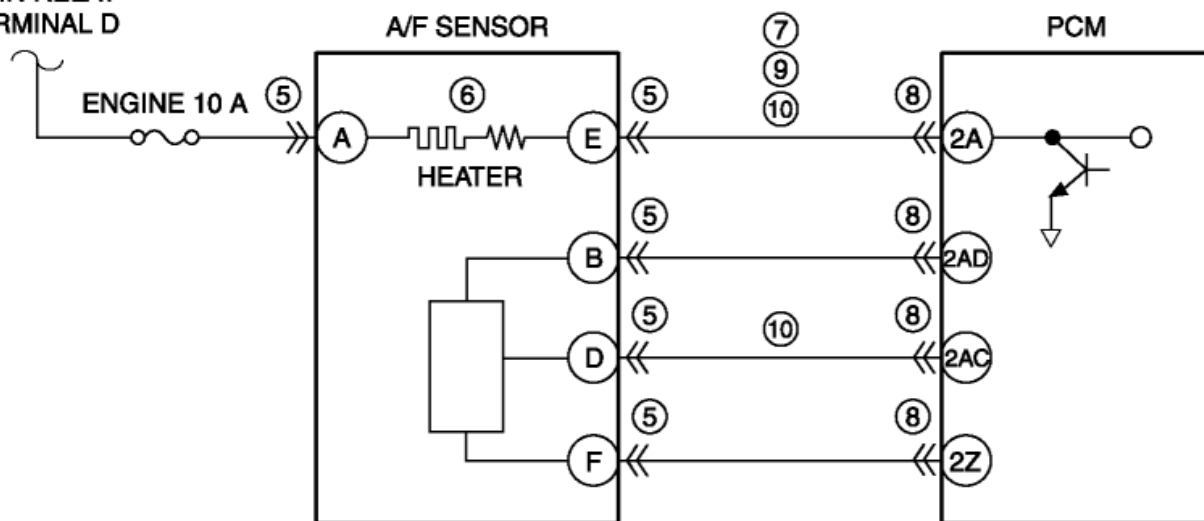


2012 - Mazda6 - Engine

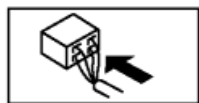
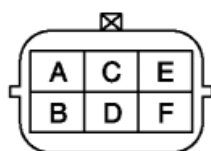
DTC P0030:00 [MZR 2.5]

DTC P0030:00	A/F sensor heater control circuit problem
DETECTI ON CONDI TION	• OBD system monitors the output signal voltage from oxygen sensor which is proportion to the element impedance of oxygen sensor. • If the output signal voltage above 1.5 V after specified time from engine start, heater performance considered failed. MONI TORI NG CONDI TIONS ▪ Battery voltage: 11—18 V ▪ Time from engine start: 74 s or more Diagnostic support note • This is an intermittent monitor (A/F sensor heater, HO2S heater). • 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 the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSI BLE CAUSE	• A/F sensor connector or terminal malfunction • A/F sensor heater malfunction • Short to ground in wiring harness between A/F sensor terminal E and PCM terminal 2A • PCM connector or terminal malfunction • Short to power supply in wiring harness between A/F sensor terminal E and PCM terminal 2A • Open circuit in wiring harness between A/F sensor terminal D and PCM terminal 2AC • Open circuit in wiring harness between A/F sensor terminal E and PCM terminal 2A • PCM malfunction

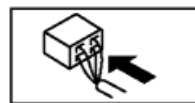
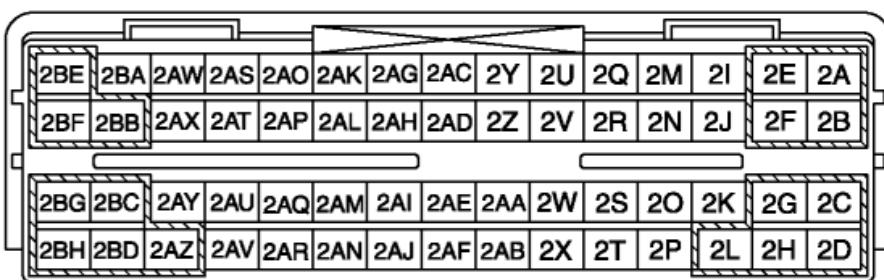
MAIN RELAY
TERMINAL D



A/F SENSOR
WIRING HARNESS-SIDE
CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



Diagnostic procedure

STEP	INSPECTION	ACTION
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) Is DTC P0030:00 on FREEZE FRAME DATA (Mode 2)?	Yes Go to the next step. No Go to troubleshooting 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 heater, HO2S heater 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. - 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.
4	VERIFY RELATED PENDING CODE OR STORED DTC	Yes Go to the applicable DTC inspection.

