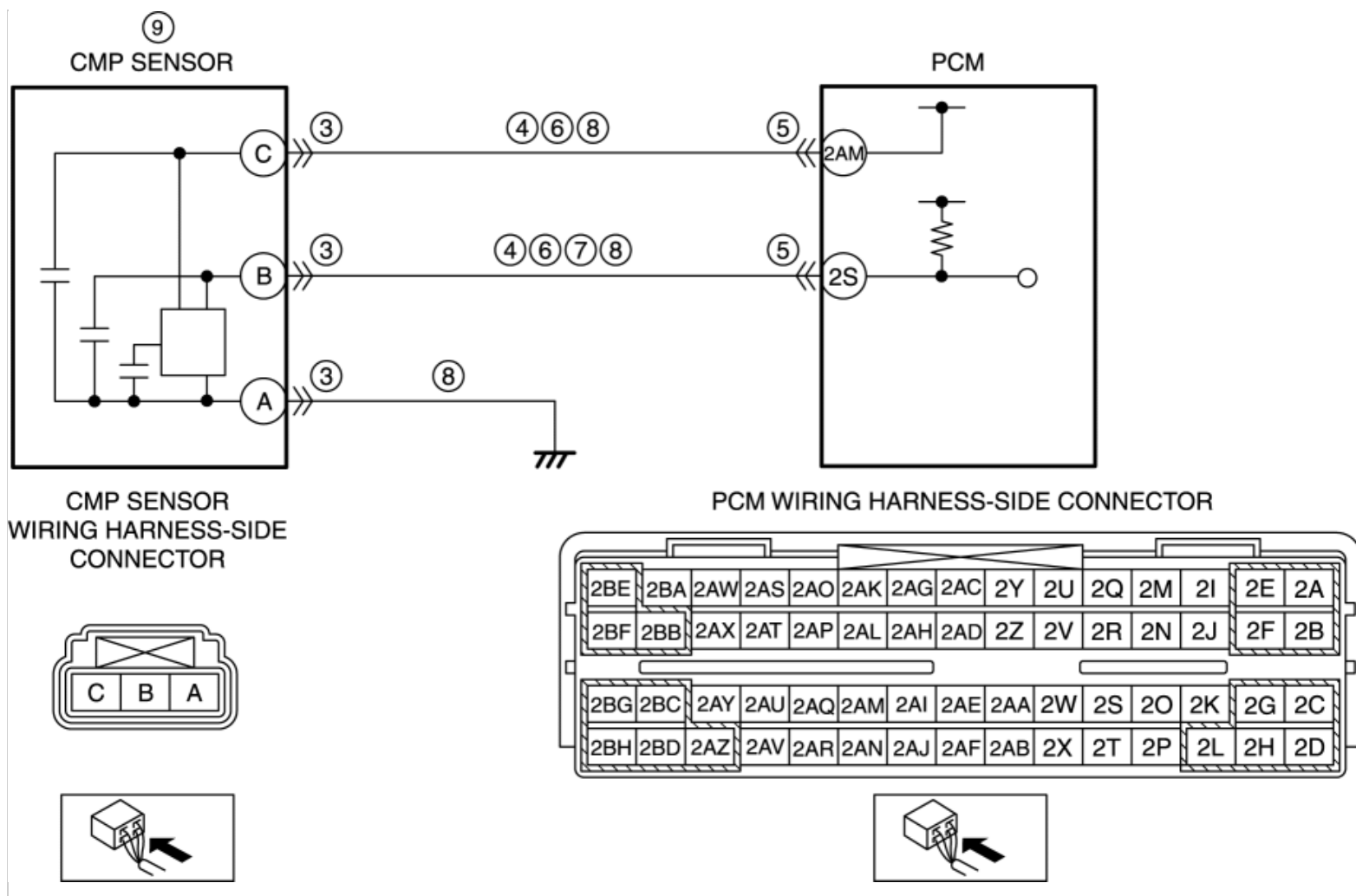


2012 - Mazda6 - Engine

DTC P0340:00 [MZR 2.5]

