

2012 - Mazda6 - Engine

DTC P2251:00, P2254:00 [MZI 3.7 V6]

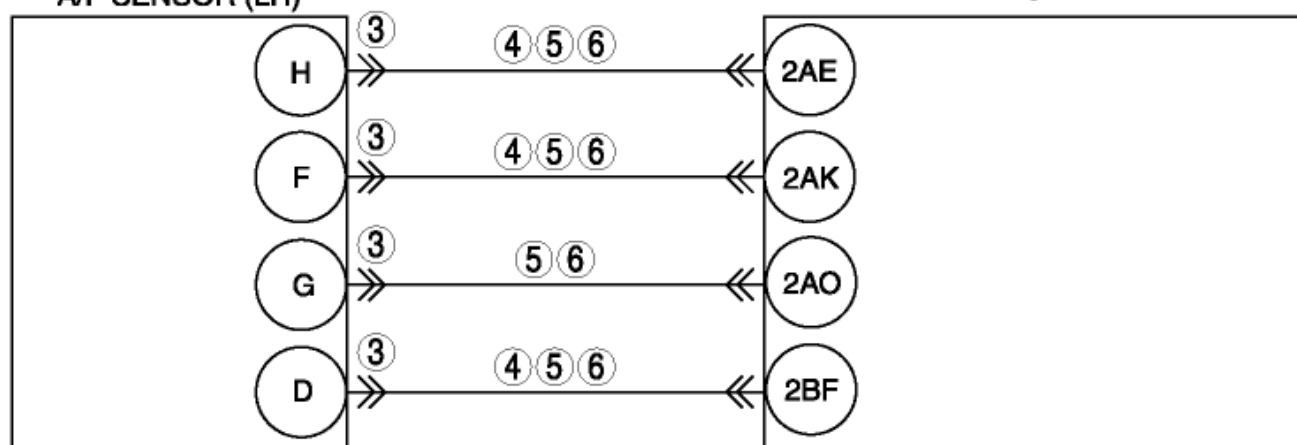
DTC P2251:00 DTC P2254:00	P2251:00: A/F sensor (RH) reference voltage circuit/open P2254:00: A/F sensor (LH) reference voltage circuit/open
DETECTION CONDITION	• P2251:00 indicates that A/F sensor (RH) positive current control circuit/open • P2254:00 indicates that A/F sensor (LH) positive current control circuit/open • The powertrain control module (PCM) monitors the universal heated oxygen sensor (HO2S) for a circuit concern. This DTC sets when the PCM detects a concern with the circuit used to determine the oxygen content in the exhaust gas.
POSSIBLE CAUSE	• Open A/F sensor circuit • P2251:00: ▪ Open circuit in wiring harness between the following terminals: • A/F sensor (RH) terminal H—PCM terminal 2AC • A/F sensor (RH) terminal F—PCM terminal 2AG • A/F sensor (RH) terminal D—PCM terminal 2BD ▪ Short to ground in wiring harness between the following terminals: • A/F sensor (RH) terminal H—PCM terminal 2AC • A/F sensor (RH) terminal F—PCM terminal 2AG • A/F sensor (RH) terminal G—PCM terminal 2AS • A/F sensor (RH) terminal D—PCM terminal 2BD ▪ Short to power supply in wiring harness between the following terminals: • A/F sensor (RH) terminal H—PCM terminal 2AC • A/F sensor (RH) terminal F—PCM terminal 2AG • A/F sensor (RH) terminal G—PCM terminal 2AS • A/F sensor (RH) terminal D—PCM terminal 2BD • P2254:00: ▪ Open circuit in wiring harness between the following terminals: • A/F sensor (LH) terminal H—PCM terminal 2AE • A/F sensor (LH) terminal F—PCM terminal 2AK • A/F sensor (LH) terminal D—PCM terminal 2BF