	- Switch the ignition to off, then to the ON (engine off). - Verify the related PENDING CODE or stored DTCs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [MZR 2.5].) - Is the DTC P0031:00 or P0032:00 also present?	(See DTC P0031:00 [MZR 2.5].) (See DTC P0032:00 [MZR 2.5].)	
5	INSPECT A/ F SENSOR CONNECTOR CONDITION - Switch the ignition to off. - Disconnect the A/F 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 11. No Go to the next step.	
6	INSPECT A/ F SENSOR HEATER - Inspect the A/F sensor heater. (See AIR FUEL RATIO (A/ F) SENSOR INSPECTION [MZR 2.5].) - Is there any malfunction?	Yes Replace the A/F sensor, then go to Step 11. (See AIR FUEL RATIO (A/ F) SENSOR REMOVAL/ INSTALLATION [MZR 2.5].) No Go to the next step.	
7	INSPECT A/ F SENSOR HEATER CONTROL CIRCUIT FOR SHORT TO GROUND - A/F sensor connector is disconnected. - Inspect for continuity between A/F sensor terminal E (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 11. No Go to the next step.	
8	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 11. No Go to the next step.	
9	INSPECT A/ F SENSOR HEATER CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY - A/F sensor and PCM connectors are disconnected. - Switch the ignition to ON (engine off). - Measure the voltage between A/F sensor terminal E (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 11. No Go to the next step.	
10	INSPECT A/ F SENSOR CIRCUIT FOR OPEN CIRCUIT - A/F sensor and PCM connectors are disconnected. - Switch the ignition to off. - Inspect for continuity between the following terminals:	Yes Go to the next step. No Repair or replace the wiring harness for a possible open circuit, then go to the next step.	

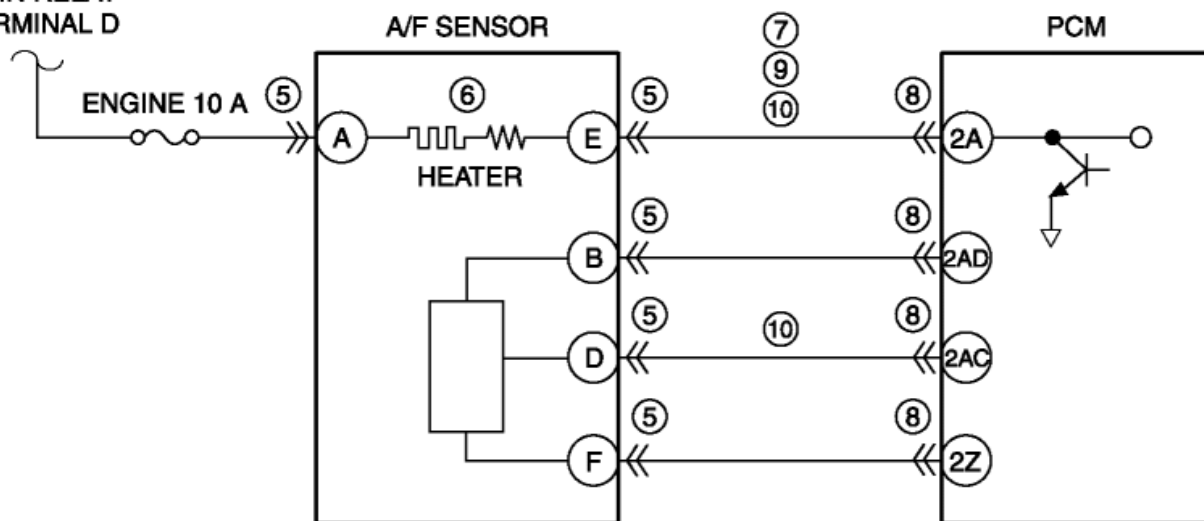
	▪ A/F sensor terminal D (wiring harness-side) and PCM terminal 2AC (wiring harness-side) ▪ A/F sensor terminal E (wiring harness-side) and PCM terminal 2A (wiring harness-side) • Is there continuity?		
11	VERIFY DTC TROUBLESHOOTING COMPLETED • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [MZR 2.5].) • Perform the KOEO or KOER self test. (See KOEO/ 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.	
12	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

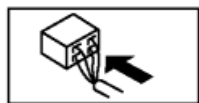
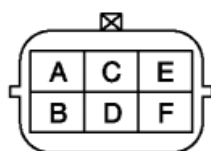
DTC P0030:00 [MZR 2.5]

