

2012 - Mazda6 - Engine

NO.11 ENGINE STALLS/ QUIT S, ENGINE RUNS ROUGH, MISSES, BUCK/ JERK, HESITATION/ STUMBLE, SURGES [MZR 2.5]

11	ENGINE STALLS/QUITS—ACCELERATION/CRUISE ENGINE RUNS ROUGH—ACCELERATION/CRUISE MISSES—ACCELERATION/CRUISE BUCK/JERK—ACCELERATION/CRUISE/DECELERATION HESITATION/STUMBLE—ACCELERATION SURGES—ACCELERATION/CRUISE
DESCRIPTION	• Engine stops unexpectedly at beginning of acceleration or during acceleration. • Engine stops unexpectedly while cruising. • Engine speed fluctuates during acceleration or cruising. • Engine misses during acceleration or cruising. • Vehicle bucks/jerks during acceleration, cruising, or deceleration. • Momentary pause at beginning of acceleration or during acceleration. • Momentary minor irregularity in engine output.
	• Drive-by-wire control system operates with brake override system. • Air cleaner restriction • Clutch slippage (MTX) • Electrical connector disconnection • Poor fuel quality • Ignition wiring malfunction • Air leakage from intake air system • Intake air system restriction • Improper installation of EGR valve • Improper operation of drive-by-wire control system • Vacuum leakage • Engine mount installation looseness • PCM DTC is stored. • Engine overheating • Erratic signal to PCM ▪ APP sensor or related wiring harness malfunction ▪ TP sensor or related wiring harness malfunction ▪ MAP sensor or related wiring harness malfunction ▪ BARO sensor or related wiring harness malfunction ▪ CKP sensor or related wiring harness malfunction

**POSSIBLE
CAUSE**

- MAF sensor or related wiring harness malfunction
- Battery power supply circuit malfunction
- VSS or related wiring harness malfunction
- CKP sensor and teeth of crankshaft pulley 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
- Improper operation of A/C control system
- Improper operation of cruise control system
- A/F sensor malfunction
- Fuel shut-off valve malfunction
- Purge solenoid valve malfunction
- EVAP control system malfunction
- CMP sensor and teeth of camshaft malfunction
- Improper operation of variable valve timing control system
- Improper operation of EGR valve
- Low engine compression
- Improper valve timing
- Check valve (two-way) malfunction
- EGR valve mechanical stack
- ATX internal malfunction (ATX)
- PCV valve malfunction

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.**

STEP	INSPECTION	RESULTS	ACTION
1	CONFIRM DRIVE-BY-WIRE CONTROL SYSTEM OPERATES WITH BRAKE OVERRIDE SYSTEM - Retrieve any continuous memory DTCs. (See ON-BOARD DIAGNOSTIC TEST [MZR 2.5].) - Is the DTC P2299:00 present?	Yes	Go to the applicable DTC inspection. (Drive-by-wire control system operates with brake override system.) (See DTC P2299:00 [MZR 2.5] .)
		No	Go to the next step.
2	INSPECT RELATED PART CONDITION - Verify the following: - Vacuum connection - Air cleaner element - No air leakage from intake air system - No restriction of the intake air system - Proper sealing of intake manifold and components attached to intake manifold: such as EGR valve - Ignition wiring - Fuel quality (such as proper octane, contamination, winter/summer blend) - Electrical connections - Smooth operation of the throttle valve - Are all the items normal?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results. Repeat Step 2.
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	VERIFY IF MALFUNCTION CAUSE IS OVERHEATING Is the engine overheating?	Yes	Go to the symptom troubleshooting "NO.17 COOLING SYSTEM CONCERNS-OVERHEATING". (See NO.17 COOLING SYSTEM CONCERNS-OVERHEATING [MZR 2.5] .)
		No	Go to the next step.

