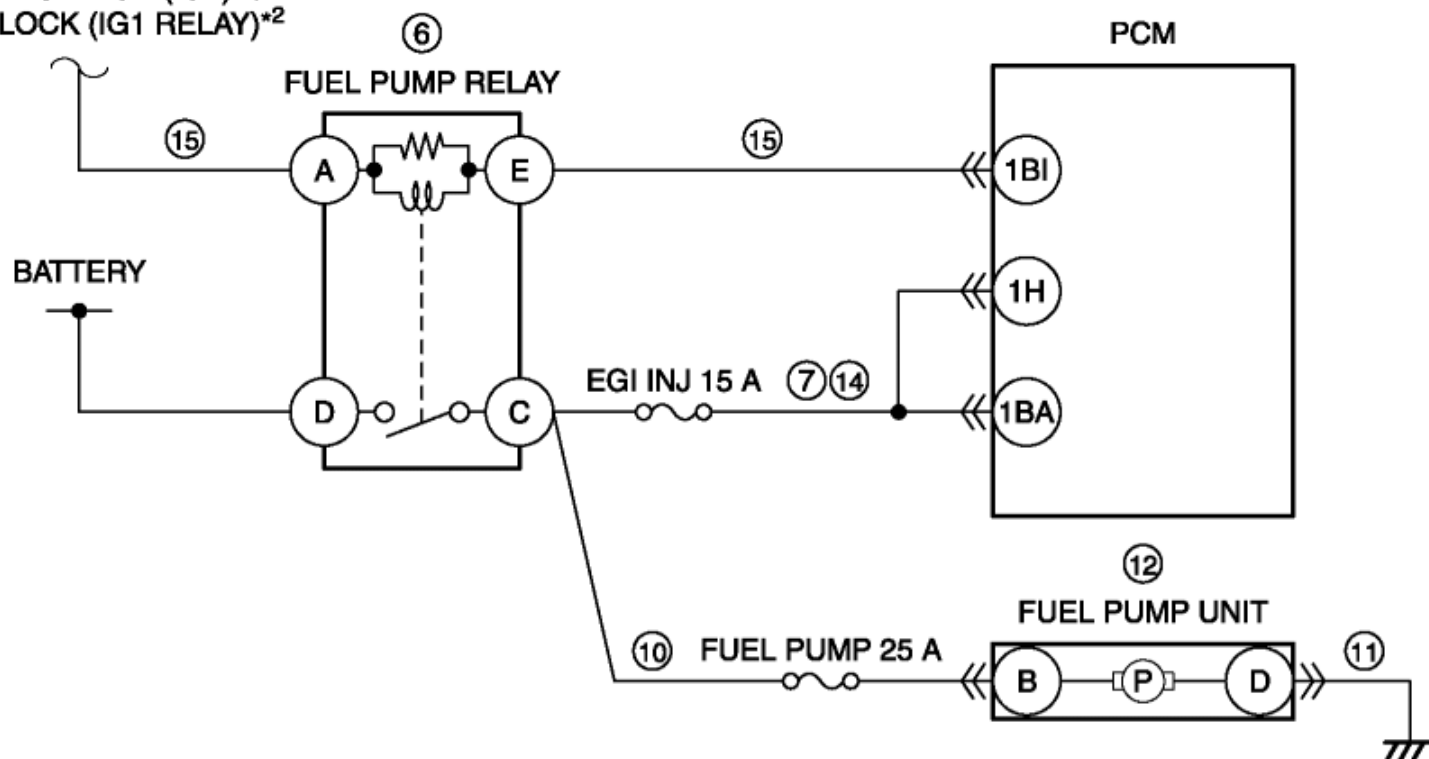


2012 - Mazda6 - Engine

DTC P0232:00 [MZI 3.7 V6]

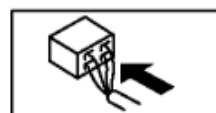
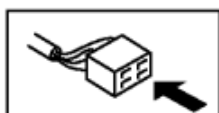
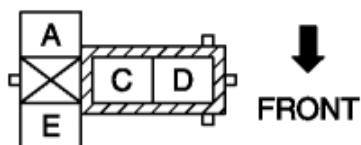
DTC P0232:00	Fuel pump secondary circuit high
DETECTION CONDITION	• The powertrain control module (PCM) monitors the fuel pump monitor (FPM) circuit. This test fails when the PCM detects voltage on the FPM circuit while the fuel pump is commanded OFF. The FPM circuit is wired to a pull-up voltage inside the PCM. The FPM circuit goes high if, with the ignition ON, engine OFF and the fuel pump commanded OFF, the FPM/FP PWR circuit loses its path to ground through the fuel pump. The FPM circuit also goes high if the FPM/FP PWR circuit is short to voltage.
POSSIBLE CAUSE	• Open circuit between the fuel pump and the fuel pump monitor connection to the fuel pump power supply circuit • Intermittent fuel pump ground • Fuel pump electrically open • Fuel pump secondary circuits short to voltage • Fuel pump relay contacts always closed • Open fuel pump monitor circuit between the PCM and the connection to the fuel pump power supply circuit • PCM malfunction

