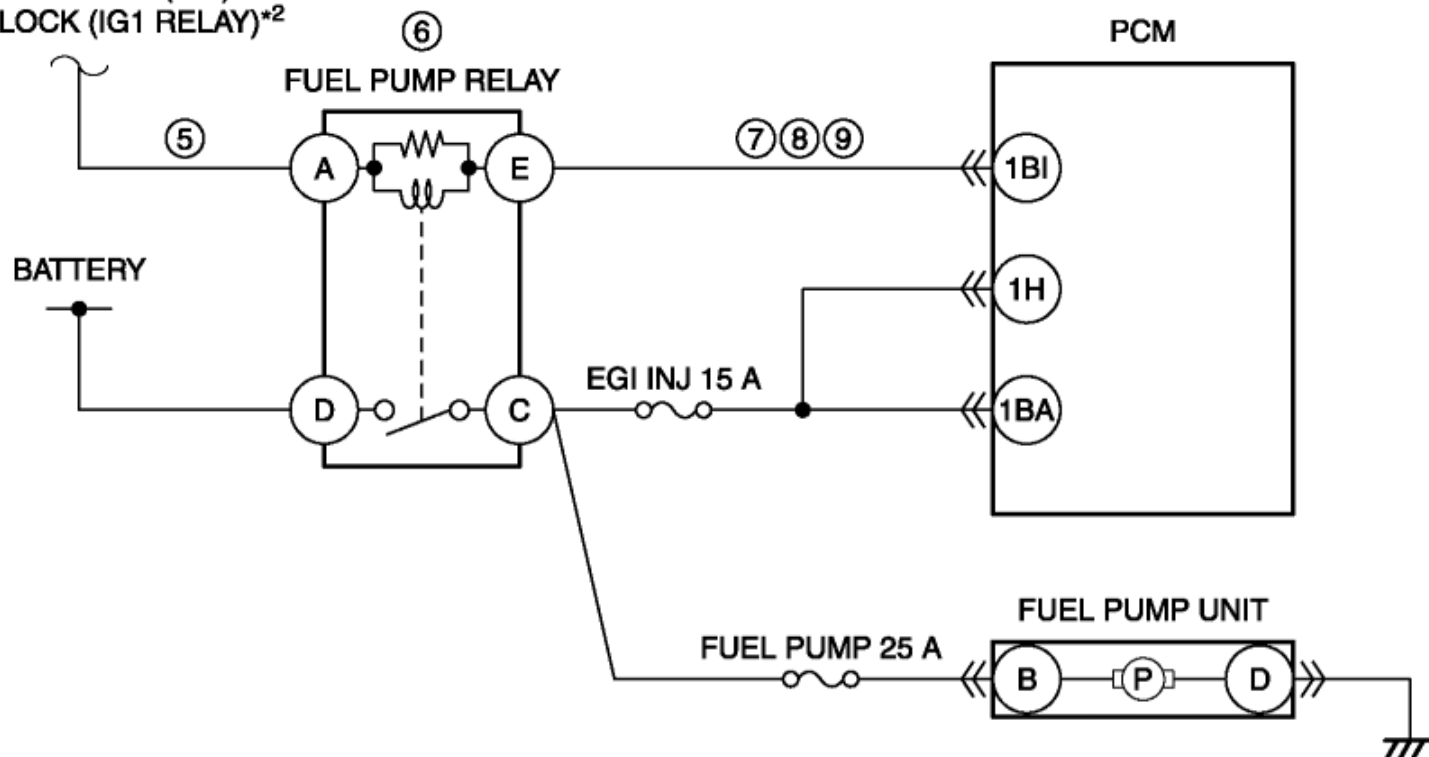


2012 - Mazda6 - Engine

DTC P0230:00 [MZI 3.7 V6]

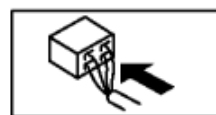
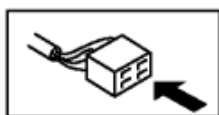
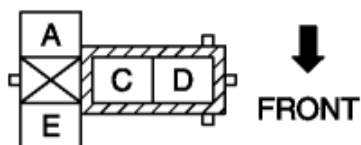
DTC P0230:00	Fuel pump primary circuit
DETECTION CONDITION	• The powertrain control module (PCM) monitors the fuel pump (FP) circuit output from the PCM. The test fails when the FP output is commanded ON (grounded) and excessive current draw is detected on the FP circuit. The test also fails when the FP output is commanded OFF and voltage is not detected on the FP circuit. The PCM expects to detect VPWR voltage coming through the fuel pump relay coil to the FP circuit.
POSSIBLE CAUSE	• Open circuit in wiring harness between ignition switch (IG1)*¹/relay block (IG1 relay)*² and fuel pump relay terminal A • Short to ground in wiring harness between fuel pump relay terminal E and PCM terminal 1BI • Short to power supply in wiring harness between fuel pump relay terminal E and PCM terminal 1BI • Open circuit in wiring harness between fuel pump relay terminal E and PCM terminal 1BI • Damaged fuel pump relay • PCM malfunction