- Short to ground in wiring harness between the following terminals:
 - A/F sensor (LH) terminal H—PCM terminal 2AE
 - A/F sensor (LH) terminal F—PCM terminal 2AK
 - A/F sensor (LH) terminal G—PCM terminal 2AO
 - A/F sensor (LH) terminal D—PCM terminal 2BF
- Short to power supply in wiring harness between the following terminals:
 - A/F sensor (LH) terminal H—PCM terminal 2AE
 - A/F sensor (LH) terminal F—PCM terminal 2AK
 - A/F sensor (LH) terminal G—PCM terminal 2AO
 - A/F sensor (LH) terminal D—PCM terminal 2BF
- Damaged A/F sensor
- PCM malfunction

⑦

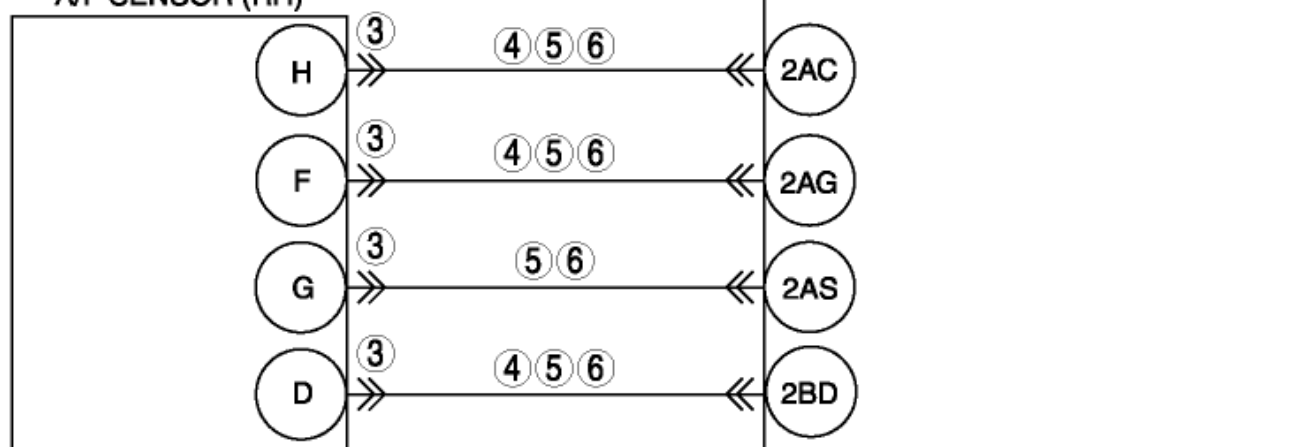
A/F SENSOR (LH)

PCM

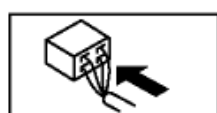


⑦

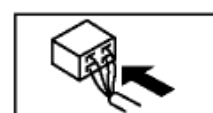
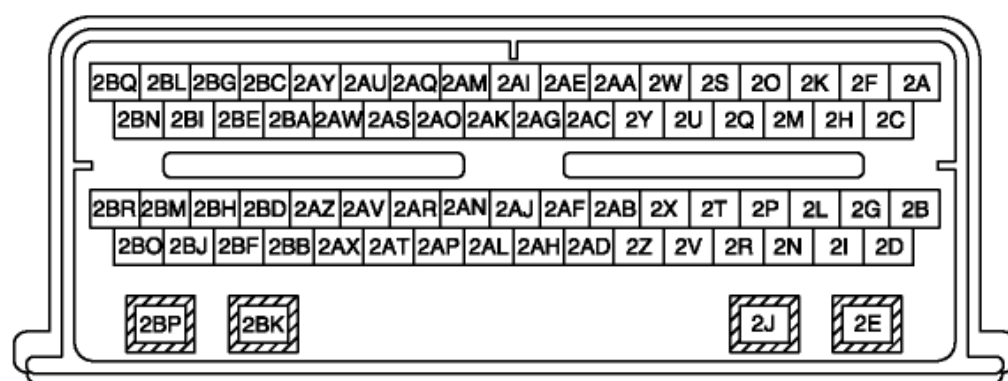
A/F SENSOR (RH)