5	INSPECT THROTTLE BODY FOR CLOGGING - Visually inspect the throttle valve. (See INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [MZR 2.5].) - Are any foreign material adhere to around throttle valve?	Yes	Clean the throttle valve.
		No	Go to the next step.
6	VERIFY CURRENT INPUT SIGNAL STATUS 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 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 the following PCM PIDs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [MZR 2.5].) - APP1 - APP2 - RPM - VPWR - MAF - MAP - BARO - TP REL - VSS - Do the PIDs indicate correct values under the trouble condition? (See PCM INSPECTION [MZR 2.5].)	Yes	Go to the next step.
		No	APP1, APP2 PIDs are not specified: - Inspect if the output signal APP sensor changes smoothly. (See ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [MZR 2.5].) TP REL PID is not specified: - Inspect if the output signal TP sensor changes smoothly. (See THROTTLE POSITION (TP) SENSOR INSPECTION [MZR 2.5].) RPM PID is not specified: - Inspect the CKP sensor and the related wiring harness for vibration or intermittent open/short circuit or both. (See CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [MZR 2.5].) MAF PID is not specified: - Inspect for an intermittent open circuit of MAF sensor and the related wiring harness. (See MASS AIR FLOW (MAF) SENSOR INSPECTION [MZR 2.5].) MAP PID is not specified: - Inspect the MAP sensor and related wiring harness for vibration or an intermittent open/short circuit. (See MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR INSPECTION [MZR 2.5].) BARO PID is not specified: - Replace the PCM. (See PCM REMOVAL/ INSTALLATION [MZR 2.5].) VPWR PID is not specified: - Inspect for an intermittent open circuit. VSS PID is not specified: - Inspect for an intermittent open circuit in the VSS and related wiring harness. (See VEHICLE SPEED SENSOR (VSS) INSPECTION [FS5A-EL].) Repair or replace the malfunctioning part according to the inspection result.
7	VISUALLY INSPECT CKP SENSOR AND PULSE WHEEL Visually inspect the CKP sensor	Yes	Go to the next step.

	and teeth of the crankshaft pulley. (See CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [MZR 2.5].) Are the CKP sensor and teeth of the crankshaft pulley normal?	No	Repair or replace the malfunctioning part according to the inspection result.
8	VERIFY SPARK PLUG CONDITION - Verify the spark plug conditions when the spark plug removed in Step 8. (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.
9	INSPECT DRIVE-BY-WIRE CONTROL SYSTEM OPERATION - Perform the drive-by-wire control system operation inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [MZR 2.5].) - Does the drive-by-wire control system function properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
10	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.
11	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].)
	INSPECT FUEL SYSTEM FOR FUEL LEAKAGE		

12	- 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].)
13	DETERMINE IF MALFUNCTION CAUSE IS A/ C SYSTEM OR OTHER NOTE: - The following test is for stall concerns with the A/C on. If other symptoms exist, go to the next step. - Connect the pressure gauges to the A/C low side and high side pressure lines. - Turn the A/C on and measure the low side and high side pressures. - Are the pressures within the specifications? (See REFRIGERANT PRESSURE CHECK.)	Yes	Go to the next step.
		No	If the A/C is always on: - Go to the 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 [MZR 2.5].) For other symptoms: - Inspect the following: - Refrigerant charging amount - Cooling fan operation - Repair or replace the malfunctioning part according to the inspection results.
14	INSPECT CRUISE CONTROL SYSTEM NOTE: - The following test should be performed for symptoms with the cruise control on. If other symptoms exist, go to the next step. - Inspect the cruise control system operation. - Is the cruise control system normal?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
15	INSPECT CURRENT A/ F SENSOR SIGNAL - Inspect the A/F sensor. (See AIR FUEL RATIO (A/ F) SENSOR INSPECTION [MZR 2.5].) - Is the A/F sensor normal?	Yes	Go to Step 17.
		No	Go to the next step.
16	DETERMINE IF MALFUNCTION CAUSE IS A/ F SENSOR MALFUNCTION OR A/ F SENSOR RELATED WIRING HARNESS MALFUNCTION NOTE: If the inspection in Step 16 is performed, the PCM detects a DTC and performs fail-safe control. After performing the inspection, clear DTCs using the M-MDS.	Yes	Replace the A/F sensor. (See AIR FUEL RATIO (A/ F) SENSOR REMOVAL/ INSTALLATION [MZR 2.5] .)
		No	Inspect the following: - Exhaust gas leakage between exhaust manifold and A/F sensor - Loose installation of A/F sensor Repair or replace the malfunctioning part according to the inspection results.