IGNITION SWITCH (IG1)*1/
RELAY BLOCK (IG1 RELAY)*2

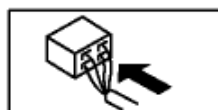
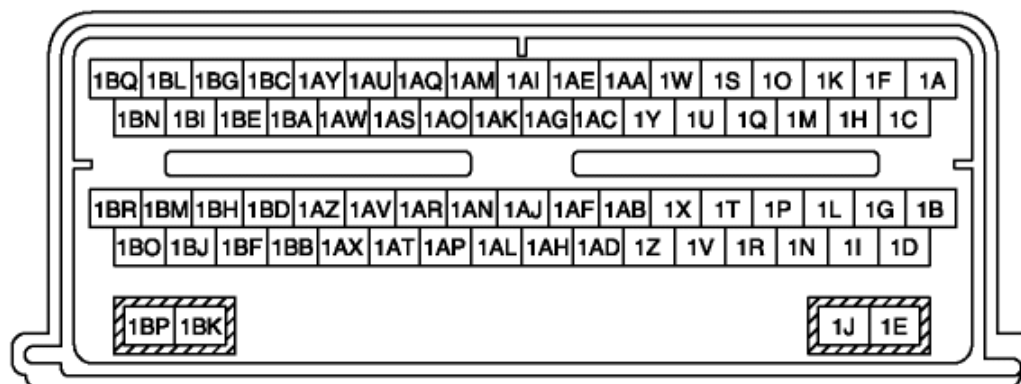


FUEL PUMP RELAY
(MAIN FUSE BLOCK)

FUEL PUMP UNIT
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	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	CHECK PROBLEM IS CONTINUING - Perform the KOEO self-test. (See KOEO/ KOER SELF TEST [MZI 3.7 V6].) - Is the DTC P0232:00 present?	Yes	Go to the next step.
		No	Go to Step 13.
4	INSPECT WHETHER MALFUNCTION IS IN FUEL PUMP MONITOR CIRCUIT OR FUEL PUMP POWER SUPPLY CIRCUIT - Start the engine. - Does the engine start?	Yes	Go to the next step.
		No	Go to Step 10.
5	INSPECT WHETHER MALFUNCTION IS IN FUEL PUMP MONITOR CIRCUIT OR FUEL PUMP RELAY - Switch the ignition to ON (engine off). - Wait for 5 seconds. - The fuel pump is located above the fuel tank. Listen for the sound of the fuel pump operating which can be heard from outside the vehicle. - Is fuel pump off with the ignition ON?	Yes	Go to Step 7.
		No	Go to the next step.
6	CHECK FOR FUEL PUMP RELAY CONTACTS ALWAYS CLOSED - Switch the ignition to off. - Remove the fuel pump relay. - Switch the ignition to ON (engine off). - Is fuel pump off with the ignition ON?	Yes	Replace the fuel pump relay, then go to Step 16.
		No	Repair for short circuit. (The short circuit is between the fuel pump power and fuel pump monitor circuits or in the injector power monitor circuit.) Go to Step 16.