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

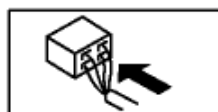
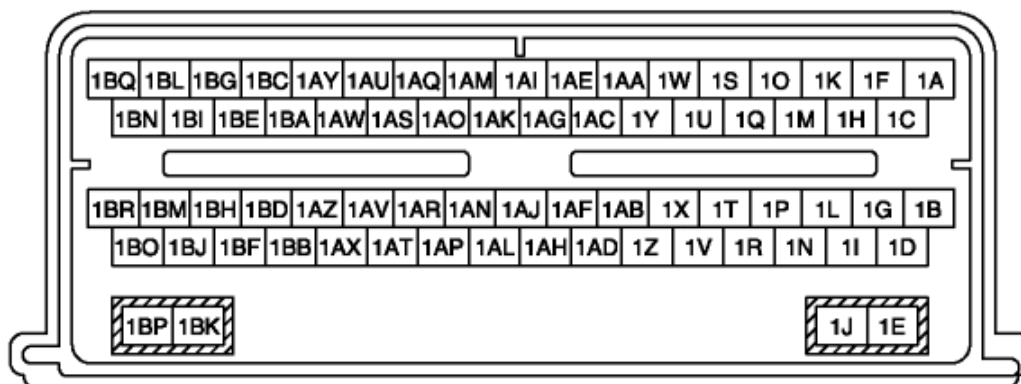


FUEL PUMP RELAY
(MAIN FUSE BLOCK)

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	VERIFY RELATED PENDING CODE OR STORED DTCs - Switch the ignition to off, then to the ON (Engine off). - Verify related PENDING CODE or stored DTCs. - Is the DTC P0685:00 present?	Yes Go to the appropriate DTC troubleshooting procedures. (See DTC P0685:00 [MZI 3.7 V6] .)
		No Go to the next step.
4	VERIFY WHETHER MALFUNCTION IS IN FUEL PUMP RELAY CONTROL CIRCUIT OR ELSEWHERE - Switch the ignition to off, then to the ON (Engine off). - Verify related PENDING CODE or stored DTCs. - Are DTCs P0230:00, P0231:00, or P0232:00 present?	Yes Go to the next step.
		No Go to Step 14.
5	CHECK VPWR VOLTAGE TO FUEL PUMP RELAY - Switch the ignition to ON (engine off). - Measure the voltage between fuel pump relay terminal A (wiring harness-side) and body ground. - Is the voltage greater than 10 V?	Yes Go to the next step.
		No Repair for open circuit, then go to Step 15.
6	CHECK THE FUEL PUMP RELAY - Inspect the fuel pump relay. (See RELAY INSPECTION.) - Is the fuel pump relay normal?	Yes Go to the next step.
		No Replace the fuel pump relay, then go to Step 15.
7	CHECK FUEL PUMP CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY IN HARNESS	Yes Go to the next step.

	- Fuel pump relay is removed. - Switch the ignition to off. - Disconnect the PCM connector. - Switch the ignition to ON (engine off). - Measure the voltage between PCM terminal 1BI (wiring harness-side) and body ground. - Is the voltage less than 1 V?	No Repair for short circuit, then go to Step 15.
8	CHECK FUEL PUMP CONTROL CIRCUIT FOR SHORT TO GROUND IN HARNESS - Fuel pump relay is removed. - PCM connector is disconnected. - Switch the ignition to off. - Measure the resistance between PCM terminal 1BI (wiring harness-side) and body ground. - Is the resistance greater than 10 kilohms?	YesGo to the next step. No Repair for short circuit, then go to Step 15.
9	CHECK FUEL PUMP CONTROL CIRCUIT FOR OPEN IN HARNESS - Fuel pump relay is removed. - PCM connector is disconnected. - Measure the resistance between PCM terminal 1BI (wiring harness-side) and fuel pump relay terminal E (wiring harness-side). - Is the resistance less than 5 ohm?	YesGo to the next step. No Repair for open circuit, then go to Step 15.
10	CHECK FOR FUEL PUMP RELAY CIRCUIT PROBLEM ALSO PRESENT - Perform the KOER self-test. (See KOE0/ KOER SELF TEST [MZI 3.7 V6].) - Are DTCs P0231:00 or P0232:00 present?	YesGo to the next step. No Go to Step 15. (The system is operating normal at this time. The concern may have been caused by a loose or corroded connector.)
11	CHECK FP PRIMARY CIRCUIT INSIDE PCM - Fuel pump relay is removed. - PCM connector is disconnected. - 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 FP PID. (See ON-BOARD DIAGNOSTIC TEST [MZI 3.7 V6].)	YesGo to Step 15. (The system is operating normal at this time. The concern may have been caused by a loose or corroded connector.) No Go to the next step.