	• Switch the ignition to off. • Disconnect the A/F sensor connector. • Verify the symptom. • Does the symptom disappear?		• If there is no malfunction, inspect the A/F sensor signal circuit. • Repair or replace suspected wiring harness and connector.
17	DETERMINE IF MALFUNCTION CAUSE IS FUEL SHUT-OFF VALVE OR OTHER • Inspect the evaporative purge hose between fuel tank and purge solenoid valve. • Does the fuel flow into the evaporative purge hose?	Yes	Inspect the fuel shut-off valve. (See FUEL SHUT-OFF VALVE INSPECTION [MZR 2.5] .) Repair or replace the malfunctioning part according to the inspection results.
		No	Go to the next step.
18	DETERMINE IF MALFUNCTION CAUSE IS EVAP CONTROL SYSTEM OR OTHER CAUTION: • While performing this step, always operate the vehicle in a safe and lawful manner. • 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. • Drive the vehicle. • Does the engine condition improve?	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.
19	VISUALLY INSPECT CMP SENSOR AND PULSE WHEEL • Visually inspect the CMP sensor and teeth of the camshaft. (See CAMSHAFT POSITION (CMP) SENSOR INSPECTION [MZR 2.5].) • Are the CMP sensor and teeth of the camshaft normal?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
20	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.
21	INSPECT EGR VALVE OPERATION • Perform the EGR control system inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [MZR 2.5].)	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.

	Is the EGR control system normal?		
22	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.
23	INSPECT IF MALFUNCTION CAUSE IS PCV VALVE OR VALVE TIMING - Inspect the PCV valve. (See POSITIVE CRANKCASE VENTILATION (PCV) VALVE INSPECTION [MZR 2.5].) - Is the PCV valve normal?	Yes	Inspect the following: - Valve timing - Internal transaxle part (ATX) - EGR valve (mechanical stuck) - Check valve (two-way) Repair or replace the malfunctioning part according to the inspection results.
		No	Replace the PCV valve and the oil separator as a single unit, then go to the next step. (See POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/ INSTALLATION [MZR 2.5].)
24	- 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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NO.11 ENGINE STALLS/ QUIT S, ENGINE RUNS ROUGH, MISSES, BUCK/ JERK, HESITATION/ STUMBLE, SURGES [MZR 2.5]

11	ENGINE STALLS/QUITS—ACCELERATION/CRUISE ENGINE RUNS ROUGH—ACCELERATION/CRUISE MISSES—ACCELERATION/CRUISE BUCK/JERK—ACCELERATION/CRUISE/DECELERATION HESITATION/STUMBLE—ACCELERATION SURGES—ACCELERATION/CRUISE
DESCRIPTION	• Engine stops unexpectedly at beginning of acceleration or during acceleration. • Engine stops unexpectedly while cruising. • Engine speed fluctuates during acceleration or cruising. • Engine misses during acceleration or cruising. • Vehicle bucks/jerks during acceleration, cruising, or deceleration. • Momentary pause at beginning of acceleration or during acceleration. • Momentary minor irregularity in engine output.
	• Drive-by-wire control system operates with brake override system. • Air cleaner restriction • Clutch slippage (MTX) • Electrical connector disconnection • Poor fuel quality • Ignition wiring malfunction • Air leakage from intake air system • Intake air system restriction • Improper installation of EGR valve • Improper operation of drive-by-wire control system • Vacuum leakage • Engine mount installation looseness • PCM DTC is stored. • Engine overheating • Erratic signal to PCM ▪ APP sensor or related wiring harness malfunction ▪ TP sensor or related wiring harness malfunction ▪ MAP sensor or related wiring harness malfunction ▪ BARO sensor or related wiring harness malfunction ▪ CKP sensor or related wiring harness malfunction

**POSSIBLE
CAUSE**

- MAF sensor or related wiring harness malfunction
- Battery power supply circuit malfunction
- VSS or related wiring harness malfunction
- CKP sensor and teeth of crankshaft pulley 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
- Improper operation of A/C control system
- Improper operation of cruise control system
- A/F sensor malfunction
- Fuel shut-off valve malfunction
- Purge solenoid valve malfunction
- EVAP control system malfunction
- CMP sensor and teeth of camshaft malfunction
- Improper operation of variable valve timing control system
- Improper operation of EGR valve
- Low engine compression
- Improper valve timing
- Check valve (two-way) malfunction
- EGR valve mechanical stack
- ATX internal malfunction (ATX)
- PCV valve malfunction

