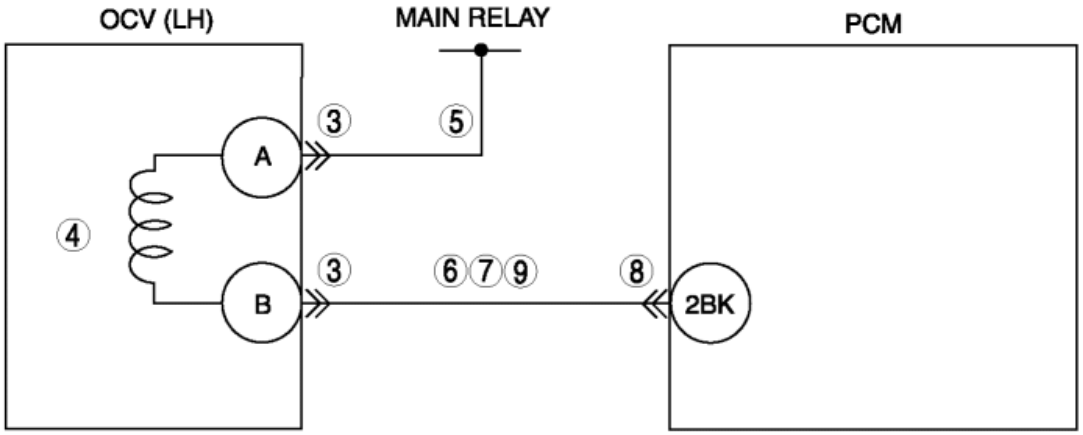
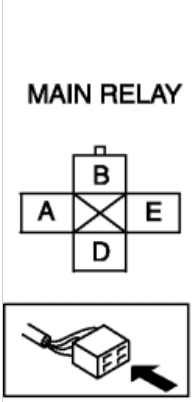
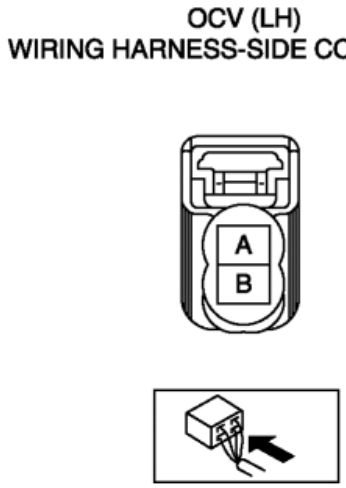
2012 - Mazda6 - Engine

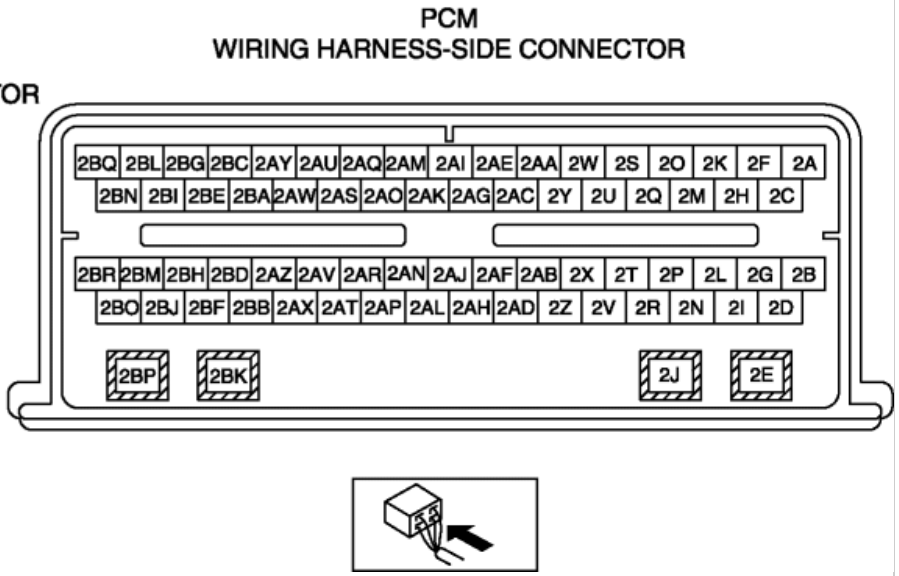
DTC P0020:00 [MZI 3.7 V6]