DTC P0340:00	CMP sensor circuit problem
DETECTION CONDITION	• The PCM monitors the input voltage from the CMP sensor when the engine is running. If the PCM does not receive the input voltage from the CMP sensor while the PCM receives the input signal from the CKP sensor, the PCM determines that the CMP circuit has a malfunction. Diagnostic support note • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	• CMP sensor connector or terminal malfunction • Short to ground in wiring harness between CMP sensor terminal C and PCM terminal 2AM • Short to ground in wiring harness between CMP sensor terminal B and PCM terminal 2S • PCM connector or terminal malfunction • Short circuit in CMP sensor circuits each other • Short to power supply in wiring harness between CMP sensor terminal B and PCM terminal 2S • Open circuit in wiring harness between CMP sensor terminal C and PCM terminal 2AM • Open circuit in wiring harness between CMP sensor terminal B and PCM terminal 2S • Open circuit in wiring harness between CMP sensor terminal A and body ground • CKP sensor connector or terminal malfunction • Variable valve timing mechanism misinstallation ▪ Loose timing chain or improper valve timing ▪ Loose camshaft sprocket lock bolt ▪ Loose crankshaft pulley lock bolt • Stopper pin mechanism malfunction • Variable valve timing mechanism is stuck in advanced position • CMP sensor malfunction ▪ CMP sensor is dirty ▪ CMP sensor pulse wheel malfunction • PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED Has the FREEZE FRAME DATA (Mode 2)/snapshot data been recorded?	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY - Verify related Service Bulletins and/or on-line repair information availability. - Is any related repair information available?	Yes Perform repair or diagnosis according to the available repair information. If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT CMP SENSOR CONNECTOR CONDITION - CMP sensor connector is disconnected. - Switch the ignition to off. - Inspect for poor connection (such as damaged/pulled-out pins, corrosion). - Is there any malfunction?	Yes Repair or replace the terminal and/or connector, then go to Step 14.
		No Go to the next step.
	INSPECT CMP SENSOR CIRCUIT FOR SHORT TO	

4	GROUND • CMP sensor connector is disconnected. • Inspect for continuity between the following terminals and body ground: ▪ CMP sensor terminal C (wiring harness-side) ▪ CMP sensor terminal B (wiring harness-side) • Is there continuity?	Yes If the short to ground circuit could be detected: • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: • Replace the PCM (short to ground in PCM internal circuit). (See PCM REMOVAL/ INSTALLATION [MZR 2.5].) Go to Step 14.
		No Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction?	Yes Repair or replace the terminal and/or connector, then go to Step 14.
		No Go to the next step.
6	INSPECT CMP SENSOR CIRCUITS FOR SHORT EACH OTHER • CMP sensor and PCM connectors are disconnected. • Inspect for continuity between CMP sensor terminals B and C (wiring harness-side). • Is there continuity?	Yes Repair or replace the malfunctioning wiring harness, then go to Step 14.
		No Go to the next step.
7	INSPECT CMP SENSOR CIRCUIT FOR SHORT TO POWER SUPPLY • CMP sensor and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between the CMP sensor terminal B (wiring harness-side) and body ground. • Is there any voltage?	Yes Repair or replace the wiring harness for a possible short to power supply, then go to Step 14.
		No Go to the next step.
8	INSPECT CMP SENSOR CIRCUIT FOR OPEN CIRCUIT • CMP sensor and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between the following terminals: ▪ CMP sensor terminal C (wiring harness-side) and PCM terminal 2AM (wiring harness-side) ▪ CMP sensor terminal B (wiring harness-side) and PCM terminal 2S (wiring harness-side) ▪ CMP sensor terminal A (wiring harness-side) and	Yes Go to the next step.
		No Repair or replace the wiring harness for a possible open circuit, then go to Step 14.

