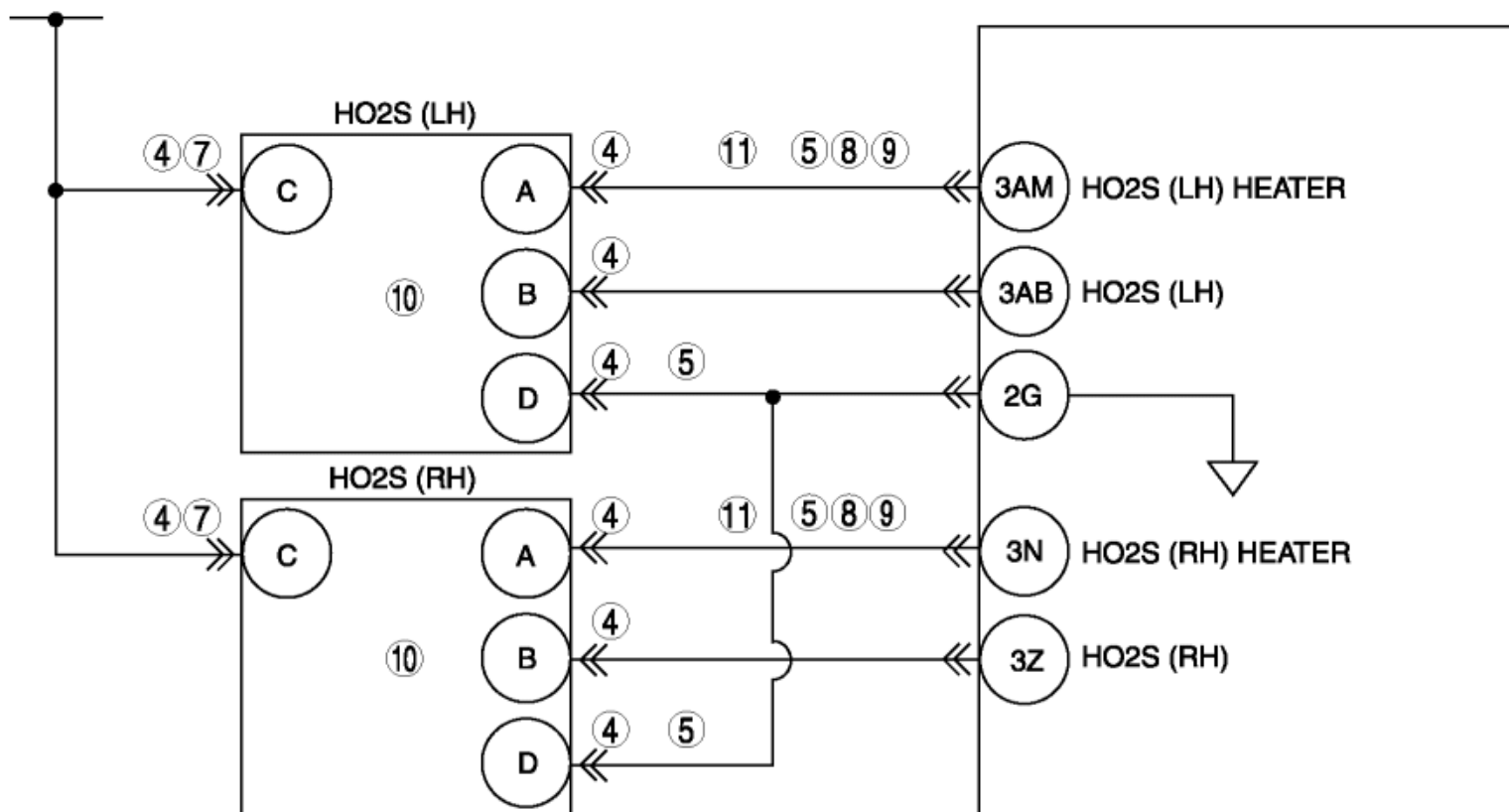


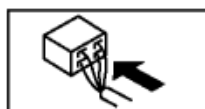
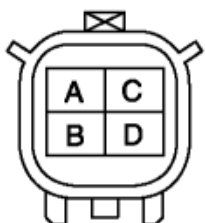
2012 - Mazda6 - Engine

DTC P0141:00, P0161:00 [MZI 3.7 V6]

