to the next step.
		No	IAT PID is not specified: • Inspect the IAT sensor (See INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [MZR 2.5].) MAF PID is not specified: • Inspect the MAF sensor (See MASS AIR FLOW (MAF) SENSOR INSPECTION [MZR 2.5].) Repair or replace the malfunctioning part according to the inspection results.

	have another technician with you, or record the data in the M-MDS using the PID/DATA MONITOR AND RECORD capturing function and inspect later. - Access and monitor the PCM PIDs IAT and MAF using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [MZR 2.5].) - Are the PIDs normal? (See PCM INSPECTION [MZR 2.5].)		
3	VERIFY PCM DTC - Retrieve any DTCs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [MZR 2.5].) - Are there any DTCs displayed?	Yes	Go to the appropriate DTC inspection. (See DTC TABLE [MZR 2.5] .)
		No	Go to the next step.
4	INSPECT CMP SENSOR INSTALLATION - Inspect the CMP sensor installation. - Is the CMP sensor installed properly?	Yes	Go to the next step.
		No	Install the CMP sensor properly. (See CAMSHAFT POSITION (CMP) SENSOR REMOVAL/ INSTALLATION [MZR 2.5] .)
5	INSPECT CKP SENSOR AND PULSE WHEEL Inspect the CKP sensor	Yes	Go to the next step.
		No	Install the CKP sensor and/or crankshaft pulley properly.

	and crankshaft pulley installation. Are CKP sensor and crankshaft pulley installed properly?		(See CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/ INSTALLATION [MZR 2.5].)
6	INSPECT ENGINE COMPRESSION Is the engine compression correct? (See COMPRESSION INSPECTION [MZR 2.5].)	Yes	Go to the next step.
		No	Inspect for cause. Repair or replace the malfunctioning part according to the inspection results.
7	INSPECT FUEL LINE PRESSURE - Inspect the fuel line pressure. (See FUEL LINE PRESSURE INSPECTION [MZR 2.5].) - Is the fuel line pressure correct?	Yes	Go to the next step.
		No	Zero or low: - Inspect the following: - Fuel pump relay - Fuel pump circuit - Fuel line for clogging - If there is no malfunction, replace the fuel pump unit. (See FUEL PUMP UNIT REMOVAL/ INSTALLATION [MZR 2.5].) High: - Replace the fuel pump unit. (See FUEL PUMP UNIT REMOVAL/ INSTALLATION [MZR 2.5].)
8	INSPECT KS - Inspect the KS. (See KNOCK SENSOR (KS) INSPECTION [MZR 2.5].) - Is the KS normal?	Yes	Go to the next step.
		No	Replace the KS. (See KNOCK SENSOR (KS) REMOVAL/ INSTALLATION [MZR 2.5].)
9	INSPECT IGNITION TIMING	Yes	Repair or replace the malfunctioning part according to the inspection

	- Inspect the ignition timing. (See ENGINE TUNE-UP [MZR 2.5].) - Is there any malfunction?		results.
		No	Replace the fuel.
10	- Verify test results. - If normal, return to diagnostic index to service any additional symptoms. (See SYMPTOM DIAGNOSTIC INDEX [MZR 2.5].) - If malfunction remains, inspect related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. - If vehicle is repaired, troubleshooting completed. - If vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest.		

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