A/F SENSOR (LH, RH)
WIRING HARNESS-SIDE
CONNECTOR



PCM
WIRING HARNESS-SIDE CONNECTOR



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	VISUALLY INSPECT A/ F SENSOR HARNESS - Switch the ignition to off. - Disconnect the suspect A/F sensor connector. - Visually inspect suspect A/F sensor for: - Pinched, shorted, and corroded wiring and pins - Oil or water contamination - Crossed sensor wires - Damaged A/F sensor - Is a concern present?	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 8.
		No	Go to the next step.
4	CHECK UO2S, UO2SGREF AND UO2SPCT CIRCUITS FOR OPEN IN HARNESS - Suspect A/F sensor connector is disconnected. - Switch the ignition to off. - Disconnect the PCM connector. - Measure the resistance between the following terminals (wiring harness-side): - P2251:00: - A/F sensor (RH) terminal H —PCM terminal 2AC - A/F sensor (RH) terminal F —PCM terminal 2AG - A/F sensor (RH) terminal D —PCM	Yes	Go to the next step.
		No	Repair for open circuit, then go to Step 8.

	terminal 2BD ▪ P2254:00: • A/F sensor (LH) terminal H —PCM terminal 2AE • A/F sensor (LH) terminal F —PCM terminal 2AK • A/F sensor (LH) terminal D —PCM terminal 2BF • Is the resistance less than 5 ohm?		
5	CHECK UO2S, UO2SGREF, UO2SPC, AND UO2SPCT CIRCUITS FOR SHORT TO GROUND IN HARNESS • Suspect A/F sensor and PCM connectors are disconnected. • Measure the resistance between the following suspect A/F sensor terminals (wiring harness-side) and body ground: ▪ P2251:00: • A/F sensor (RH) terminal H • A/F sensor (RH) terminal F • A/F sensor (RH) terminal G • A/F sensor (RH) terminal D ▪ P2254:00: • A/F sensor (LH) terminal H • A/F sensor (LH) terminal F • A/F sensor (LH)	YesGo to the next step. No Repair for short circuit, then go to Step 8.	

	terminal G - A/F sensor (LH) terminal D - Is the resistance greater than 10 kilohms?		
6	CHECK UO2S, UO2SGREF, UO2SPC, AND UO2SPCT CIRCUITS FOR SHORT TO VOLTAGE IN HARNESS - Suspect A/F sensor and PCM connectors are disconnected. - Switch the ignition to ON (engine off). - Measure the voltage between the following suspect A/F sensor terminals (wiring harness-side) and body ground: - P2251:00: - A/F sensor (RH) terminal H - A/F sensor (RH) terminal F - A/F sensor (RH) terminal G - A/F sensor (RH) terminal D - P2254:00: - A/F sensor (LH) terminal H - A/F sensor (LH) terminal F - A/F sensor (LH) terminal G - A/F sensor (LH) terminal D - Is there any voltage?	Yes	Repair for short circuit, then go to Step 8.
		No	Go to the next step.
7	CHECK UO2SGREF CIRCUIT FOR VOLTAGE - Switch the ignition to off. - Reconnect the PCM connector. - Switch the ignition to ON (engine off). - Measure the voltage between suspect A/F sensor terminal F and body ground. - Is the voltage between 3.5—3.7 V?	Yes	Replace the A/F sensor, then go to the next step. (See AIR FUEL RATIO (A/ F) SENSOR REMOVAL/ INSTALLATION [MZI 3.7 V6] .)
		No	Go to the next step. (The system is operating normal at this time. The concern may have been caused by a loose or corroded connector.)

8	VERIFY TROUBLESHOOTING OF DTC P2251:00, P2254:00 HAS BEEN COMPLETED • Verify that all disconnected connectors are reconnected. • Switch the ignition to ON (Engine off). • Clear the DTC from the PCM memory using the M-MDS. • Perform the KOER self-test. (See KOEO/ KOER SELF TEST [MZI 3.7 V6].) • 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.
9	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.