DTC P0030:00	A/F sensor heater control circuit problem
DETECTI ON CONDI TION	• OBD system monitors the output signal voltage from oxygen sensor which is proportion to the element impedance of oxygen sensor. • If the output signal voltage above 1.5 V after specified time from engine start, heater performance considered failed. MONITORING CONDITIONS ▪ Battery voltage: 11—18 V ▪ Time from engine start: 74 s or more Diagnostic support note • This is an intermittent monitor (A/F sensor heater, HO2S heater). • 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 the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSI BLE CAUSE	• A/F sensor connector or terminal malfunction • A/F sensor heater malfunction • Short to ground in wiring harness between A/F sensor terminal E and PCM terminal 2A • PCM connector or terminal malfunction • Short to power supply in wiring harness between A/F sensor terminal E and PCM terminal 2A • Open circuit in wiring harness between A/F sensor terminal D and PCM terminal 2AC • Open circuit in wiring harness between A/F sensor terminal E and PCM terminal 2A • PCM malfunction

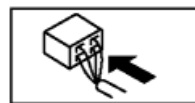
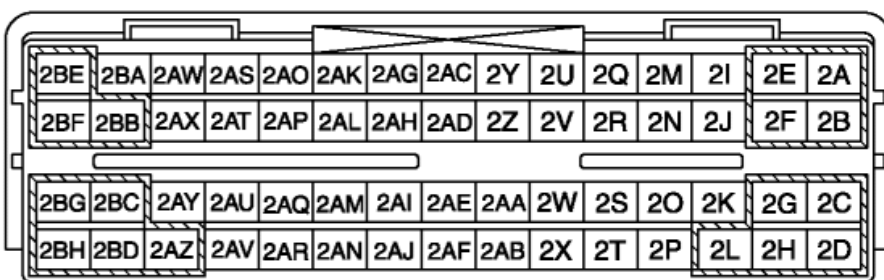
MAIN RELAY
TERMINAL D



A/F SENSOR
WIRING HARNESS-SIDE
CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



Diagnostic procedure

STEP	INSPECTION	ACTION
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) Is DTC P0030:00 on FREEZE FRAME DATA (Mode 2)?	Yes Go to the next step. No Go to troubleshooting 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 heater, HO2S heater 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. - 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.
4	VERIFY RELATED PENDING CODE OR STORED DTC	Yes Go to the applicable DTC inspection.

	- Switch the ignition to off, then to the ON (engine off). - Verify the related PENDING CODE or stored DTCs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [MZR 2.5].) - Is the DTC P0031:00 or P0032:00 also present?	(See DTC P0031:00 [MZR 2.5].) (See DTC P0032:00 [MZR 2.5].)	
5	INSPECT A/ F SENSOR CONNECTOR CONDITION - Switch the ignition to off. - Disconnect the A/F 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 11. No Go to the next step.	
6	INSPECT A/ F SENSOR HEATER - Inspect the A/F sensor heater. (See AIR FUEL RATIO (A/ F) SENSOR INSPECTION [MZR 2.5].) - Is there any malfunction?	Yes Replace the A/F sensor, then go to Step 11. (See AIR FUEL RATIO (A/ F) SENSOR REMOVAL/ INSTALLATION [MZR 2.5].) No Go to the next step.	
7	INSPECT A/ F SENSOR HEATER CONTROL CIRCUIT FOR SHORT TO GROUND - A/F sensor connector is disconnected. - Inspect for continuity between A/F sensor terminal E (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 11. No Go to the next step.	
8	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 11. No Go to the next step.	
9	INSPECT A/ F SENSOR HEATER CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY - A/F sensor and PCM connectors are disconnected. - Switch the ignition to ON (engine off). - Measure the voltage between A/F sensor terminal E (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 11. No Go to the next step.	
10	INSPECT A/ F SENSOR CIRCUIT FOR OPEN CIRCUIT - A/F sensor and PCM connectors are disconnected. - Switch the ignition to off. - Inspect for continuity between the following terminals:	Yes Go to the next step. No Repair or replace the wiring harness for a possible open circuit, then go to the next step.	

	▪ A/F sensor terminal D (wiring harness-side) and PCM terminal 2AC (wiring harness-side) ▪ A/F sensor terminal E (wiring harness-side) and PCM terminal 2A (wiring harness-side) • Is there continuity?		
11	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].) • Perform the KOEO or KOER self test. (See KOEO/ 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.	
12	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.	