7	CHECK FUEL PUMP MONITOR CIRCUIT FOR OPEN IN HARNESS - Switch the ignition to off. - Remove the fuel pump relay. - Disconnect the PCM connector. - Measure the resistance between PCM terminal 1H (wiring harness-side) and fuel pump relay terminal C. - Is the resistance less than 5 ohm?	Yes	Go to the next step.
		No	Repair for open circuit, then go to Step 16.
8	INSPECT WHETHER MALFUNCTION IS IN FUEL PUMP MONITOR PRIMARY CIRCUIT - Perform the KOEO self-test. (See KOEO/ KOER SELF TEST [MZI 3.7 V6].) - Is the DTC P0231:00 present?	Yes	Go to Step 16.
		No	Go to the next step.
9	CHECK FPM PRIMARY CIRCUIT INSIDE PCM - Switch the ignition to off. - Reconnect all disconnected connectors. - Reinstall the fuel pump relay. - Switch the ignition to ON (engine off). - Access the PCM and monitor the FPM PID. (See ON-BOARD DIAGNOSTIC TEST [MZI 3.7 V6].) - Is the PID state OFF?	Yes	Unable to duplicate or identify the cause of concern at this time. Perform the "INTERMITTENT CONCERN TROUBLESHOOTING" procedure. (See INTERMITTENT CONCERN TROUBLESHOOTING [MZI 3.7 V6] .)
		No	Go to Step 16.
10	CHECK FUEL PUMP POWER SUPPLY CIRCUIT FOR OPEN IN HARNESS - Switch the ignition to off. - Remove the fuel pump relay. - Disconnect the PCM connector. - Measure the resistance between fuel pump terminal C (wiring harness-side) and fuel pump terminal B (wiring harness-side). - Is the resistance less than 5 ohm?	Yes	Go to the next step.
		No	Repair for open circuit, then go to Step 16.
11	CHECK FUEL PUMP GROUND CIRCUIT FOR OPEN IN HARNESS - Switch the ignition to off. - Disconnect the fuel pump unit connector. - Measure the resistance between fuel pump terminal D and body ground. - Is the resistance less than 5 ohm?	Yes	Go to the next step.
		No	Repair for open circuit, then go to Step 16.
12	CHECK INTERNAL RESISTANCE OF FUEL PUMP - Fuel pump unit connector is disconnected. - Measure the resistance between fuel pump	Yes	Go to Step 16. (The fuel pump circuit is normal in the harness and PCM.)

	connector terminal B and D at wiring harness-side connector. Is the resistance less than 10 ohms?	No	Replace the fuel pump unit, then go to Step 16.
13	INSPECT WHETHER MALFUNCTION IS IN FUEL PUMP PRIMARY CIRCUIT OR SECONDARY CIRCUIT - Retrieve the DTCs using the M-MDS. - Is the DTC P0230:00 present?	Yes	Go to Step 15.
		No	Go to the next step.
14	CHECK FUEL PUMP SECONDARY CIRCUITS FOR CONCERN NOTE: - Be aware that DTC P0232:00 could be set if voltage is supplied to the fuel pump power circuit when the PCM expects the fuel pump to be off. The fuel pump prime procedure produces this. - The FPM PID turns ON when a concern is present. - Switch the ignition to ON (engine off). - Access the PCM and monitor the FPM PID. (See ON-BOARD DIAGNOSTIC TEST [MZI 3.7 V6].) - Observe the FPM PID for an indication of a concern while carrying out the following: - Shake, wiggle, and bend the fuel pump power supply circuit between the fuel pump relay and the fuel pump - Shake, wiggle, and bend the fuel pump ground - Shake, wiggle, and bend the PCM terminal 1H and the splice to the fuel pump power supply circuit - Shake, wiggle, and bend the injector power supply monitor circuit between the PCM terminal 1BA and the splice to the fuel pump power supply circuit - Lightly tap on the fuel pump, and fuel pump relay to simulate road shock - Is a concern present?	Yes	Isolate the concern and repair if necessary. Go to Step 16.
		No	Unable to duplicate or identify the cause of concern at this time. Perform the "INTERMITTENT CONCERN TROUBLESHOOTING" procedure. (See INTERMITTENT CONCERN TROUBLESHOOTING [MZI 3.7 V6].)
15	CHECK FUEL PUMP RELAY PRIMARY CIRCUITS NOTE: - The PID indicates YES when a concern is present. - Switch the ignition to ON (engine off). - Wait for 5 seconds. - Access the PCM and monitor the FP PID. (See ON-BOARD DIAGNOSTIC TEST [MZI 3.7 V6].)	Yes	Isolate the concern and repair if necessary. Go to the next step.
		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

