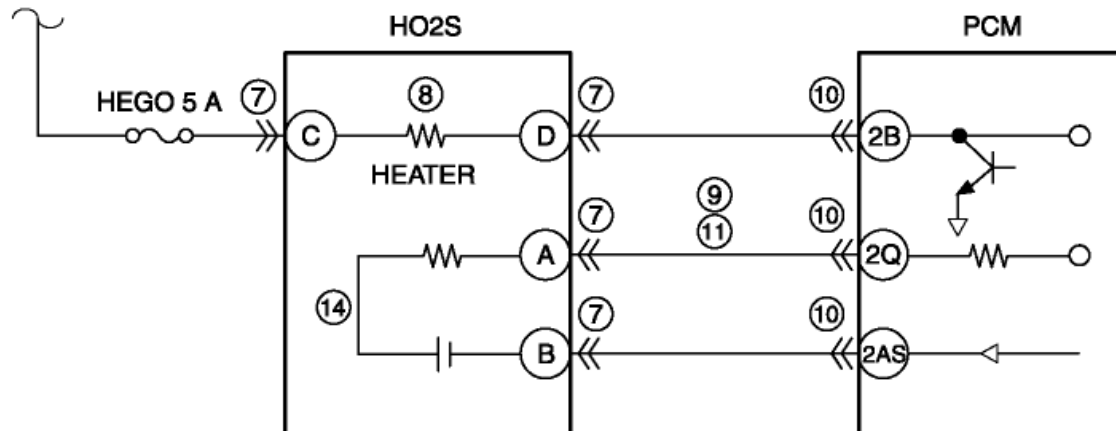


2012 - Mazda6 - Engine

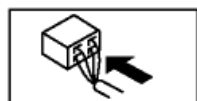
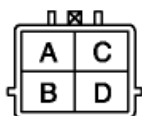
DTC P0140:00 [MZR 2.5]

DTC P0140:00	HO2S circuit no activity detected
DETECTION CONDITION	- The PCM monitors the input voltage from the HO2S when the following conditions are met. Under the following monitoring conditions, if the input voltage from the HO2S does not even exceed 0.6 V though the short term fuel trim is controlled up to 20.5 % for 20.8 s, the PCM determines that sensor circuit is not activated. MONITORING CONDITIONS - EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode - Estimated temperature of the zirconia element inside the HO2S above 450 °C { 842 °F} Diagnostic support note - This is an intermittent monitor (A/F sensor, HO2S). - The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. - PENDING CODE is available 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	- HO2S loose - Leakage exhaust system - HO2S connector or terminal malfunction - HO2S heater malfunction - Short to ground in wiring harness between HO2S terminal A and PCM terminal 2Q - PCM connector or terminal malfunction - Open circuit in wiring harness between HO2S terminal A and PCM terminal 2Q - Engine malfunction - Engine coolant leakage - Insufficient compression - HO2S malfunction - HO2S deterioration - PCM malfunction

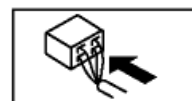
IGNITION SWITCH (IG1)
 TERMINAL C*¹/
 RELAY BLOCK (IG1 RELAY)
 TERMINAL 1B*²



HO2S
 WIRING HARNESS-SIDE
 CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



*1

Vehicles without advanced keyless entry and push button start system

*2

Vehicles with advanced keyless entry and push button start system

Diagnostic procedure

STEP	INSPECTION	ACTION
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) Is the DTC P0140:00 on FREEZE FRAME DATA (Mode 2)?	Yes Go to the next step. No Go to troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See DTC TABLE [MZR 2.5] .)
2	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED Have the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded?	Yes Go to the next step. No Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY Verify related Service Bulletins and/or on-line repair information availability.	Yes Perform repair or diagnosis according to the available repair information. • If the vehicle is not repaired, go to the

	Is any related repair information available?		next step.
		No	Go to the next step.
4	VERIFY RELATED PENDING AND STORED DTC NOTE: • If fuel monitor DTC, DTC P0132:00 is retrieved, ignore it until P0140:00 is fixed. • Switch the ignition to off, then to the ON (engine off). • Verify pending and stored DTCs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [MZR 2.5].) • Are any other DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [MZR 2.5] .)
		No	Go to the next step.
5	INSPECT INSTALLATION OF HO2S • Inspect if the HO2S is loosely installed. • Is the HO2S installed securely?	Yes	Go to the next step.
		No	Retighten the HO2S, then go to Step 15. (See HEATED OXYGEN SENSOR (HO2S) REMOVAL/ INSTALLATION [MZR 2.5] .)
6	INSPECT GAS LEAKAGE FROM EXHAUST SYSTEM • Visually inspect the exhaust system from exhaust manifold to HO2S. • Is there any leakage?	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 15.
		No	Go to the next step.
7	INSPECT HO2S CONNECTOR CONDITION • Switch the ignition to off. • Disconnect the HO2S 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 15.
		No	Go to the next step.
8	INSPECT HO2S HEATER • Inspect the HO2S heater. (See HEATED OXYGEN SENSOR (HO2S) INSPECTION [MZR 2.5].) • Is there any malfunction?	Yes	Replace the HO2S, then go to Step 15. (See HEATED OXYGEN SENSOR (HO2S) REMOVAL/ INSTALLATION [MZR 2.5] .)
		No	Go to the next step.
9	INSPECT HO2S SIGNAL CIRCUIT FOR SHORT TO GROUND • HO2S connector is disconnected. • Inspect for continuity between HO2S terminal A (wiring harness-side) and body ground. • 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 15.
		No	Go to the next step.
10	INSPECT PCM CONNECTOR CONDITION • Disconnect the PCM connector.	Yes	Repair or replace the terminal and/or connector, then go to Step 15.