	Is the PID state properly? (See PCM INSPECTION [MZI 3.7 V6].)		
12	CHECK FUEL PUMP PRIMARY CIRCUIT INSIDE PCM WHILE CRANKING ENGINE - Access the PCM and monitor the FP PID. (See ON-BOARD DIAGNOSTIC TEST [MZI 3.7 V6].) - While observing the PID, crank the engine - Does the PID display indicate a concern during crank?	Yes Go to Step 15. (The system is operating normal at this time. The concern may have been caused by a loose or corroded connector.)	
		No The fuel pump primary circuit is normal in the harness and PCM. Go to the next step.	
13	VERIFY FUEL PUMP RELAY SECONDARY CIRCUIT LOW CONCERN ALSO PRESENT - Perform the KOEO self-test. (See KOEO/ KOER SELF TEST [MZI 3.7 V6].) - Is DTC P0231:00 present?	Yes Go to the appropriate DTC troubleshooting procedures. (See DTC P0231:00 [MZI 3.7 V6] .)	
		No Go to Step 15. (The system is operating normal at this time. The concern may have been caused by a loose or corroded connector.)	
14	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].) - Observe the FP PID for an indication of a concern while carrying out the following: - Shake, wiggle, and bend the FP circuit between the PCM and the FP relay - Shake, wiggle, and bend the VPWR circuit between the electronic engine control power relay and the FP relay - Lightly tap on the FP 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.	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 connector.)	

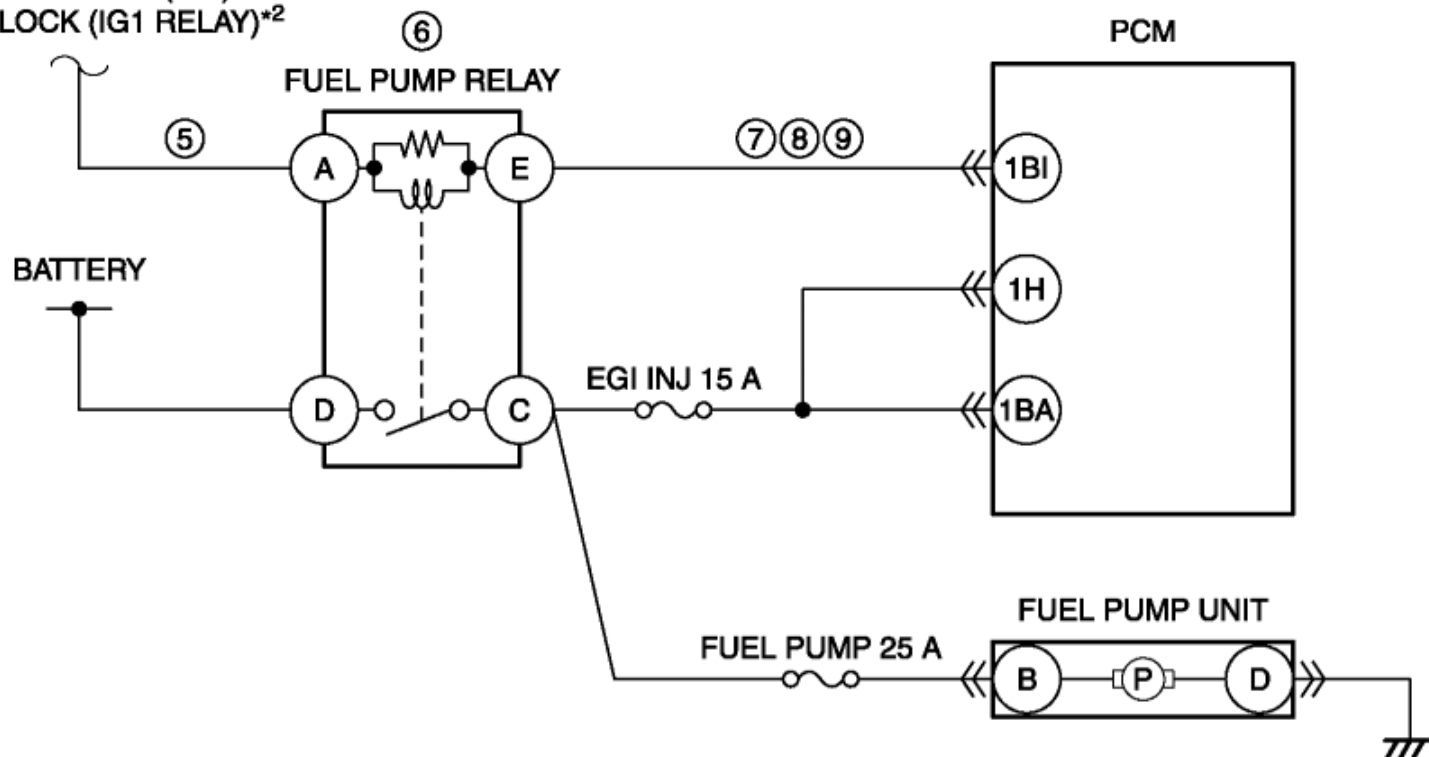
	• Is a concern present?		
15	VERIFY TROUBLESHOOTING OF DTC P0230:00 HAS BEEN COMPLETED • Verify that all disconnected connectors are reconnected. • Switch the ignition to ON (Engine off). • Clear the DTC from the PCM memory using the M-MDS. • Perform the KOEO or KOER self-test. (See KOEO/ KOER SELF TEST [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.	
16	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 P0230:00 [MZI 3.7 V6]