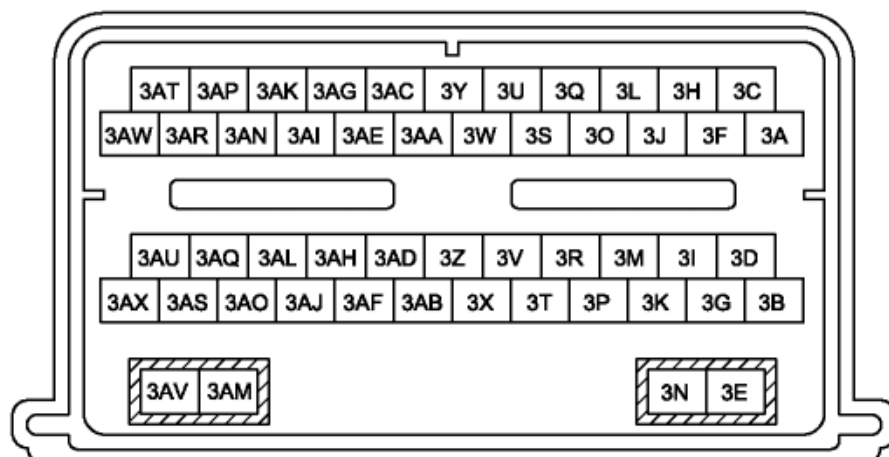
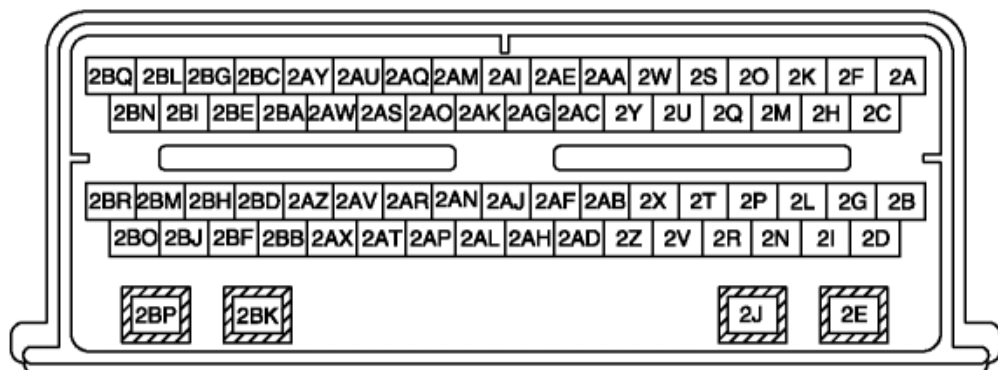
DTC P0141:00 DTC P0161:00	P0141:00: HO2S heater (RH) circuit P0161:00: HO2S heater (LH) circuit
DETECTION CONDITION	• P0141:00 indicates that HO2S (RH) heater circuit. • P0161:00 indicates that HO2S (LH) heater circuit. • During testing the heated oxygen sensor heaters are checked for open and short circuits and excessive current draw. The test fails when the current draw exceeds the calibrated limit or an open or short circuit is detected.
POSSIBLE CAUSE	• Contaminated HO2S • Water in the wiring harness connector • Corrosion or incorrect wiring harness connections • Open circuit between main relay terminal D and HO2S (RH/LH) terminal C • Damaged ENGINE fuse • Short to ground between ENGINE fuse and HO2S terminal C • P0141:00: Short to power supply between PCM terminal 3N and HO2S (RH) terminal A • P0161:00: Short to power supply between PCM terminal 3AM and HO2S (LH) terminal A • HO2S heater control signal circuit short to other wiring harness • P0141:00: Open circuit between PCM terminal 3N and HO2S (RH) terminal A • P0161:00: Open circuit between PCM terminal 3AM and HO2S (LH) terminal A • P0141:00: Open circuit between PCM terminal 3Z and HO2S (RH) terminal B • P0161:00: Open circuit between PCM terminal 3AB and HO2S (LH) terminal B • P0141:00: Open circuit between PCM terminal 2G and HO2S (RH) terminal D • P0161:00: Open circuit between PCM terminal 2G and HO2S (LH) terminal D • HO2S heater malfunction • P0141:00: Short to ground between PCM terminal 3N and HO2S (RH) terminal A • P0161:00: Short to ground between PCM terminal 3AM and HO2S (LH) terminal A • Low battery voltage • PCM malfunction
MAIN RELAY	PCM