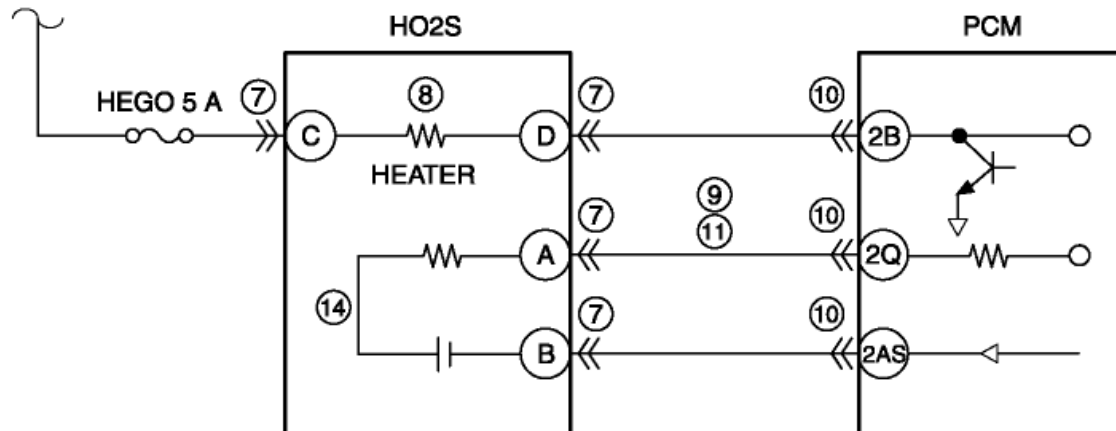
	- Inspect for poor connection (such as damaged/pulled-out pins, corrosion). - Is there any malfunction?	No	Go to the next step.
11	INSPECT HO2S SIGNAL CIRCUIT FOR OPEN CIRCUIT - HO2S and PCM connectors are disconnected. - Inspect for continuity between HO2S terminal A (wiring harness-side) and PCM terminal 2Q (wiring harness-side). - Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 15.
12	INSPECT SEALING OF ENGINE COOLANT PASSAGE - Perform the "ENGINE COOLANT LEAKAGE INSPECTION". (See ENGINE COOLANT LEAKAGE INSPECTION [MZR 2.5].) - Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 15.
		No	Go to the next step.
13	INSPECT ENGINE COMPRESSION - Inspect the engine compression. (See COMPRESSION INSPECTION [MZR 2.5].) - Is there any malfunction?	Yes	Perform the engine overhaul for repairs, then go to Step 15.
		No	Go to the next step.
14	INSPECT HO2S - Reconnect all disconnected connectors. - Inspect the HO2S. (See HEATED OXYGEN SENSOR (HO2S) INSPECTION [MZR 2.5].) - Is there any malfunction?	Yes	Inspect and repair for exhaust gas leakage between exhaust manifold and HO2S. If the exhaust system is normal: Replace the HO2S, then go to the next step. (See HEATED OXYGEN SENSOR (HO2S) REMOVAL/ INSTALLATION [MZR 2.5].)
		No	Go to the next step.
15	VERIFY DTC TROUBLESHOOTING COMPLETED - Make sure to reconnect all disconnected connectors. - Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [MZR 2.5].) - Start the engine and warm it up completely. - Perform the KOER self test. (See KOE0/ KOER SELF TEST [MZR 2.5].) - 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 [MZR 2.5].) Go to the next step.
		No	Go to the next step.
16	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.

2012 - Mazda6 - Engine

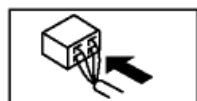
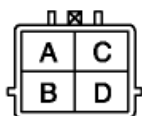
DTC P0140:00 [MZR 2.5]

DTC P0140:00	HO2S circuit no activity detected
DETECTION CONDITION	- The PCM monitors the input voltage from the HO2S when the following conditions are met. Under the following monitoring conditions, if the input voltage from the HO2S does not even exceed 0.6 V though the short term fuel trim is controlled up to 20.5 % for 20.8 s, the PCM determines that sensor circuit is not activated. MONITORING CONDITIONS - EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode - Estimated temperature of the zirconia element inside the HO2S above 450 °C { 842 °F} Diagnostic support note - This is an intermittent monitor (A/F sensor, HO2S). - The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. - PENDING CODE is available 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	- HO2S loose - Leakage exhaust system - HO2S connector or terminal malfunction - HO2S heater malfunction - Short to ground in wiring harness between HO2S terminal A and PCM terminal 2Q - PCM connector or terminal malfunction - Open circuit in wiring harness between HO2S terminal A and PCM terminal 2Q - Engine malfunction - Engine coolant leakage - Insufficient compression - HO2S malfunction - HO2S deterioration - PCM malfunction