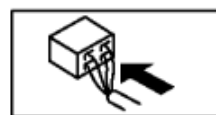
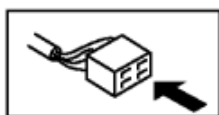
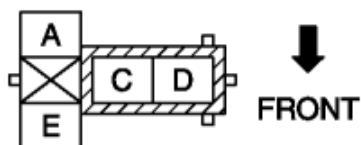
DTC P0230:00	Fuel pump primary circuit
DETECTION CONDITION	• The powertrain control module (PCM) monitors the fuel pump (FP) circuit output from the PCM. The test fails when the FP output is commanded ON (grounded) and excessive current draw is detected on the FP circuit. The test also fails when the FP output is commanded OFF and voltage is not detected on the FP circuit. The PCM expects to detect VPWR voltage coming through the fuel pump relay coil to the FP circuit.
POSSIBLE CAUSE	• Open circuit in wiring harness between ignition switch (IG1)*¹/relay block (IG1 relay)*² and fuel pump relay terminal A • Short to ground in wiring harness between fuel pump relay terminal E and PCM terminal 1BI • Short to power supply in wiring harness between fuel pump relay terminal E and PCM terminal 1BI • Open circuit in wiring harness between fuel pump relay terminal E and PCM terminal 1BI • Damaged fuel pump relay • PCM malfunction

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

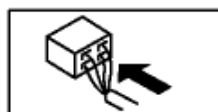
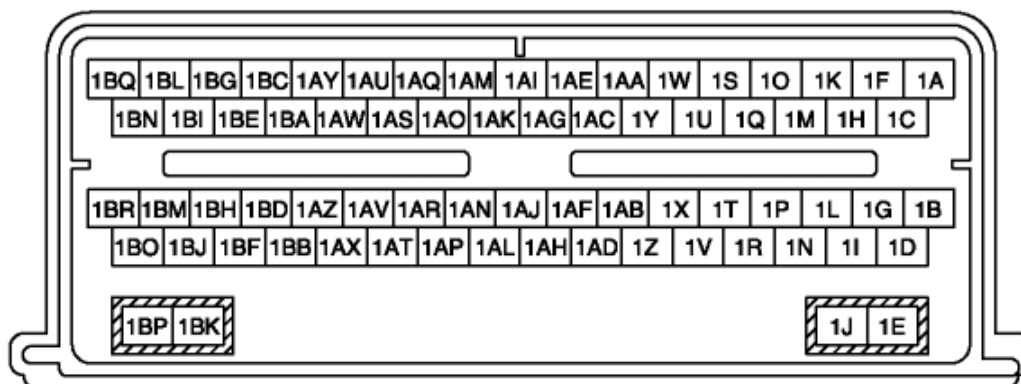


FUEL PUMP RELAY
(MAIN FUSE BLOCK)