HO2S (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	INSPECT FOR SOURCE OF POTENTIAL HO2S CONTAMINATION - Investigate the following items as potential sources of HO2S contamination: - Use of unapproved silicon sealers - Fuel contaminated by silicon additives - Excessive oil consumption - Glycol leaking internally in the engine - Lead-contaminated fuel - Short drive cycles in cold weather - Use of unapproved cleaning agents - Is a concern present?	Yes	Repair the source of the contamination. Change the engine oil and oil filter. Then go to Step 12.
		No	Go to the next step.
4	VISUALLY INSPECT HO2S WIRING HARNESS - Connect the PCM connector. - Visually inspect the HO2S wiring harness for exposed wiring water contamination, corrosion, and proper assembly. - Is a concern present?	Yes	Repair or replace suspected part, then go to Step 12.
		No	Go to the next step.
5	INSPECT HO2S AND SIGNAL RETURN CIRCUIT FOR OPEN CIRCUIT IN WIRING HARNESS - Switch the ignition to off. - Disconnect suspect HO2S and PCM connectors. - For DTC P0141:00, measure the resistance between PCM terminal 3Z and HO2S (RH) terminal B.	Yes	Go to the next step.
		No	Repair or replace suspected part, Go to Step 12.

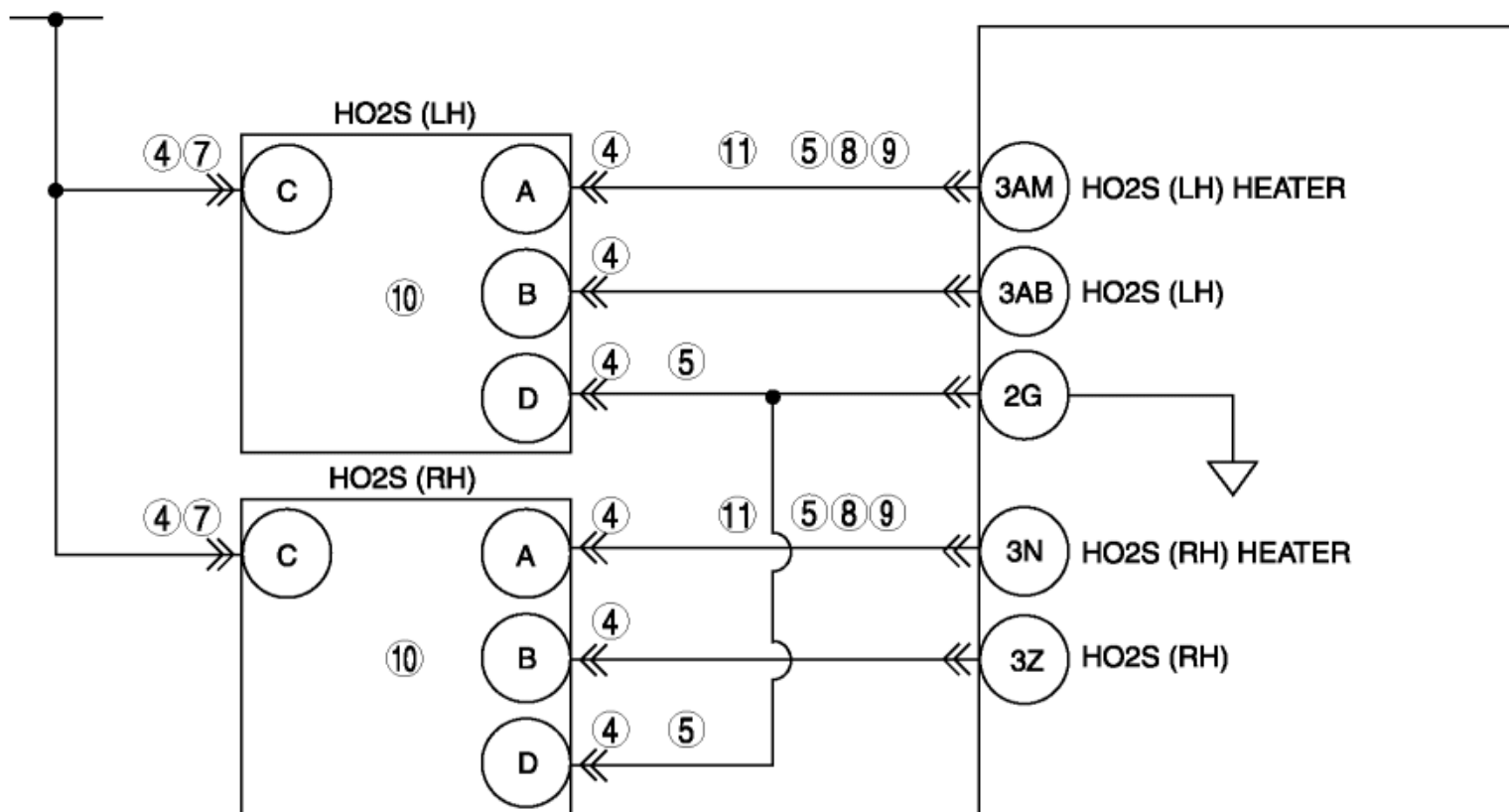
	- For DTC P0161:00, measure the resistance between PCM terminal 3AB and HO2S (LH) terminal B. - For DTC P0141:00 and P0161:00, measure the resistance between PCM terminal 2G. - Is the resistance less than 5.0 ohms?		