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.**

STEP	INSPECTION	RESULTS	ACTION
1	CONFIRM DRIVE-BY-WIRE CONTROL SYSTEM OPERATES WITH BRAKE OVERRIDE SYSTEM - Retrieve any continuous memory DTCs. (See ON-BOARD DIAGNOSTIC TEST [MZR 2.5].) - Is the DTC P2299:00 present?	Yes	Go to the applicable DTC inspection. (Drive-by-wire control system operates with brake override system.) (See DTC P2299:00 [MZR 2.5] .)
		No	Go to the next step.
2	INSPECT RELATED PART CONDITION - Verify the following: - Vacuum connection - Air cleaner element - No air leakage from intake air system - No restriction of the intake air system - Proper sealing of intake manifold and components attached to intake manifold: such as EGR valve - Ignition wiring - Fuel quality (such as proper octane, contamination, winter/summer blend) - Electrical connections - Smooth operation of the throttle valve - Are all the items normal?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results. Repeat Step 2.
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	VERIFY IF MALFUNCTION CAUSE IS OVERHEATING Is the engine overheating?	Yes	Go to the symptom troubleshooting "NO.17 COOLING SYSTEM CONCERNS-OVERHEATING". (See NO.17 COOLING SYSTEM CONCERNS-OVERHEATING [MZR 2.5] .)
		No	Go to the next step.

5	INSPECT THROTTLE BODY FOR CLOGGING - Visually inspect the throttle valve. (See INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [MZR 2.5].) - Are any foreign material adhere to around throttle valve?	Yes	Clean the throttle valve.
		No	Go to the next step.
6	VERIFY CURRENT INPUT SIGNAL STATUS 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 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 the following PCM PIDs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [MZR 2.5].) - APP1 - APP2 - RPM - VPWR - MAF - MAP - BARO - TP REL - VSS - Do the PIDs indicate correct values under the trouble condition? (See PCM INSPECTION [MZR 2.5].)	Yes	Go to the next step.
		No	APP1, APP2 PIDs are not specified: - Inspect if the output signal APP sensor changes smoothly. (See ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [MZR 2.5].) TP REL PID is not specified: - Inspect if the output signal TP sensor changes smoothly. (See THROTTLE POSITION (TP) SENSOR INSPECTION [MZR 2.5].) RPM PID is not specified: - Inspect the CKP sensor and the related wiring harness for vibration or intermittent open/short circuit or both. (See CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [MZR 2.5].) MAF PID is not specified: - Inspect for an intermittent open circuit of MAF sensor and the related wiring harness. (See MASS AIR FLOW (MAF) SENSOR INSPECTION [MZR 2.5].) MAP PID is not specified: - Inspect the MAP sensor and related wiring harness for vibration or an intermittent open/short circuit. (See MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR INSPECTION [MZR 2.5].) BARO PID is not specified: - Replace the PCM. (See PCM REMOVAL/ INSTALLATION [MZR 2.5].) VPWR PID is not specified: - Inspect for an intermittent open circuit. VSS PID is not specified: - Inspect for an intermittent open circuit in the VSS and related wiring harness. (See VEHICLE SPEED SENSOR (VSS) INSPECTION [FS5A-EL].) Repair or replace the malfunctioning part according to the inspection result.
7	VISUALLY INSPECT CKP SENSOR AND PULSE WHEEL Visually inspect the CKP sensor	Yes	Go to the next step.

	and teeth of the crankshaft pulley. (See CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [MZR 2.5].) Are the CKP sensor and teeth of the crankshaft pulley normal?	No	Repair or replace the malfunctioning part according to the inspection result.
8	VERIFY SPARK PLUG CONDITION - Verify the spark plug conditions when the spark plug removed in Step 8. (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.
9	INSPECT DRIVE-BY-WIRE CONTROL SYSTEM OPERATION - Perform the drive-by-wire control system operation inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [MZR 2.5].) - Does the drive-by-wire control system function properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
10	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.
11	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].)
	INSPECT FUEL SYSTEM FOR FUEL LEAKAGE		

