

2012 - Mazda6 - Engine

NO.6 CRANKS NORMALLY BUT WILL NOT START [MZR 2.5]

6	CRANKS NORMALLY BUT WILL NOT START
DESCRIPTION	• Starter cranks engine at normal speed but engine will not run. • Refer to symptom troubleshooting "NO.5 ENGINE STALLS-AFTER START/AT IDLE" if this symptom appears after engine stall. • Fuel is in tank. • Battery is in normal condition.
POSSIBLE CAUSE	• Vacuum leakage • External fuel shut off or accessory • Poor fuel quality • Air leakage from intake air system • Intake air system restriction • Proper sealing of intake manifold and components attached to intake manifold: such as EGR valve • Ignition wiring malfunction • Electrical connector disconnection • Fuse malfunction • Throttle valve stacking • APP sensor and related wiring harness malfunction • TP sensor and related wiring harness malfunction • PCM continuous memory DTC is stored. • Improper operation of drive-by-wire control system • CKP sensor and related wiring harness malfunction • CKP sensor and teeth of crankshaft pulley malfunction • Ignition coil and related wiring harness malfunction • Spark plug malfunction • Exhaust system part malfunction • 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 • Fuel leakage from fuel system • Fuel injector malfunction • Purge solenoid valve malfunction

- EVAP control system malfunction
- EGR valve malfunction
- Improper operation of variable valve timing control system
- Low engine compression
- Improper valve timing

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 RELATED PART CONDITION • Verify the following: ▪ Vacuum connection ▪ External fuel shut off or accessory (such as kill switch, alarm) ▪ Fuel quality: proper octane, contamination, winter/summer blend ▪ No air leakage from intake air system ▪ Intake air system restriction (such as air cleaner element, fresh air duct) ▪ Proper sealing of intake manifold and components attached to intake manifold: EGR valve ▪ Ignition wiring	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results. Repeat Step 1.

	Are there any DTCs displayed?		between main relay terminal B and PCM terminal 1Q - Open circuit in the wiring harness between main relay terminal D and PCM terminal 1A, 1B - Main relay is stuck open. - Open or short circuit in the wiring harness between DLC-2 and PCM terminals 1AM or 1AI - Open or poor ground circuit (PCM terminal 1E,1F,1G, 1BE, or 1BF) - Poor connection of vehicle body ground Repair or replace the malfunctioning part according to the inspection results.
		No	Go to the next step.
5	DETERMINE IF MALFUNCTION CAUSE IS DRIVE-BY-WIRE CONTROL SYSTEM OR OTHER - Attempt to start the engine at part throttle. - Does the engine run smoothly at part throttle.	Yes	Inspect the drive-by-wire control system operation. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [MZR 2.5].) Repair or replace the malfunctioning part according to the inspection results.
		No	Go to the next step.
6	DETERMINE IF MALFUNCTION CAUSE IS CKP SENSOR WIRING HARNESS OR OTHER - Access the PCM PID RPM using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [MZR 2.5].) - Is the RPM PID indicating the engine speed during engine cranking?	Yes	Go to the next step.
		No	Inspect the following: - Open or short circuit in CKP sensor - Open or short circuit between CKP sensor terminal A and ground - Open or short circuit between CKP sensor terminal B and PCM terminal 2W - Open or short circuit between CKP sensor terminal C and PCM terminal 2AQ Repair or replace the malfunctioning part according to the inspection results. - If the CKP sensor and wiring harness are normal, go to the next step.
7	VISUALLY INSPECT CKP SENSOR AND PULSE WHEEL - 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	Repair or replace the malfunctioning part according to the inspection results.
8	INSPECT IGNITION SYSTEM RELATED WIRING HARNESS - Inspect the ignition coil related wiring harness condition (intermittent open or short circuit) for all cylinders. - Are the wiring harness conditions normal?	Yes	Go to the next step.
		No	Repair or replace suspected wiring harness and connector.

9	INSPECT IGNITION SYSTEM OPERATION - Perform the Spark Test. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [MZR 2.5].) - Is a strong blue spark visible at each cylinder?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
10	VERIFY SPARK PLUG CONDITION - Verify the spark plug conditions when the spark plug removed in Step 9. (See SPARK PLUG INSPECTION [MZR 2.5].) - Is spark plug wet, covered with carbon or grayish white?	Yes	Spark plug is wet or covered with carbon: - Inspect for fuel leakage from fuel injector. Spark plug is grayish white: - Inspect the fuel injector for clogging. Repair or replace the malfunctioning part according to the inspection results.
		No	Install the spark plugs on original cylinders. Go to the next step.
11	INSPECT DEFORMED IN EXHAUST SYSTEM - Visually inspect the exhaust system part. - Is there any deformed exhaust system part?	Yes	Repair or replace the malfunctioning part according to the inspection results.
		No	Go to the next step.
12	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].)
13	INSPECT FUEL SYSTEM FOR FUEL LEAKAGE - Visually inspect for fuel leakage at the fuel injector O-ring and fuel line. - Service if necessary. - Is the fuel line pressure held after ignition is off? (See FUEL LINE PRESSURE INSPECTION [MZR 2.5].)	Yes	Go to the next step.
		No	Inspect the fuel injector. (See FUEL INJECTOR INSPECTION [MZR 2.5] .) If the fuel injector is normal, replace the fuel pump unit. (See FUEL PUMP UNIT REMOVAL/ INSTALLATION [MZR 2.5].)
DETERMINE IF MALFUNCTION CAUSE IS			

14	EVAP CONTROL SYSTEM OR OTHER • Disconnect the vacuum hose between purge solenoid valve and intake manifold from the purge solenoid valve side. • Plug the open end of the vacuum hose. • Start the engine. • Is the engine stall now eliminated?	Yes	Inspect the following: • If the purge solenoid valve is stuck open. • EVAP control system Repair or replace the malfunctioning part according to the inspection results.
		No	Go to the next step.
15	INSPECT INTAKE AIR SYSTEM FOR AIR LEAKAGE • Is air leakage felt or heard at the intake air system components while racing the engine to higher speed?	Yes	Repair or replace the malfunctioning part according to the inspection results.
		No	Go to the next step.
16	INSPECT EGR VALVE FOR STUCK • Inspect the engine condition while tapping the EGR valve housing. • Does the engine condition improve?	Yes	Replace the EGR valve. (See EGR VALVE REMOVAL/ INSTALLATION [MZR 2.5] .)
		No	Go to the next step.
17	INSPECT VARIABLE VALVE TIMING CONTROL SYSTEM OPERATION • Inspect the variable valve timing control system operation. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [MZR 2.5].) • Does the variable valve timing control system operate properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
18	INSPECT IF MALFUNCTION CAUSE IS LOW ENGINE COMPRESSION OR VALVE TIMING • Is the engine compression correct? (See COMPRESSION INSPECTION [MZR 2.5].)	Yes	Inspect the valve timing. Repair or replace the malfunctioning part according to the inspection results.
		No	Inspect for cause. Repair or replace the malfunctioning part according to the inspection results.
19	• 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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