6	PERFORM KOEO SELF-TEST - Reconnect suspect HO2S and PCM connectors. - Perform the KOEO self-test. (See KOEO/ KOER SELF TEST [MZI 3.7 V6].) - Are DTCs P0141:00, or P0161:00 present?	Yes	Go to the next step.
		No	Go to Step 8.
7	INSPECT POWER SUPPLY IN WIRING HARNESS - Switch the ignition to off. - Disconnect suspect HO2S and PCM connectors. - Switch the ignition to ON (Engine off). - Measure the voltage between suspect HO2S connector terminal C and ground, on the wiring harness side. - Is the voltage more than 10 V?	Yes	Switch the ignition to off. Go to the next step.
		No	Inspect the ENGINE fuse. - If the is fuse deterioration, replace the fuse. - If the fuse has melted, repair for short to ground and replace the fuse. - If the fuse is normal, repair for an open circuit. Go to Step 12.
8	INSPECT HO2S HEATER FOR SHORT IN WIRING HARNESS - Switch the ignition to off. - Disconnect suspect HO2S and PCM connectors. - Measure the resistance between the following terminals: - HO2S terminal A and C (wiring harness-side) - HO2S terminal A and D (wiring harness-side) - HO2S terminal A and B (wiring harness-side) - Are the resistances more than 10 kilohms?	Yes	Go to the next step.
		No	Repair or replace suspected part, Go to Step 12.
9	INSPECT HO2S HEATER CIRCUIT FOR OPEN IN HARNESS - Suspect HO2S and PCM connectors are disconnected. - For DTC P0141:00, measure the resistance between PCM terminal 3N (wiring harness-side) and HO2S (RH) terminal A (wiring harness-side) - For DTC P00161:00, Measure the resistance	Yes	Go to the next step.
		No	Repair for open circuit. Go to Step 12.

