

2012 - Mazda6 - Engine

NO.5 ENGINE STALLS-AFTER START/ AT IDLE [MZR 2.5]

5	ENGINE STALLS—AFTER START/AT IDLE
DESCRIPTION	• Engine stops unexpectedly at idle and/or after start.
POSSIBLE CAUSE	• Air cleaner restriction • Improper installation of EGR valve • Electrical connector disconnected • Poor fuel quality • Ignition wiring malfunction • Air leakage from intake air system • Intake air system restriction • Throttle valve stacking • Vacuum leakage • APP sensor or related wiring harness malfunction • TP sensor or related wiring harness malfunction • PCM continuous memory DTC is stored. • CKP sensor or related wiring harness malfunction • CKP sensor and teeth of crankshaft pulley malfunction • Ignition coil or related wiring harness intermittent malfunction • Ignition system 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 system • Purge solenoid valve malfunction • EVAP control system malfunction • EGR valve malfunction • Improper operation of variable valve timing control system • Improper valve timing

- Low engine compression
- 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.**

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	INSPECT RELATED PART CONDITION • Inspect the following: ▪ Vacuum connection ▪ Air cleaner element ▪ No air leakage from intake air system ▪ No restriction of intake air system ▪ Proper sealing of intake manifold and components attached to intake manifold ▪ EGR valve ▪ Ignition wiring ▪ Fuel quality: proper octane, contamination, winter/summer blend ▪ Electrical connections ▪ Smooth operation of throttle valve • Are all items normal?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results. Repeat Step 1.
2	INSPECT APP SENSOR SIGNAL	Yes	Go to the next step.

	- Access the PCM PIDs APP1 and APP2 using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [MZR 2.5].) - Crank the engine with the accelerator pedal released. - Are the APP1 and APP2 PIDs indicating that the accelerator pedal is in the released position?	No	Inspect the following: - APP sensor (See ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [MZR 2.5].) - Wiring harness and connector for the following: - APP sensor terminal A—PCM terminal 1W - APP sensor terminal B—PCM terminal 1AP - APP sensor terminal C—PCM terminal 1AV - APP sensor terminal D—PCM terminal 1AS - APP sensor terminal E—PCM terminal 1AO - APP sensor terminal F—PCM terminal 1AL Repair or replace the malfunctioning part according to the inspection results.
3	INSPECT TP SENSOR SIGNAL - Access the PCM PID TP REL using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [MZR 2.5].) - Crank the engine with the accelerator pedal released. - Is the TP REL PID indicating that the accelerator pedal is in the released position?	Yes	Go to the next step.
		No	Inspect the following: - TP sensor (See THROTTLE POSITION (TP) SENSOR INSPECTION [MZR 2.5].) - Wiring harness and connector for the following: - TP sensor terminal A—PCM terminal 2AK - TP sensor terminal B—PCM terminal 2AO - TP sensor terminal C—PCM terminal 2AL - TP sensor terminal D—PCM terminal 2AP Repair or replace the malfunctioning part according to the inspection results.
4	VERIFY PRESENT MALFUNCTION DTC - Retrieve any continuous memory, KOEO and KOER DTCs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [MZR 2.5].) (See KOEO/ KOER SELF TEST [MZR 2.5].) - If the engine stalls, retrieve the continuous memory and KOEO DTCs. - Are there any DTCs displayed?	Yes	DTC is displayed: - Go to the appropriate DTC inspection. (See DTC TABLE [MZR 2.5].) Communication error message is displayed: - Inspect the following: - Open circuit in the wiring harness 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. • If a symptom occurs with the A/C on, go to Step 15.
		No	Repair or replace the malfunctioning part according to the inspection results.
10	VERIFY SPARK PLUG CONDITION	Yes	Spark plug is wet or covered with carbon:

	- 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?		- 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].)
14	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.	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:

	• Turn the A/C on and measure the low side and high side pressures. • Are the pressures within the specifications? (See REFRIGERANT PRESSURE CHECK.)		• Inspect the following: ▪ Refrigerant charging amount ▪ Cooling fan operation • Repair or replace the malfunctioning part according to the inspection results.
15	DETERMINE IF MALFUNCTION CAUSE IS 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.
16	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.
17	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.
18	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.
19	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.
20	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 valve timing. 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

21

- 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.