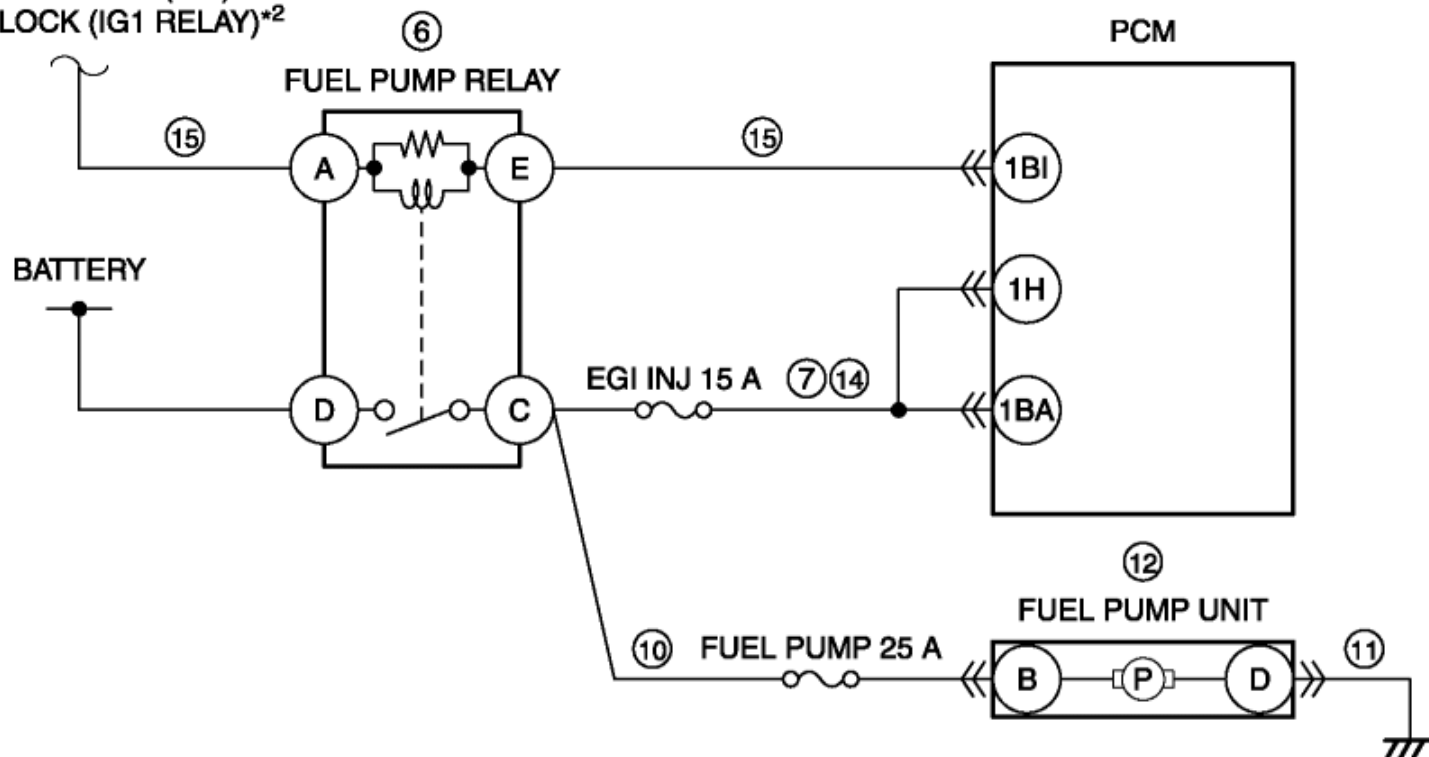
	- Observe the FP PID for an indication of a concern while carrying out the following: - Shake, wiggle, and bend the fuel pump relay control circuit between the PCM terminal 1BI and the fuel pump relay - Shake, wiggle, and bend the power supply circuit between the ignition switch and the fuel pump relay - Lightly tap on the fuel pump relay to simulate road shock - Switch the ignition to off. - Visually inspect the PCM connector and wires as far back as the main loom for damage. - Visually inspect the fuel pump relay connector and wires as far back as the main loom for damage. - Is a concern present?		connector.)
16	VERIFY TROUBLESHOOTING OF DTC P0232:00 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 same 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.
17	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 P0232:00 [MZI 3.7 V6]

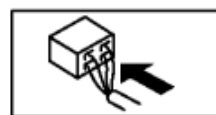
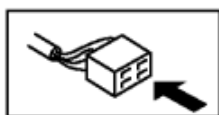
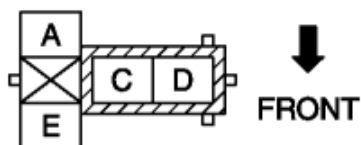
DTC P0232:00	Fuel pump secondary circuit high
DETECTION CONDITION	• The powertrain control module (PCM) monitors the fuel pump monitor (FPM) circuit. This test fails when the PCM detects voltage on the FPM circuit while the fuel pump is commanded OFF. The FPM circuit is wired to a pull-up voltage inside the PCM. The FPM circuit goes high if, with the ignition ON, engine OFF and the fuel pump commanded OFF, the FPM/FP PWR circuit loses its path to ground through the fuel pump. The FPM circuit also goes high if the FPM/FP PWR circuit is short to voltage.
POSSIBLE CAUSE	• Open circuit between the fuel pump and the fuel pump monitor connection to the fuel pump power supply circuit • Intermittent fuel pump ground • Fuel pump electrically open • Fuel pump secondary circuits short to voltage • Fuel pump relay contacts always closed • Open fuel pump monitor circuit between the PCM and the connection to the fuel pump power supply circuit • PCM malfunction