	between: PCM terminal 3AM (wiring harness-side) and HO2S (LH) terminal A (wiring harness-side) Are the resistances less than 5 ohms?		
10	INSPECT INTERNAL RESISTANCE OF HO2S HEATER - Suspect HO2S and PCM connectors are disconnected. - Measure the resistance between the suspect HO2S terminal A and C, on the component side. - Is the resistance between 2—50 ohms?	Yes	Go to the next step. (The system is normal at this time. The concern may have been caused by a loose or corroded connector.)
		No	Replace HO2S. (See HEATED OXYGEN SENSOR (HO2S) REMOVAL/ INSTALLATION [MZI 3.7 V6].) Go to Step 12.
11	INSPECT HO2S HEATER FOR SHORT TO GROUND - Suspect HO2S and PCM connectors are disconnected. - Measure the resistance between HO2S terminal A on the wiring harness side and body ground. - Is the resistance more than 10 kilohms?	Yes	Go to the next step.
		No	Repair or replace suspected part, Go to the next step.
12	VERIFY TROUBLESHOOTING OF DTCs P0141:00, P0161:00 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 KOEO or 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.
13	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.

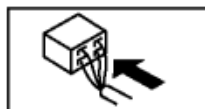
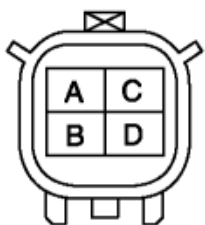
2012 - Mazda6 - Engine

DTC P0141:00, P0161:00 [MZI 3.7 V6]

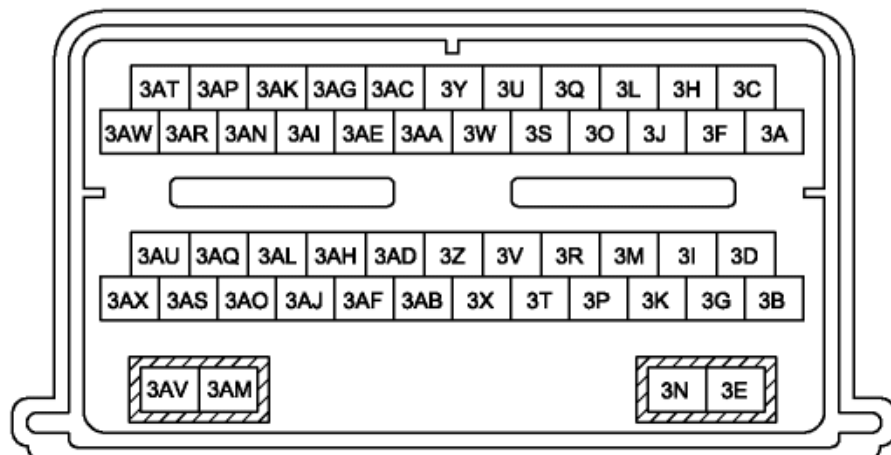
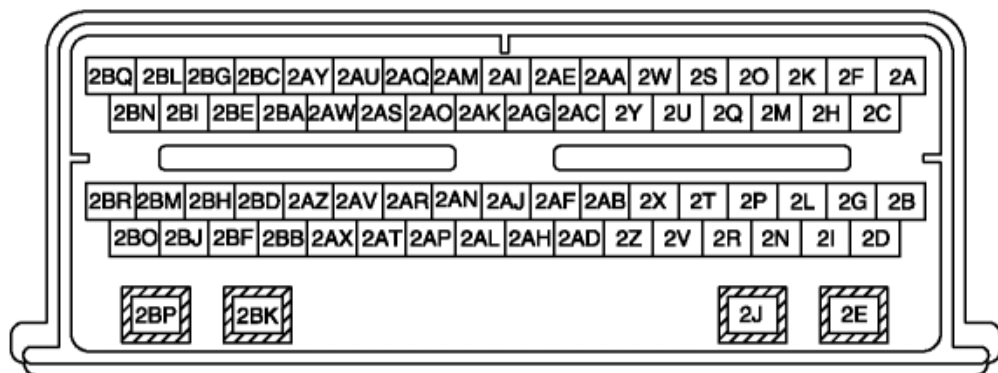
DTC P0141:00	P0141:00: HO2S heater (RH) circuit
DTC P0161:00	P0161:00: HO2S heater (LH) circuit
DETECTION CONDITION	• P0141:00 indicates that HO2S (RH) heater circuit. • P0161:00 indicates that HO2S (LH) heater circuit. • During testing the heated oxygen sensor heaters are checked for open and short circuits and excessive current draw. The test fails when the current draw exceeds the calibrated limit or an open or short circuit is detected.
POSSIBLE CAUSE	• Contaminated HO2S • Water in the wiring harness connector • Corrosion or incorrect wiring harness connections • Open circuit between main relay terminal D and HO2S (RH/LH) terminal C • Damaged ENGINE fuse • Short to ground between ENGINE fuse and HO2S terminal C • P0141:00: Short to power supply between PCM terminal 3N and HO2S (RH) terminal A • P0161:00: Short to power supply between PCM terminal 3AM and HO2S (LH) terminal A • HO2S heater control signal circuit short to other wiring harness • P0141:00: Open circuit between PCM terminal 3N and HO2S (RH) terminal A • P0161:00: Open circuit between PCM terminal 3AM and HO2S (LH) terminal A • P0141:00: Open circuit between PCM terminal 3Z and HO2S (RH) terminal B • P0161:00: Open circuit between PCM terminal 3AB and HO2S (LH) terminal B • P0141:00: Open circuit between PCM terminal 2G and HO2S (RH) terminal D • P0161:00: Open circuit between PCM terminal 2G and HO2S (LH) terminal D • HO2S heater malfunction • P0141:00: Short to ground between PCM terminal 3N and HO2S (RH) terminal A • P0161:00: Short to ground between PCM terminal 3AM and HO2S (LH) terminal A • Low battery voltage • PCM malfunction
MAIN RELAY	PCM