2012 - Mazda6 - Engine

DTC P2251:00, P2254:00 [MZI 3.7 V6]

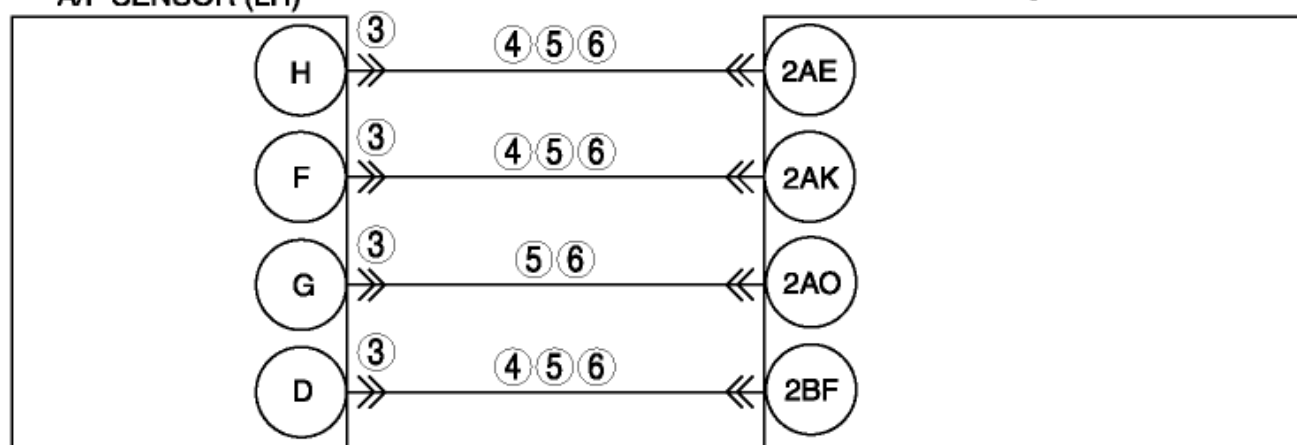
DTC P2251:00 DTC P2254:00	P2251:00: A/F sensor (RH) reference voltage circuit/open P2254:00: A/F sensor (LH) reference voltage circuit/open
DETECTION CONDITION	• P2251:00 indicates that A/F sensor (RH) positive current control circuit/open • P2254:00 indicates that A/F sensor (LH) positive current control circuit/open • The powertrain control module (PCM) monitors the universal heated oxygen sensor (HO2S) for a circuit concern. This DTC sets when the PCM detects a concern with the circuit used to determine the oxygen content in the exhaust gas.
POSSIBLE CAUSE	• Open A/F sensor circuit • P2251:00: ▪ Open circuit in wiring harness between the following terminals: • A/F sensor (RH) terminal H—PCM terminal 2AC • A/F sensor (RH) terminal F—PCM terminal 2AG • A/F sensor (RH) terminal D—PCM terminal 2BD ▪ Short to ground in wiring harness between the following terminals: • A/F sensor (RH) terminal H—PCM terminal 2AC • A/F sensor (RH) terminal F—PCM terminal 2AG • A/F sensor (RH) terminal G—PCM terminal 2AS • A/F sensor (RH) terminal D—PCM terminal 2BD ▪ Short to power supply in wiring harness between the following terminals: • A/F sensor (RH) terminal H—PCM terminal 2AC • A/F sensor (RH) terminal F—PCM terminal 2AG • A/F sensor (RH) terminal G—PCM terminal 2AS • A/F sensor (RH) terminal D—PCM terminal 2BD • P2254:00: ▪ Open circuit in wiring harness between the following terminals: • A/F sensor (LH) terminal H—PCM terminal 2AE • A/F sensor (LH) terminal F—PCM terminal 2AK • A/F sensor (LH) terminal D—PCM terminal 2BF