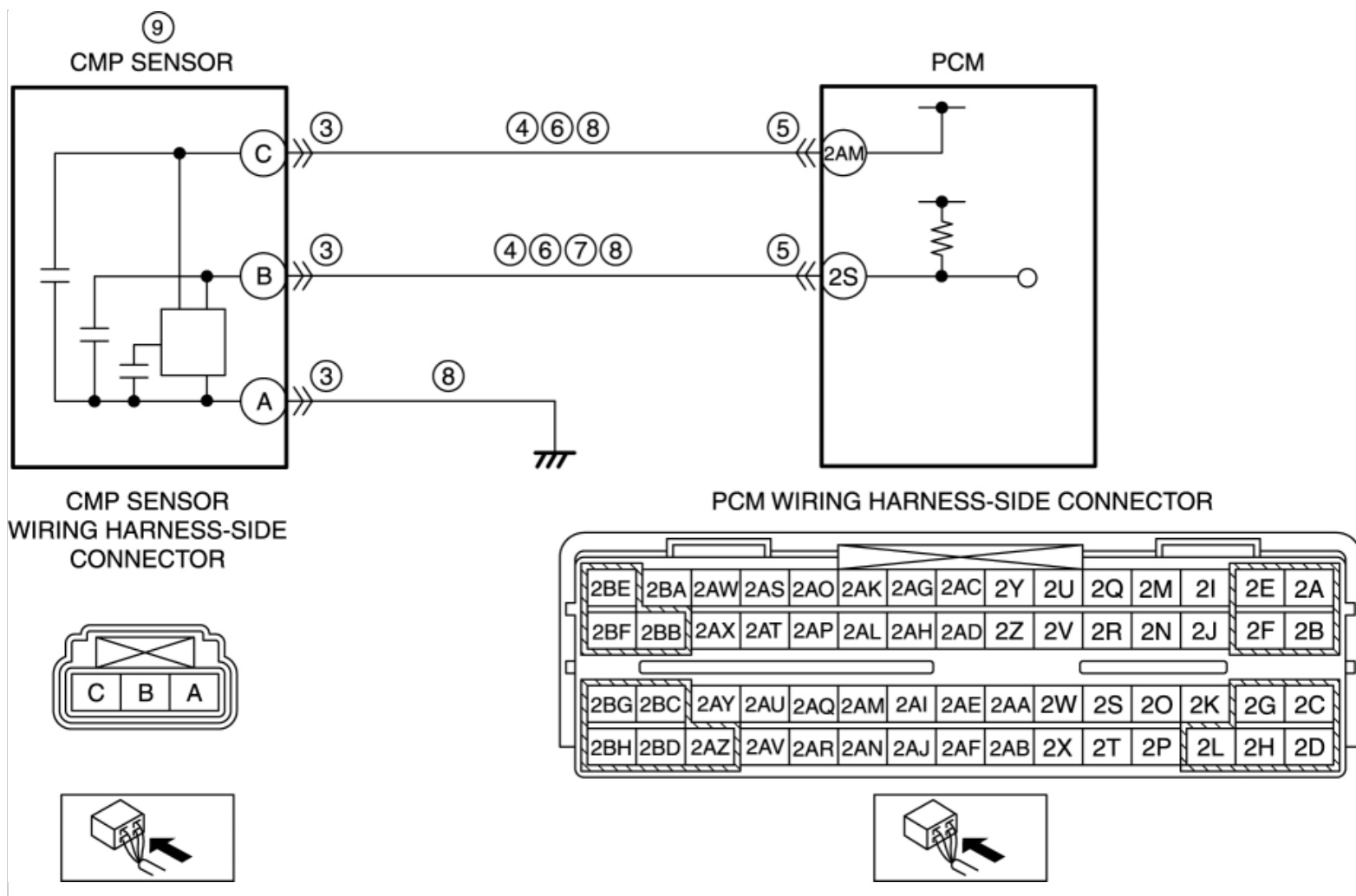
	body ground		
	Is there continuity?		
9	INSPECT CMP SENSOR - Inspect the CMP sensor. (See CAMSHAFT POSITION (CMP) SENSOR REMOVAL/ INSTALLATION [MZR 2.5].) - Is there any malfunction?	Yes Replace the CMP sensor, then go to Step 14. (See CAMSHAFT POSITION (CMP) SENSOR REMOVAL/ INSTALLATION [MZR 2.5].)	
		No Go to the next step.	
10	INSPECT CKP SENSOR CONNECTOR CONDITION - Disconnect the CKP sensor connector. - Inspect for poor connection (such as damaged/pulled-out pins, corrosion). - Is there any malfunction?	Yes Repair or replace the terminal and/or connector, then go to Step 14.	
		No Go to the next step.	
11	VERIFY VALVE TIMING MECHANISM INSTALLATION - Verify the valve timing mechanism installation for the following parts: - Timing chain - Camshaft sprocket lock bolt - Crankshaft pulley lock bolt - Is there any malfunction?	Yes Reinstall the misinstallation or loose parts correctly, then go to Step 14. (See VARIABLE VALVE TIMING ACTUATOR REMOVAL/ INSTALLATION [MZR 2.5].) (See TIMING CHAIN REMOVAL/ INSTALLATION [MZR 2.5].)	
		No Go to the next step.	
12	INSPECT STOPPER PIN MECHANISM - Remove the timing chain. (See TIMING CHAIN REMOVAL/ INSTALLATION [MZR 2.5].) - Inspect the stopper pin. (See VARIABLE VALVE TIMING ACTUATOR INSPECTION [MZR 2.5].) - Is there any malfunction?	Yes Replace the variable valve timing actuator, then go to Step 14. (See VARIABLE VALVE TIMING ACTUATOR REMOVAL/ INSTALLATION [MZR 2.5].)	
		No Go to the next step.	
13	INSPECT ROTOR POSITION - Remove the variable valve timing actuator. (See VARIABLE VALVE TIMING ACTUATOR REMOVAL/ INSTALLATION [MZR 2.5].) - Is the rotor at the maximum valve timing advanced position?	Yes Reinstall or replace the variable valve timing actuator, then go to the next step. (See VARIABLE VALVE TIMING ACTUATOR REMOVAL/ INSTALLATION [MZR 2.5].)	
		No VARIABLE VALVE TIMING MECHANISM IS NORMAL NOTE: - This DTC is detected as an intermittent concern. - The intermittent concern might be removed by cleaning the variable valve timing mode control function. Go to the next step.	
14	VERIFY DTC TROUBLESHOOTING COMPLETED - Make sure to reconnect all disconnected connectors. - Clear the DTC from the PCM memory using	Yes Repeat the inspection from Step 1. If the malfunction recurs, replace the PCM.	