HO2S (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	INSPECT FOR SOURCE OF POTENTIAL HO2S CONTAMINATION - Investigate the following items as potential sources of HO2S contamination: - Use of unapproved silicon sealers - Fuel contaminated by silicon additives - Excessive oil consumption - Glycol leaking internally in the engine - Lead-contaminated fuel - Short drive cycles in cold weather - Use of unapproved cleaning agents - Is a concern present?	Yes	Repair the source of the contamination. Change the engine oil and oil filter. Then go to Step 12.
		No	Go to the next step.
4	VISUALLY INSPECT HO2S WIRING HARNESS - Connect the PCM connector. - Visually inspect the HO2S wiring harness for exposed wiring water contamination, corrosion, and proper assembly. - Is a concern present?	Yes	Repair or replace suspected part, then go to Step 12.
		No	Go to the next step.
5	INSPECT HO2S AND SIGNAL RETURN CIRCUIT FOR OPEN CIRCUIT IN WIRING HARNESS - Switch the ignition to off. - Disconnect suspect HO2S and PCM connectors. - For DTC P0141:00, measure the resistance between PCM terminal 3Z and HO2S (RH) terminal B.	Yes	Go to the next step.
		No	Repair or replace suspected part, Go to Step 12.

	- For DTC P0161:00, measure the resistance between PCM terminal 3AB and HO2S (LH) terminal B. - For DTC P0141:00 and P0161:00, measure the resistance between PCM terminal 2G. - Is the resistance less than 5.0 ohms?		
6	PERFORM KOEO SELF-TEST - Reconnect suspect HO2S and PCM connectors. - Perform the KOEO self-test. (See KOEO/ KOER SELF TEST [MZI 3.7 V6].) - Are DTCs P0141:00, or P0161:00 present?	Yes	Go to the next step.
		No	Go to Step 8.
7	INSPECT POWER SUPPLY IN WIRING HARNESS - Switch the ignition to off. - Disconnect suspect HO2S and PCM connectors. - Switch the ignition to ON (Engine off). - Measure the voltage between suspect HO2S connector terminal C and ground, on the wiring harness side. - Is the voltage more than 10 V?	Yes	Switch the ignition to off. Go to the next step.
		No	Inspect the ENGINE fuse. - If the is fuse deterioration, replace the fuse. - If the fuse has melted, repair for short to ground and replace the fuse. - If the fuse is normal, repair for an open circuit. Go to Step 12.
8	INSPECT HO2S HEATER FOR SHORT IN WIRING HARNESS - Switch the ignition to off. - Disconnect suspect HO2S and PCM connectors. - Measure the resistance between the following terminals: - HO2S terminal A and C (wiring harness-side) - HO2S terminal A and D (wiring harness-side) - HO2S terminal A and B (wiring harness-side) - Are the resistances more than 10 kilohms?	Yes	Go to the next step.
		No	Repair or replace suspected part, Go to Step 12.
9	INSPECT HO2S HEATER CIRCUIT FOR OPEN IN HARNESS - Suspect HO2S and PCM connectors are disconnected. - For DTC P0141:00, measure the resistance between PCM terminal 3N (wiring harness-side) and HO2S (RH) terminal A (wiring harness-side) - For DTC P00161:00, Measure the resistance	Yes	Go to the next step.
		No	Repair for open circuit. Go to Step 12.

	between: PCM terminal 3AM (wiring harness-side) and HO2S (LH) terminal A (wiring harness-side) Are the resistances less than 5 ohms?		
10	INSPECT INTERNAL RESISTANCE OF HO2S HEATER - Suspect HO2S and PCM connectors are disconnected. - Measure the resistance between the suspect HO2S terminal A and C, on the component side. - Is the resistance between 2—50 ohms?	Yes	Go to the next step. (The system is normal at this time. The concern may have been caused by a loose or corroded connector.)
		No	Replace HO2S. (See HEATED OXYGEN SENSOR (HO2S) REMOVAL/ INSTALLATION [MZI 3.7 V6].) Go to Step 12.
11	INSPECT HO2S HEATER FOR SHORT TO GROUND - Suspect HO2S and PCM connectors are disconnected. - Measure the resistance between HO2S terminal A on the wiring harness side and body ground. - Is the resistance more than 10 kilohms?	Yes	Go to the next step.
		No	Repair or replace suspected part, Go to the next step.
12	VERIFY TROUBLESHOOTING OF DTCs P0141:00, P0161:00 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 KOEO or 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.
13	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.