DTC P0020:00	CMP actuator circuit open (LH)
DETECTION CONDITION	• The PCM monitors the OCV (LH) circuit to the PCM for high and low voltage. The test fails if the voltage exceeds or falls below a calibrated limit for a calibrated amount of time.
POSSIBLE CAUSE	• Connector or terminal malfunction • OCV (LH) malfunction • Open circuit between OCV (LH) terminal A and main relay terminal A • Short to power supply between OCV (LH) terminal B and PCM terminal 2BK • Short to ground circuit between OCV (LH) terminal B and PCM terminal 2BK • Open circuit between OCV (LH) terminal B and PCM terminal 2BK









Diagnostic procedure

STEP	INSPECTION		ACTION
1	**VERIFY FREEZE FRAME DATA HAS BEEN RECORDED** • Has FREEZE FRAME DATA been recorded?	Yes	Go to the next step.
		No	Record FREEZE FRAME 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 Service Bulletins available?	Yes	Perform repair or diagnosis according to the available Service Bulletins. • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	**INSPECT OCV (LH) CONNECTOR FOR POOR CONNECTION** • Switch the ignition to off. • Disconnect the OCV (LH) connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are there any malfunction?	Yes	Repair or replace suspected part, then go to Step 10.
		No	Go to the next step.
4	**INSPECT OCV (LH)** • Inspect the OCV (LH). (See **OIL CONTROL VALVE (OCV) INSPECTION [MZI 3.7 V6]**.) • Is there any malfunction?	Yes	Replace the OCV (LH), then go to Step 10. (See **OIL CONTROL VALVE (OCV) REMOVAL/ INSTALLATION [MZI 3.7 V6]**.)
		No	Go to the next step.
5	**INSPECT OCV (LH) CIRCUIT FOR OPEN CIRCUIT** • Switch the ignition to ON (Engine off). • Measure the voltage between the OCV (LH) connector terminal A (wiring harness-side) and body ground. • Is the voltage B+?	Yes	Go to the next step.
		No	Repair or replace suspected part, then go to Step 10.
6	**INSPECT OCV (LH) CIRCUIT FOR SHORT TO POWER SUPPLY** • Disconnect the PCM connector. • Switch the ignition to ON (Engine off). • Measure the voltage between the OCV (LH) connector terminal B (wiring harness-side) and body ground. • Is the voltage B+?	Yes	Repair or replace suspected part, then go to Step 10.
		No	Go to the next step.
7	**INSPECT OCV (LH) CIRCUIT FOR SHORT TO GROUND** • Switch the ignition to ON (Engine off). • Inspect for continuity between OCV (LH) terminal B (wiring harness-side) and body ground. • Is there continuity?	Yes	Repair or replace suspected part, then go to Step 10.
		No	Go to the next step.
8	**INSPECT PCM CONNECTOR FOR POOR CONNECTION** • Disconnect the PCM connector.	Yes	Repair or replace suspected part, then go to Step 10.

	• Inspect for poor connection (such as damaged/ pulled-out pins, corrosion). • Is there any malfunction?	No	Go to the next step.
9	**INSPECT OCV (LH) CIRCUIT FOR OPEN CIRCUIT** • Switch the ignition to off. • Measure the resistance between the OCV (LH) connector terminal B (wiring harness-side) and PCM terminal 2BK (wiring harness-side). • Is there continuity?	Yes	Go to the next step.
		No	Repair or replace suspected part, then go to the next step.
10	**VERIFY TROUBLESHOOTING OF DTC P0020:00 HAS BEEN COMPLETED** • Verify that all disconnected connectors reconnected. • Switch the ignition to ON (Engine off). • Clear the DTC from the PCM memory using the M-MDS. • Start the engine and run it at idle. • Retrieve DTCs using the M-MDS. • Is the PENDING CODE for this DTC present?	Yes	Repeat the inspection from Step 1. • If the malfunction recurs, replace the PCM. (See **PCM REMOVAL/ INSTALLATION [MZI 3.7 V6]**.) Go to the next step.
		No	Go to the next step.
11	**VERIFY AFTER REPAIR PROCEDURE** • Perform the "AFTER REPAIR PROCEDURE". (See **AFTER REPAIR PROCEDURE [MZI 3.7 V6]**.) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See **DTC TABLE [MZI 3.7 V6]**.)
		No	Troubleshooting completed.