	the M-MDS. (See AFTER REPAIR PROCEDURE [MZR 2.5].) - Start the engine and warm it up completely. - Access the MAF PID using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [MZR 2.5].) NOTE: - The MAF PID should indicate 1.95 g/s { 0.25 lb/min} or above during this test. - Perform the KOER self test. (See KOEO/ KOER SELF TEST [MZR 2.5].) - Is the same DTC present?	(See PCM REMOVAL/ INSTALLATION [MZR 2.5].) Go to the next step.
		No Go to the next step.
15	VERIFY AFTER REPAIR PROCEDURE - Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [MZR 2.5].) - Are any DTCs present?	YesGo to the applicable DTC inspection. (See DTC TABLE [MZR 2.5].)
		No DTC troubleshooting completed.

2012 - Mazda6 - Engine

DTC P0340:00 [MZR 2.5]

DTC P0340:00	CMP sensor circuit problem
DETECTION CONDITION	• The PCM monitors the input voltage from the CMP sensor when the engine is running. If the PCM does not receive the input voltage from the CMP sensor while the PCM receives the input signal from the CKP sensor, the PCM determines that the CMP circuit has a malfunction. Diagnostic support note • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	• CMP sensor connector or terminal malfunction • Short to ground in wiring harness between CMP sensor terminal C and PCM terminal 2AM • Short to ground in wiring harness between CMP sensor terminal B and PCM terminal 2S • PCM connector or terminal malfunction • Short circuit in CMP sensor circuits each other • Short to power supply in wiring harness between CMP sensor terminal B and PCM terminal 2S • Open circuit in wiring harness between CMP sensor terminal C and PCM terminal 2AM • Open circuit in wiring harness between CMP sensor terminal B and PCM terminal 2S • Open circuit in wiring harness between CMP sensor terminal A and body ground • CKP sensor connector or terminal malfunction • Variable valve timing mechanism misinstallation ▪ Loose timing chain or improper valve timing ▪ Loose camshaft sprocket lock bolt ▪ Loose crankshaft pulley lock bolt • Stopper pin mechanism malfunction • Variable valve timing mechanism is stuck in advanced position • CMP sensor malfunction ▪ CMP sensor is dirty ▪ CMP sensor pulse wheel malfunction • PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED Has the FREEZE FRAME DATA (Mode 2)/snapshot data been recorded?	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY - Verify related Service Bulletins and/or on-line repair information availability. - Is any related repair information available?	Yes Perform repair or diagnosis according to the available repair information. If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT CMP SENSOR CONNECTOR CONDITION - CMP sensor connector is disconnected. - Switch the ignition to off. - Inspect for poor connection (such as damaged/pulled-out pins, corrosion). - Is there any malfunction?	Yes Repair or replace the terminal and/or connector, then go to Step 14.
		No Go to the next step.
	INSPECT CMP SENSOR CIRCUIT FOR SHORT TO	