IGNITION SWITCH (IG1)*1/
RELAY BLOCK (IG1 RELAY)*2

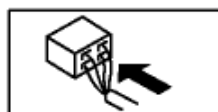
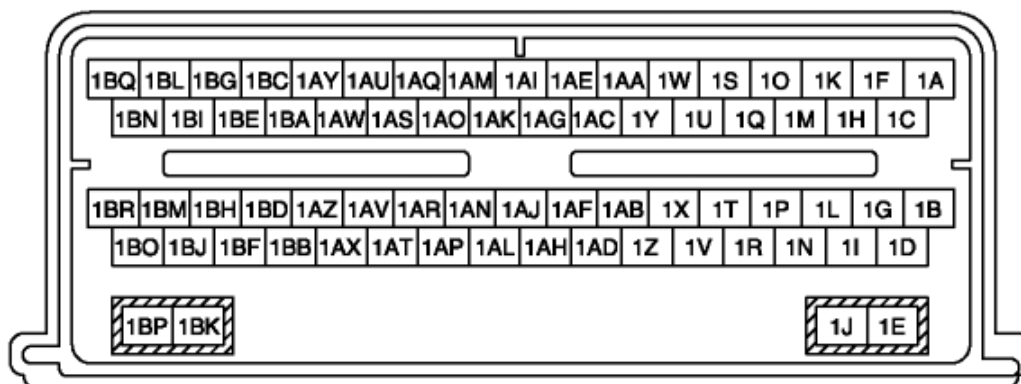


FUEL PUMP RELAY
(MAIN FUSE BLOCK)

FUEL PUMP UNIT
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	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	CHECK PROBLEM IS CONTINUING - Perform the KOEO self-test. (See KOEO/ KOER SELF TEST [MZI 3.7 V6].) - Is the DTC P0232:00 present?	Yes	Go to the next step.
		No	Go to Step 13.
4	INSPECT WHETHER MALFUNCTION IS IN FUEL PUMP MONITOR CIRCUIT OR FUEL PUMP POWER SUPPLY CIRCUIT - Start the engine. - Does the engine start?	Yes	Go to the next step.
		No	Go to Step 10.
5	INSPECT WHETHER MALFUNCTION IS IN FUEL PUMP MONITOR CIRCUIT OR FUEL PUMP RELAY - Switch the ignition to ON (engine off). - Wait for 5 seconds. - The fuel pump is located above the fuel tank. Listen for the sound of the fuel pump operating which can be heard from outside the vehicle. - Is fuel pump off with the ignition ON?	Yes	Go to Step 7.
		No	Go to the next step.
6	CHECK FOR FUEL PUMP RELAY CONTACTS ALWAYS CLOSED - Switch the ignition to off. - Remove the fuel pump relay. - Switch the ignition to ON (engine off). - Is fuel pump off with the ignition ON?	Yes	Replace the fuel pump relay, then go to Step 16.
		No	Repair for short circuit. (The short circuit is between the fuel pump power and fuel pump monitor circuits or in the injector power monitor circuit.) Go to Step 16.