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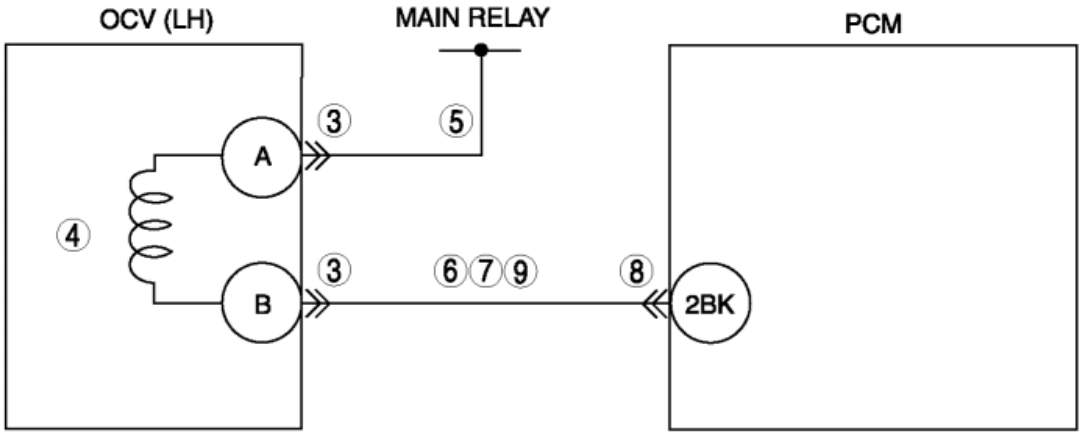
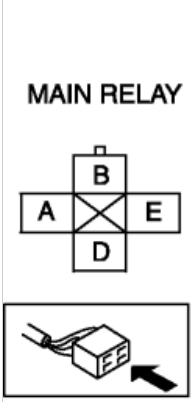
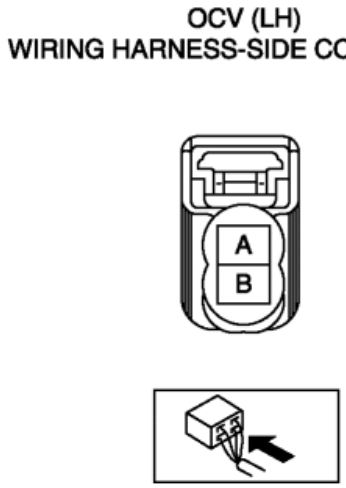
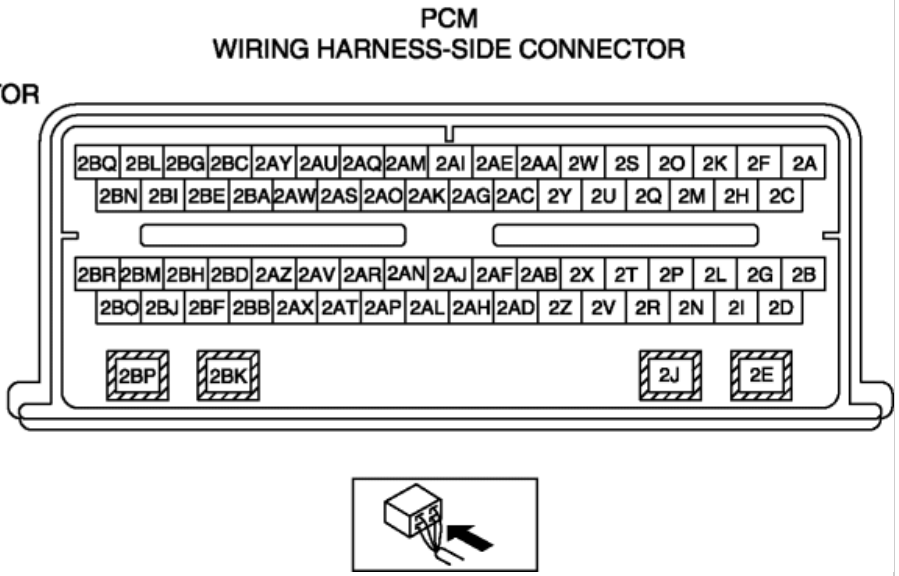
POSSIBLE CAUSE	• Connector or terminal malfunction • OCV (LH) malfunction • Open circuit between OCV (LH) terminal A and main relay terminal A • Short to power supply between OCV (LH) terminal B and PCM terminal 2BK • Short to ground circuit between OCV (LH) terminal B and PCM terminal 2BK • Open circuit between OCV (LH) terminal B and PCM terminal 2BK