- Short to ground in wiring harness between the following terminals:
 - A/F sensor (LH) terminal H—PCM terminal 2AE
 - A/F sensor (LH) terminal F—PCM terminal 2AK
 - A/F sensor (LH) terminal G—PCM terminal 2AO
 - A/F sensor (LH) terminal D—PCM terminal 2BF
- Short to power supply in wiring harness between the following terminals:
 - A/F sensor (LH) terminal H—PCM terminal 2AE
 - A/F sensor (LH) terminal F—PCM terminal 2AK
 - A/F sensor (LH) terminal G—PCM terminal 2AO
 - A/F sensor (LH) terminal D—PCM terminal 2BF
- Damaged A/F sensor
- PCM malfunction

⑦

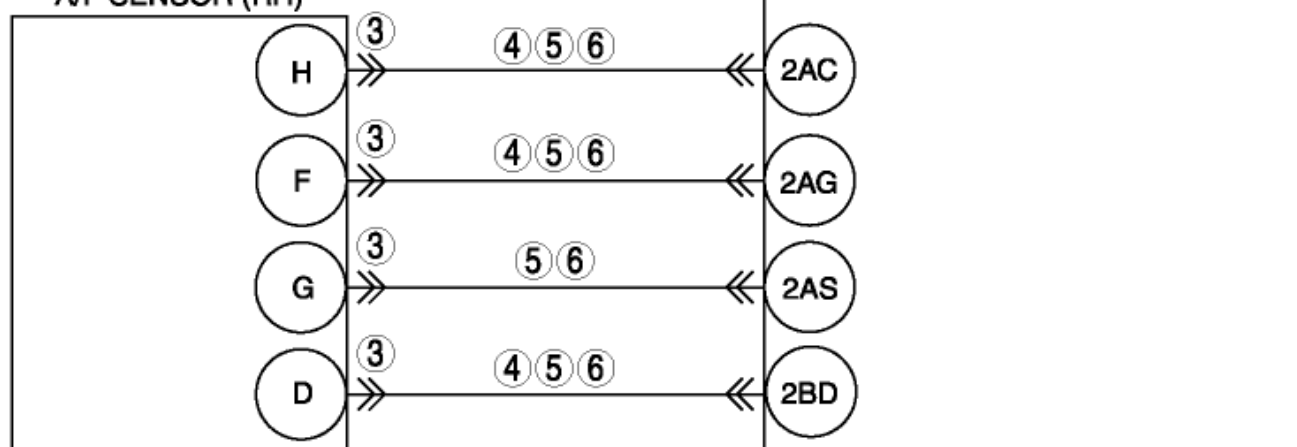
A/F SENSOR (LH)

PCM

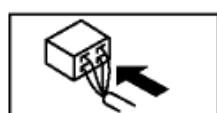


⑦

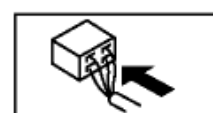
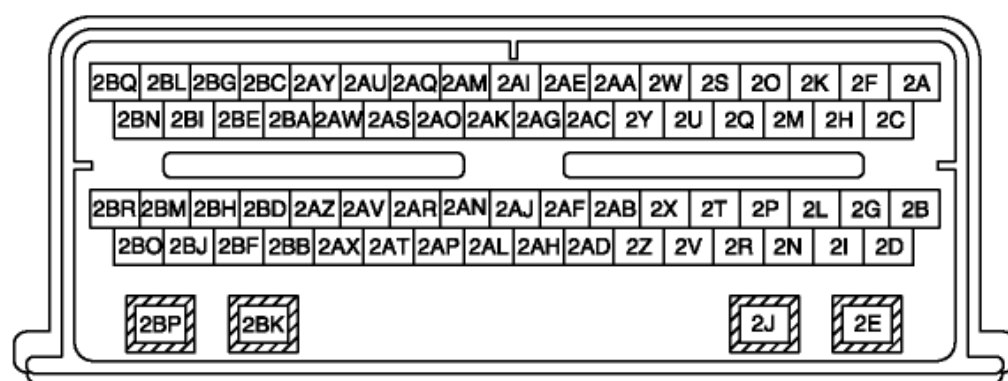
A/F SENSOR (RH)