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	VERIFY RELATED PENDING CODE OR STORED DTCs - Switch the ignition to off, then to the ON (Engine off). - Verify related PENDING CODE or stored DTCs. - Is the DTC P0685:00 present?	Yes Go to the appropriate DTC troubleshooting procedures. (See DTC P0685:00 [MZI 3.7 V6] .)
		No Go to the next step.
4	VERIFY WHETHER MALFUNCTION IS IN FUEL PUMP RELAY CONTROL CIRCUIT OR ELSEWHERE - Switch the ignition to off, then to the ON (Engine off). - Verify related PENDING CODE or stored DTCs. - Are DTCs P0230:00, P0231:00, or P0232:00 present?	Yes Go to the next step.
		No Go to Step 14.
5	CHECK VPWR VOLTAGE TO FUEL PUMP RELAY - Switch the ignition to ON (engine off). - Measure the voltage between fuel pump relay terminal A (wiring harness-side) and body ground. - Is the voltage greater than 10 V?	Yes Go to the next step.
		No Repair for open circuit, then go to Step 15.
6	CHECK THE FUEL PUMP RELAY - Inspect the fuel pump relay. (See RELAY INSPECTION.) - Is the fuel pump relay normal?	Yes Go to the next step.
		No Replace the fuel pump relay, then go to Step 15.
7	CHECK FUEL PUMP CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY IN HARNESS	Yes Go to the next step.

	- Fuel pump relay is removed. - Switch the ignition to off. - Disconnect the PCM connector. - Switch the ignition to ON (engine off). - Measure the voltage between PCM terminal 1BI (wiring harness-side) and body ground. - Is the voltage less than 1 V?	No Repair for short circuit, then go to Step 15.
8	CHECK FUEL PUMP CONTROL CIRCUIT FOR SHORT TO GROUND IN HARNESS - Fuel pump relay is removed. - PCM connector is disconnected. - Switch the ignition to off. - Measure the resistance between PCM terminal 1BI (wiring harness-side) and body ground. - Is the resistance greater than 10 kilohms?	YesGo to the next step. No Repair for short circuit, then go to Step 15.
9	CHECK FUEL PUMP CONTROL CIRCUIT FOR OPEN IN HARNESS - Fuel pump relay is removed. - PCM connector is disconnected. - Measure the resistance between PCM terminal 1BI (wiring harness-side) and fuel pump relay terminal E (wiring harness-side). - Is the resistance less than 5 ohm?	YesGo to the next step. No Repair for open circuit, then go to Step 15.
10	CHECK FOR FUEL PUMP RELAY CIRCUIT PROBLEM ALSO PRESENT - Perform the KOER self-test. (See KOE0/ KOER SELF TEST [MZI 3.7 V6].) - Are DTCs P0231:00 or P0232:00 present?	YesGo to the next step. No Go to Step 15. (The system is operating normal at this time. The concern may have been caused by a loose or corroded connector.)
11	CHECK FP PRIMARY CIRCUIT INSIDE PCM - Fuel pump relay is removed. - PCM connector is disconnected. - 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 FP PID. (See ON-BOARD DIAGNOSTIC TEST [MZI 3.7 V6].)	YesGo to Step 15. (The system is operating normal at this time. The concern may have been caused by a loose or corroded connector.) No Go to the next step.

	Is the PID state properly? (See PCM INSPECTION [MZI 3.7 V6].)		
12	CHECK FUEL PUMP PRIMARY CIRCUIT INSIDE PCM WHILE CRANKING ENGINE - Access the PCM and monitor the FP PID. (See ON-BOARD DIAGNOSTIC TEST [MZI 3.7 V6].) - While observing the PID, crank the engine - Does the PID display indicate a concern during crank?	Yes Go to Step 15. (The system is operating normal at this time. The concern may have been caused by a loose or corroded connector.)	
		No The fuel pump primary circuit is normal in the harness and PCM. Go to the next step.	
13	VERIFY FUEL PUMP RELAY SECONDARY CIRCUIT LOW CONCERN ALSO PRESENT - Perform the KOEO self-test. (See KOEO/ KOER SELF TEST [MZI 3.7 V6].) - Is DTC P0231:00 present?	Yes Go to the appropriate DTC troubleshooting procedures. (See DTC P0231:00 [MZI 3.7 V6] .)	
		No Go to Step 15. (The system is operating normal at this time. The concern may have been caused by a loose or corroded connector.)	
14	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].) - Observe the FP PID for an indication of a concern while carrying out the following: - Shake, wiggle, and bend the FP circuit between the PCM and the FP relay - Shake, wiggle, and bend the VPWR circuit between the electronic engine control power relay and the FP relay - Lightly tap on the FP 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.	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 connector.)	

	• Is a concern present?		
15	VERIFY TROUBLESHOOTING OF DTC P0230:00 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.	
16	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.	