4	GROUND • CMP sensor connector is disconnected. • Inspect for continuity between the following terminals and body ground: ▪ CMP sensor terminal C (wiring harness-side) ▪ CMP sensor terminal B (wiring harness-side) • Is there continuity?	Yes If the short to ground circuit could be detected: • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: • Replace the PCM (short to ground in PCM internal circuit). (See PCM REMOVAL/ INSTALLATION [MZR 2.5].) Go to Step 14.
		No Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction?	Yes Repair or replace the terminal and/or connector, then go to Step 14.
		No Go to the next step.
6	INSPECT CMP SENSOR CIRCUITS FOR SHORT EACH OTHER • CMP sensor and PCM connectors are disconnected. • Inspect for continuity between CMP sensor terminals B and C (wiring harness-side). • Is there continuity?	Yes Repair or replace the malfunctioning wiring harness, then go to Step 14.
		No Go to the next step.
7	INSPECT CMP SENSOR CIRCUIT FOR SHORT TO POWER SUPPLY • CMP sensor and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between the CMP sensor terminal B (wiring harness-side) and body ground. • Is there any voltage?	Yes Repair or replace the wiring harness for a possible short to power supply, then go to Step 14.
		No Go to the next step.
8	INSPECT CMP SENSOR CIRCUIT FOR OPEN CIRCUIT • CMP sensor and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between the following terminals: ▪ CMP sensor terminal C (wiring harness-side) and PCM terminal 2AM (wiring harness-side) ▪ CMP sensor terminal B (wiring harness-side) and PCM terminal 2S (wiring harness-side) ▪ CMP sensor terminal A (wiring harness-side) and	Yes Go to the next step.
		No Repair or replace the wiring harness for a possible open circuit, then go to Step 14.

	body ground		
	Is there continuity?		
9	INSPECT CMP SENSOR - Inspect the CMP sensor. (See CAMSHAFT POSITION (CMP) SENSOR REMOVAL/ INSTALLATION [MZR 2.5].) - Is there any malfunction?	Yes Replace the CMP sensor, then go to Step 14. (See CAMSHAFT POSITION (CMP) SENSOR REMOVAL/ INSTALLATION [MZR 2.5].)	
		No Go to the next step.	
10	INSPECT CKP SENSOR CONNECTOR CONDITION - Disconnect the CKP sensor connector. - Inspect for poor connection (such as damaged/pulled-out pins, corrosion). - Is there any malfunction?	Yes Repair or replace the terminal and/or connector, then go to Step 14.	
		No Go to the next step.	
11	VERIFY VALVE TIMING MECHANISM INSTALLATION - Verify the valve timing mechanism installation for the following parts: - Timing chain - Camshaft sprocket lock bolt - Crankshaft pulley lock bolt - Is there any malfunction?	Yes Reinstall the misinstallation or loose parts correctly, then go to Step 14. (See VARIABLE VALVE TIMING ACTUATOR REMOVAL/ INSTALLATION [MZR 2.5].) (See TIMING CHAIN REMOVAL/ INSTALLATION [MZR 2.5].)	
		No Go to the next step.	
12	INSPECT STOPPER PIN MECHANISM - Remove the timing chain. (See TIMING CHAIN REMOVAL/ INSTALLATION [MZR 2.5].) - Inspect the stopper pin. (See VARIABLE VALVE TIMING ACTUATOR INSPECTION [MZR 2.5].) - Is there any malfunction?	Yes Replace the variable valve timing actuator, then go to Step 14. (See VARIABLE VALVE TIMING ACTUATOR REMOVAL/ INSTALLATION [MZR 2.5].)	
		No Go to the next step.	
13	INSPECT ROTOR POSITION - Remove the variable valve timing actuator. (See VARIABLE VALVE TIMING ACTUATOR REMOVAL/ INSTALLATION [MZR 2.5].) - Is the rotor at the maximum valve timing advanced position?	Yes Reinstall or replace the variable valve timing actuator, then go to the next step. (See VARIABLE VALVE TIMING ACTUATOR REMOVAL/ INSTALLATION [MZR 2.5].)	
		No VARIABLE VALVE TIMING MECHANISM IS NORMAL NOTE: - This DTC is detected as an intermittent concern. - The intermittent concern might be removed by cleaning the variable valve timing mode control function. Go to the next step.	
14	VERIFY DTC TROUBLESHOOTING COMPLETED - Make sure to reconnect all disconnected connectors. - Clear the DTC from the PCM memory using	Yes Repeat the inspection from Step 1. If the malfunction recurs, replace the PCM.	

	the M-MDS. (See AFTER REPAIR PROCEDURE [MZR 2.5].) - Start the engine and warm it up completely. - Access the MAF PID using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [MZR 2.5].) NOTE: - The MAF PID should indicate 1.95 g/s { 0.25 lb/min} or above during this test. - Perform the KOER self test. (See KOEO/ KOER SELF TEST [MZR 2.5].) - Is the same DTC present?	(See PCM REMOVAL/ INSTALLATION [MZR 2.5].) Go to the next step.	
		No	Go to the next step.
15	VERIFY AFTER REPAIR PROCEDURE - Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [MZR 2.5].) - Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [MZR 2.5].)
		No	DTC troubleshooting completed.