A/F SENSOR (LH, RH)
WIRING HARNESS-SIDE
CONNECTOR



PCM
WIRING HARNESS-SIDE CONNECTOR



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	VISUALLY INSPECT A/ F SENSOR HARNESS - Switch the ignition to off. - Disconnect the suspect A/F sensor connector. - Visually inspect suspect A/F sensor for: - Pinched, shorted, and corroded wiring and pins - Oil or water contamination - Crossed sensor wires - Damaged A/F sensor - Is a concern present?	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 8.
		No	Go to the next step.
4	CHECK UO2S, UO2SGREF AND UO2SPCT CIRCUITS FOR OPEN IN HARNESS - Suspect A/F sensor connector is disconnected. - Switch the ignition to off. - Disconnect the PCM connector. - Measure the resistance between the following terminals (wiring harness-side): - P2251:00: - A/F sensor (RH) terminal H —PCM terminal 2AC - A/F sensor (RH) terminal F —PCM terminal 2AG - A/F sensor (RH) terminal D —PCM	Yes	Go to the next step.
		No	Repair for open circuit, then go to Step 8.

	terminal 2BD ▪ P2254:00: • A/F sensor (LH) terminal H —PCM terminal 2AE • A/F sensor (LH) terminal F —PCM terminal 2AK • A/F sensor (LH) terminal D —PCM terminal 2BF • Is the resistance less than 5 ohm?		
5	CHECK UO2S, UO2SGREF, UO2SPC, AND UO2SPCT CIRCUITS FOR SHORT TO GROUND IN HARNESS • Suspect A/F sensor and PCM connectors are disconnected. • Measure the resistance between the following suspect A/F sensor terminals (wiring harness-side) and body ground: ▪ P2251:00: • A/F sensor (RH) terminal H • A/F sensor (RH) terminal F • A/F sensor (RH) terminal G • A/F sensor (RH) terminal D ▪ P2254:00: • A/F sensor (LH) terminal H • A/F sensor (LH) terminal F • A/F sensor (LH)	YesGo to the next step. No Repair for short circuit, then go to Step 8.	

	terminal G - A/F sensor (LH) terminal D - Is the resistance greater than 10 kilohms?		
6	CHECK UO2S, UO2SGREF, UO2SPC, AND UO2SPCT CIRCUITS FOR SHORT TO VOLTAGE IN HARNESS - Suspect A/F sensor and PCM connectors are disconnected. - Switch the ignition to ON (engine off). - Measure the voltage between the following suspect A/F sensor terminals (wiring harness-side) and body ground: - P2251:00: - A/F sensor (RH) terminal H - A/F sensor (RH) terminal F - A/F sensor (RH) terminal G - A/F sensor (RH) terminal D - P2254:00: - A/F sensor (LH) terminal H - A/F sensor (LH) terminal F - A/F sensor (LH) terminal G - A/F sensor (LH) terminal D - Is there any voltage?	Yes	Repair for short circuit, then go to Step 8.
		No	Go to the next step.
7	CHECK UO2SGREF CIRCUIT FOR VOLTAGE - Switch the ignition to off. - Reconnect the PCM connector. - Switch the ignition to ON (engine off). - Measure the voltage between suspect A/F sensor terminal F and body ground. - Is the voltage between 3.5—3.7 V?	Yes	Replace the A/F sensor, then go to the next step. (See AIR FUEL RATIO (A/ F) SENSOR REMOVAL/ INSTALLATION [MZI 3.7 V6] .)
		No	Go to the next step. (The system is operating normal at this time. The concern may have been caused by a loose or corroded connector.)

8	VERIFY TROUBLESHOOTING OF DTC P2251:00, P2254:00 HAS BEEN COMPLETED • Verify that all disconnected connectors are reconnected. • Switch the ignition to ON (Engine off). • Clear the DTC from the PCM memory using the M-MDS. • Perform the KOER self-test. (See KOEO/ KOER SELF TEST [MZI 3.7 V6].) • 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.
9	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.