7	CHECK FUEL PUMP MONITOR CIRCUIT FOR OPEN IN HARNESS • Switch the ignition to off. • Remove the fuel pump relay. • Disconnect the PCM connector. • Measure the resistance between PCM terminal 1H (wiring harness-side) and fuel pump relay terminal C. • Is the resistance less than 5 ohm?	Yes	Go to the next step.
		No	Repair for open circuit, then go to Step 16.
8	INSPECT WHETHER MALFUNCTION IS IN FUEL PUMP MONITOR PRIMARY CIRCUIT • Perform the KOEO self-test. (See KOEO/ KOER SELF TEST [MZI 3.7 V6].) • Is the DTC P0231:00 present?	Yes	Go to Step 16.
		No	Go to the next step.
9	CHECK FPM PRIMARY CIRCUIT INSIDE PCM • Switch the ignition to off. • Reconnect all disconnected connectors. • Reinstall the fuel pump relay. • Switch the ignition to ON (engine off). • Access the PCM and monitor the FPM PID. (See ON-BOARD DIAGNOSTIC TEST [MZI 3.7 V6].) • Is the PID state OFF?	Yes	Unable to duplicate or identify the cause of concern at this time. Perform the "INTERMITTENT CONCERN TROUBLESHOOTING" procedure. (See INTERMITTENT CONCERN TROUBLESHOOTING [MZI 3.7 V6] .)
		No	Go to Step 16.
10	CHECK FUEL PUMP POWER SUPPLY CIRCUIT FOR OPEN IN HARNESS • Switch the ignition to off. • Remove the fuel pump relay. • Disconnect the PCM connector. • Measure the resistance between fuel pump terminal C (wiring harness-side) and fuel pump terminal B (wiring harness-side). • Is the resistance less than 5 ohm?	Yes	Go to the next step.
		No	Repair for open circuit, then go to Step 16.
11	CHECK FUEL PUMP GROUND CIRCUIT FOR OPEN IN HARNESS • Switch the ignition to off. • Disconnect the fuel pump unit connector. • Measure the resistance between fuel pump terminal D and body ground. • Is the resistance less than 5 ohm?	Yes	Go to the next step.
		No	Repair for open circuit, then go to Step 16.
12	CHECK INTERNAL RESISTANCE OF FUEL PUMP • Fuel pump unit connector is disconnected. • Measure the resistance between fuel pump	Yes	Go to Step 16. (The fuel pump circuit is normal in the harness and PCM.)

	connector terminal B and D at wiring harness-side connector. Is the resistance less than 10 ohms?	No	Replace the fuel pump unit, then go to Step 16.
13	INSPECT WHETHER MALFUNCTION IS IN FUEL PUMP PRIMARY CIRCUIT OR SECONDARY CIRCUIT - Retrieve the DTCs using the M-MDS. - Is the DTC P0230:00 present?	Yes	Go to Step 15.
		No	Go to the next step.
14	CHECK FUEL PUMP SECONDARY CIRCUITS FOR CONCERN NOTE: - Be aware that DTC P0232:00 could be set if voltage is supplied to the fuel pump power circuit when the PCM expects the fuel pump to be off. The fuel pump prime procedure produces this. - The FPM PID turns ON when a concern is present. - Switch the ignition to ON (engine off). - Access the PCM and monitor the FPM PID. (See ON-BOARD DIAGNOSTIC TEST [MZI 3.7 V6].) - Observe the FPM PID for an indication of a concern while carrying out the following: - Shake, wiggle, and bend the fuel pump power supply circuit between the fuel pump relay and the fuel pump - Shake, wiggle, and bend the fuel pump ground - Shake, wiggle, and bend the PCM terminal 1H and the splice to the fuel pump power supply circuit - Shake, wiggle, and bend the injector power supply monitor circuit between the PCM terminal 1BA and the splice to the fuel pump power supply circuit - Lightly tap on the fuel pump, and fuel pump relay to simulate road shock - Is a concern present?	Yes	Isolate the concern and repair if necessary. Go to Step 16.
		No	Unable to duplicate or identify the cause of concern at this time. Perform the "INTERMITTENT CONCERN TROUBLESHOOTING" procedure. (See INTERMITTENT CONCERN TROUBLESHOOTING [MZI 3.7 V6].)
15	CHECK FUEL PUMP RELAY PRIMARY CIRCUITS NOTE: - The PID indicates YES when a concern is present. - Switch the ignition to ON (engine off). - Wait for 5 seconds. - Access the PCM and monitor the FP PID. (See ON-BOARD DIAGNOSTIC TEST [MZI 3.7 V6].)	Yes	Isolate the concern and repair if necessary. Go to the next step.
		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

	- Observe the FP PID for an indication of a concern while carrying out the following: - Shake, wiggle, and bend the fuel pump relay control circuit between the PCM terminal 1BI and the fuel pump relay - Shake, wiggle, and bend the power supply circuit between the ignition switch and the fuel pump relay - Lightly tap on the fuel pump relay to simulate road shock - Switch the ignition to off. - Visually inspect the PCM connector and wires as far back as the main loom for damage. - Visually inspect the fuel pump relay connector and wires as far back as the main loom for damage. - Is a concern present?		connector.)
16	VERIFY TROUBLESHOOTING OF DTC P0232:00 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 same 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.
17	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.