Diagnostic procedure

STEP	INSPECTION		ACTION
1	**VERIFY FREEZE FRAME DATA HAS BEEN RECORDED** • Has FREEZE FRAME DATA been recorded?	Yes	Go to the next step.
		No	Record FREEZE FRAME 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 Service Bulletins available?	Yes	Perform repair or diagnosis according to the available Service Bulletins. • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	**INSPECT OCV (LH) CONNECTOR FOR POOR CONNECTION** • Switch the ignition to off. • Disconnect the OCV (LH) connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are there any malfunction?	Yes	Repair or replace suspected part, then go to Step 10.
		No	Go to the next step.
4	**INSPECT OCV (LH)** • Inspect the OCV (LH). (See **OIL CONTROL VALVE (OCV) INSPECTION [MZI 3.7 V6]**.) • Is there any malfunction?	Yes	Replace the OCV (LH), then go to Step 10. (See **OIL CONTROL VALVE (OCV) REMOVAL/ INSTALLATION [MZI 3.7 V6]**.)
		No	Go to the next step.
5	**INSPECT OCV (LH) CIRCUIT FOR OPEN CIRCUIT** • Switch the ignition to ON (Engine off). • Measure the voltage between the OCV (LH) connector terminal A (wiring harness-side) and body ground. • Is the voltage B+?	Yes	Go to the next step.
		No	Repair or replace suspected part, then go to Step 10.
6	**INSPECT OCV (LH) CIRCUIT FOR SHORT TO POWER SUPPLY** • Disconnect the PCM connector. • Switch the ignition to ON (Engine off). • Measure the voltage between the OCV (LH) connector terminal B (wiring harness-side) and body ground. • Is the voltage B+?	Yes	Repair or replace suspected part, then go to Step 10.
		No	Go to the next step.
7	**INSPECT OCV (LH) CIRCUIT FOR SHORT TO GROUND** • Switch the ignition to ON (Engine off). • Inspect for continuity between OCV (LH) terminal B (wiring harness-side) and body ground. • Is there continuity?	Yes	Repair or replace suspected part, then go to Step 10.
		No	Go to the next step.
8	**INSPECT PCM CONNECTOR FOR POOR CONNECTION** • Disconnect the PCM connector.	Yes	Repair or replace suspected part, then go to Step 10.

	• Inspect for poor connection (such as damaged/ pulled-out pins, corrosion). • Is there any malfunction?	No	Go to the next step.
9	**INSPECT OCV (LH) CIRCUIT FOR OPEN CIRCUIT** • Switch the ignition to off. • Measure the resistance between the OCV (LH) connector terminal B (wiring harness-side) and PCM terminal 2BK (wiring harness-side). • Is there continuity?	Yes	Go to the next step.
		No	Repair or replace suspected part, then go to the next step.
10	**VERIFY TROUBLESHOOTING OF DTC P0020:00 HAS BEEN COMPLETED** • Verify that all disconnected connectors reconnected. • Switch the ignition to ON (Engine off). • Clear the DTC from the PCM memory using the M-MDS. • Start the engine and run it at idle. • Retrieve DTCs using the M-MDS. • Is the PENDING CODE for this DTC present?	Yes	Repeat the inspection from Step 1. • If the malfunction recurs, replace the PCM. (See **PCM REMOVAL/ INSTALLATION [MZI 3.7 V6]**.) Go to the next step.
		No	Go to the next step.
11	**VERIFY AFTER REPAIR PROCEDURE** • Perform the "AFTER REPAIR PROCEDURE". (See **AFTER REPAIR PROCEDURE [MZI 3.7 V6]**.) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See **DTC TABLE [MZI 3.7 V6]**.)
		No	Troubleshooting completed.

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