2012 - Mazda6 - Engine

NO.5 ENGINE STALLS-AFTER START/ AT IDLE [MZR 2.5]

5	ENGINE STALLS—AFTER START/AT IDLE
DESCRIPTION	• Engine stops unexpectedly at idle and/or after start.
POSSIBLE CAUSE	• Air cleaner restriction • Improper installation of EGR valve • Electrical connector disconnected • Poor fuel quality • Ignition wiring malfunction • Air leakage from intake air system • Intake air system restriction • Throttle valve stacking • Vacuum leakage • APP sensor or related wiring harness malfunction • TP sensor or related wiring harness malfunction • PCM continuous memory DTC is stored. • CKP sensor or related wiring harness malfunction • CKP sensor and teeth of crankshaft pulley malfunction • Ignition coil or related wiring harness intermittent malfunction • Ignition system 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 system • Purge solenoid valve malfunction • EVAP control system malfunction • EGR valve malfunction • Improper operation of variable valve timing control system • Improper valve timing

- Low engine compression
- 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.**

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	INSPECT RELATED PART CONDITION • Inspect the following: ▪ Vacuum connection ▪ Air cleaner element ▪ No air leakage from intake air system ▪ No restriction of intake air system ▪ Proper sealing of intake manifold and components attached to intake manifold ▪ EGR valve ▪ Ignition wiring ▪ Fuel quality: proper octane, contamination, winter/summer blend ▪ Electrical connections ▪ Smooth operation of throttle valve • Are all items normal?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results. Repeat Step 1.
2	INSPECT APP SENSOR SIGNAL	Yes	Go to the next step.

	- Access the PCM PIDs APP1 and APP2 using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [MZR 2.5].) - Crank the engine with the accelerator pedal released. - Are the APP1 and APP2 PIDs indicating that the accelerator pedal is in the released position?	No Inspect the following: - APP sensor (See ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [MZR 2.5].) - Wiring harness and connector for the following: - APP sensor terminal A—PCM terminal 1W - APP sensor terminal B—PCM terminal 1AP - APP sensor terminal C—PCM terminal 1AV - APP sensor terminal D—PCM terminal 1AS - APP sensor terminal E—PCM terminal 1AO - APP sensor terminal F—PCM terminal 1AL Repair or replace the malfunctioning part according to the inspection results.
3	INSPECT TP SENSOR SIGNAL - Access the PCM PID TP REL using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [MZR 2.5].) - Crank the engine with the accelerator pedal released. - Is the TP REL PID indicating that the accelerator pedal is in the released position?	Yes Go to the next step. No Inspect the following: - TP sensor (See THROTTLE POSITION (TP) SENSOR INSPECTION [MZR 2.5].) - Wiring harness and connector for the following: - TP sensor terminal A—PCM terminal 2AK - TP sensor terminal B—PCM terminal 2AO - TP sensor terminal C—PCM terminal 2AL - TP sensor terminal D—PCM terminal 2AP Repair or replace the malfunctioning part according to the inspection results.
4	VERIFY PRESENT MALFUNCTION DTC - Retrieve any continuous memory, KOEO and KOER DTCs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [MZR 2.5].) (See KOEO/ KOER SELF TEST [MZR 2.5].) - If the engine stalls, retrieve the continuous memory and KOEO DTCs. - Are there any DTCs displayed?	Yes DTC is displayed: - Go to the appropriate DTC inspection. (See DTC TABLE [MZR 2.5].) Communication error message is displayed: - Inspect the following: - Open circuit in the wiring harness 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. • If a symptom occurs with the A/C on, go to Step 15.
		No	Repair or replace the malfunctioning part according to the inspection results.
10	VERIFY SPARK PLUG CONDITION	Yes	Spark plug is wet or covered with carbon:

	- 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?		- 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].)
14	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.	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:

	• Turn the A/C on and measure the low side and high side pressures. • Are the pressures within the specifications? (See REFRIGERANT PRESSURE CHECK.)		• Inspect the following: ▪ Refrigerant charging amount ▪ Cooling fan operation • Repair or replace the malfunctioning part according to the inspection results.
15	DETERMINE IF MALFUNCTION CAUSE IS 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.
16	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.
17	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.
18	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.
19	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.
20	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 valve timing. 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

21

- 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.