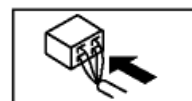
IGNITION SWITCH (IG1)
 TERMINAL C*¹/
 RELAY BLOCK (IG1 RELAY)
 TERMINAL 1B*²



HO2S
 WIRING HARNESS-SIDE
 CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



*1

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Vehicles with advanced keyless entry and push button start system

Diagnostic procedure

STEP	INSPECTION	ACTION
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) Is the DTC P0140:00 on FREEZE FRAME DATA (Mode 2)?	Yes Go to the next step. No Go to troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See DTC TABLE [MZR 2.5] .)
2	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED Have the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded?	Yes Go to the next step. No Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY Verify related Service Bulletins and/or on-line repair information availability.	Yes Perform repair or diagnosis according to the available repair information. • If the vehicle is not repaired, go to the

	Is any related repair information available?		next step.
		No	Go to the next step.
4	VERIFY RELATED PENDING AND STORED DTC NOTE: • If fuel monitor DTC, DTC P0132:00 is retrieved, ignore it until P0140:00 is fixed. • Switch the ignition to off, then to the ON (engine off). • Verify pending and stored DTCs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [MZR 2.5].) • Are any other DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [MZR 2.5] .)
		No	Go to the next step.
5	INSPECT INSTALLATION OF HO2S • Inspect if the HO2S is loosely installed. • Is the HO2S installed securely?	Yes	Go to the next step.
		No	Retighten the HO2S, then go to Step 15. (See HEATED OXYGEN SENSOR (HO2S) REMOVAL/ INSTALLATION [MZR 2.5] .)
6	INSPECT GAS LEAKAGE FROM EXHAUST SYSTEM • Visually inspect the exhaust system from exhaust manifold to HO2S. • Is there any leakage?	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 15.
		No	Go to the next step.
7	INSPECT HO2S CONNECTOR CONDITION • Switch the ignition to off. • Disconnect the HO2S 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 15.
		No	Go to the next step.
8	INSPECT HO2S HEATER • Inspect the HO2S heater. (See HEATED OXYGEN SENSOR (HO2S) INSPECTION [MZR 2.5].) • Is there any malfunction?	Yes	Replace the HO2S, then go to Step 15. (See HEATED OXYGEN SENSOR (HO2S) REMOVAL/ INSTALLATION [MZR 2.5] .)
		No	Go to the next step.
9	INSPECT HO2S SIGNAL CIRCUIT FOR SHORT TO GROUND • HO2S connector is disconnected. • Inspect for continuity between HO2S terminal A (wiring harness-side) and body ground. • 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 15.
		No	Go to the next step.
10	INSPECT PCM CONNECTOR CONDITION • Disconnect the PCM connector.	Yes	Repair or replace the terminal and/or connector, then go to Step 15.

	- Inspect for poor connection (such as damaged/pulled-out pins, corrosion). - Is there any malfunction?	No	Go to the next step.
11	INSPECT HO2S SIGNAL CIRCUIT FOR OPEN CIRCUIT - HO2S and PCM connectors are disconnected. - Inspect for continuity between HO2S terminal A (wiring harness-side) and PCM terminal 2Q (wiring harness-side). - Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 15.
12	INSPECT SEALING OF ENGINE COOLANT PASSAGE - Perform the "ENGINE COOLANT LEAKAGE INSPECTION". (See ENGINE COOLANT LEAKAGE INSPECTION [MZR 2.5].) - Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 15.
		No	Go to the next step.
13	INSPECT ENGINE COMPRESSION - Inspect the engine compression. (See COMPRESSION INSPECTION [MZR 2.5].) - Is there any malfunction?	Yes	Perform the engine overhaul for repairs, then go to Step 15.
		No	Go to the next step.
14	INSPECT HO2S - Reconnect all disconnected connectors. - Inspect the HO2S. (See HEATED OXYGEN SENSOR (HO2S) INSPECTION [MZR 2.5].) - Is there any malfunction?	Yes	Inspect and repair for exhaust gas leakage between exhaust manifold and HO2S. If the exhaust system is normal: Replace the HO2S, then go to the next step. (See HEATED OXYGEN SENSOR (HO2S) REMOVAL/ INSTALLATION [MZR 2.5].)
		No	Go to the next step.
15	VERIFY DTC TROUBLESHOOTING COMPLETED - Make sure to reconnect all disconnected connectors. - Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [MZR 2.5].) - Start the engine and warm it up completely. - Perform the KOER self test. (See KOE/ KOER SELF TEST [MZR 2.5].) - 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 [MZR 2.5].) Go to the next step.
		No	Go to the next step.
16	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.