12	- 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].)
13	DETERMINE IF MALFUNCTION CAUSE IS A/ C SYSTEM OR OTHER NOTE: - The following test is for stall concerns with the A/C on. If other symptoms exist, go to the next step. - Connect the pressure gauges to the A/C low side and high side pressure lines. - Turn the A/C on and measure the low side and high side pressures. - Are the pressures within the specifications? (See REFRIGERANT PRESSURE CHECK.)	Yes	Go to the next step.
		No	If the A/C is always on: - Go to the 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 [MZR 2.5].) For other symptoms: - Inspect the following: - Refrigerant charging amount - Cooling fan operation - Repair or replace the malfunctioning part according to the inspection results.
14	INSPECT CRUISE CONTROL SYSTEM NOTE: - The following test should be performed for symptoms with the cruise control on. If other symptoms exist, go to the next step. - Inspect the cruise control system operation. - Is the cruise control system normal?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
15	INSPECT CURRENT A/ F SENSOR SIGNAL - Inspect the A/F sensor. (See AIR FUEL RATIO (A/ F) SENSOR INSPECTION [MZR 2.5].) - Is the A/F sensor normal?	Yes	Go to Step 17.
		No	Go to the next step.
16	DETERMINE IF MALFUNCTION CAUSE IS A/ F SENSOR MALFUNCTION OR A/ F SENSOR RELATED WIRING HARNESS MALFUNCTION NOTE: If the inspection in Step 16 is performed, the PCM detects a DTC and performs fail-safe control. After performing the inspection, clear DTCs using the M-MDS.	Yes	Replace the A/F sensor. (See AIR FUEL RATIO (A/ F) SENSOR REMOVAL/ INSTALLATION [MZR 2.5] .)
		No	Inspect the following: - Exhaust gas leakage between exhaust manifold and A/F sensor - Loose installation of A/F sensor Repair or replace the malfunctioning part according to the inspection results.

	• Switch the ignition to off. • Disconnect the A/F sensor connector. • Verify the symptom. • Does the symptom disappear?		• If there is no malfunction, inspect the A/F sensor signal circuit. • Repair or replace suspected wiring harness and connector.
17	DETERMINE IF MALFUNCTION CAUSE IS FUEL SHUT-OFF VALVE OR OTHER • Inspect the evaporative purge hose between fuel tank and purge solenoid valve. • Does the fuel flow into the evaporative purge hose?	Yes	Inspect the fuel shut-off valve. (See FUEL SHUT-OFF VALVE INSPECTION [MZR 2.5] .) Repair or replace the malfunctioning part according to the inspection results.
		No	Go to the next step.
18	DETERMINE IF MALFUNCTION CAUSE IS EVAP CONTROL SYSTEM OR OTHER CAUTION: • While performing this step, always operate the vehicle in a safe and lawful manner. • 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. • Drive the vehicle. • Does the engine condition improve?	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.
19	VISUALLY INSPECT CMP SENSOR AND PULSE WHEEL • Visually inspect the CMP sensor and teeth of the camshaft. (See CAMSHAFT POSITION (CMP) SENSOR INSPECTION [MZR 2.5].) • Are the CMP sensor and teeth of the camshaft normal?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
20	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.
21	INSPECT EGR VALVE OPERATION • Perform the EGR control system inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [MZR 2.5].)	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.

	Is the EGR control system normal?		
22	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.
23	INSPECT IF MALFUNCTION CAUSE IS PCV VALVE OR VALVE TIMING - Inspect the PCV valve. (See POSITIVE CRANKCASE VENTILATION (PCV) VALVE INSPECTION [MZR 2.5].) - Is the PCV valve normal?	Yes	Inspect the following: - Valve timing - Internal transaxle part (ATX) - EGR valve (mechanical stuck) - Check valve (two-way) Repair or replace the malfunctioning part according to the inspection results.
		No	Replace the PCV valve and the oil separator as a single unit, then go to the next step. (See POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/ INSTALLATION [MZR 2.5].)
24	- 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.		