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1996 MAZDA MX-6 OEM Service and Repair Workshop Manual

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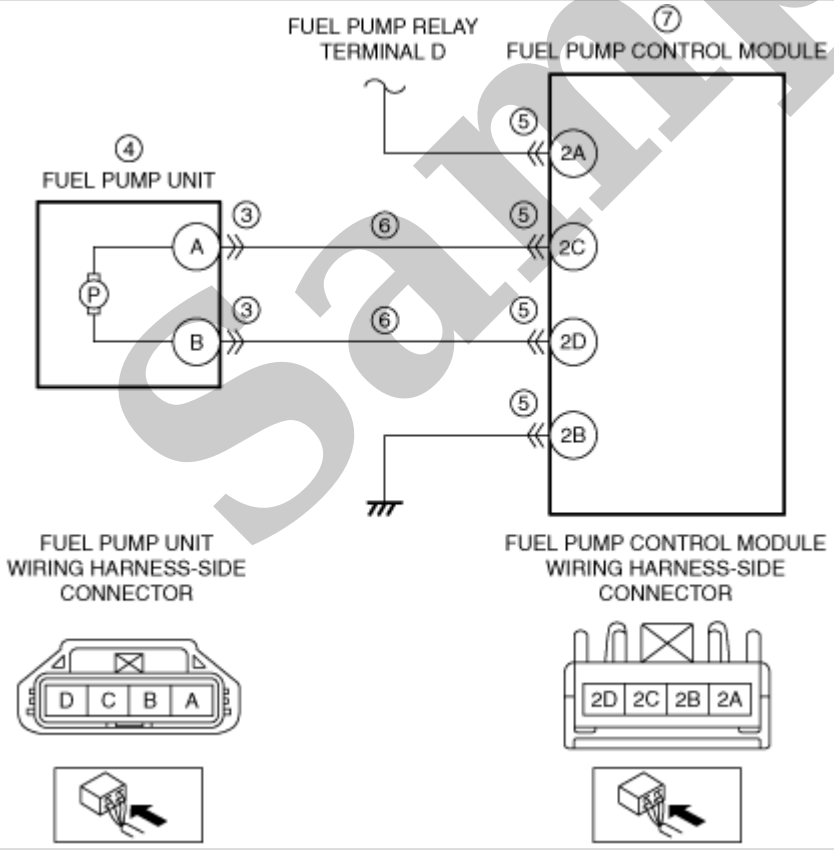
DTC P0629:00 [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]

SM2896667

id0102s914870

DTC P0629:00	Fuel pump control module circuit high input
DETECTION CONDITION	• The PCM detects over-current during the fuel pump control module control. Diagnostic support note • This is a continuous monitor (CCM). • The check engine light does not illuminate. • FREEZE FRAME DATA is not available. • Snapshot data is available. • DTC is stored in the PCM memory.
FAIL-SAFE FUNCTION	• Stops fuel pump control
POSSIBLE CAUSE	• Fuel pump unit connector or terminals malfunction • Fuel pump unit malfunction • Fuel pump control module connector or terminals malfunction • Short to power supply in wiring harness between the following terminals: — Fuel pump unit terminal A–Fuel pump control module terminal 2C — Fuel pump unit terminal B–Fuel pump control module terminal 2D • Fuel pump control module malfunction • PCM malfunction
	

Diagnostic Procedure

DTC P2228:00 [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]

SM2896668

id0102s915320

DTC P2228:00	BARO sensor circuit low input
DETECTION CONDITION	• The PCM monitors input voltage from the BARO sensor. If the input voltage is low for 5 s, the PCM determines that the BARO sensor circuit has a malfunction. **Diagnostic support note** • This is a continuous monitor (CCM). • The check engine light illuminates if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA/Snapshot data is available. • DTC is stored in the PCM memory.
FAIL-SAFE FUNCTION	• Fixes the barometric pressure for the engine control at 101.32 kPa {1.0332 kgf/cm^2, 14.695 psi}.
POSSIBLE CAUSE	• BARO sensor (built-into PCM) malfunction • PCM malfunction
SYSTEM WIRING DIAGRAM	• Not applicable

Diagnostic Procedure

STEP	INSPECTION	RESULTS	ACTION
1	**RECORD VEHICLE STATUS AT TIME OF DTC DETECTION TO UTILIZE WITH REPEATABILITY VERIFICATION** **Note** **• Recording can be facilitated using the screen capture function of the PC.** • Record the FREEZE FRAME DATA/snapshot data on the repair order.	–	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 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.
3	**INSPECT BARO SENSOR** • Inspect the BARO sensor. (See BAROMETRIC PRESSURE (BARO) SENSOR INSPECTION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].) • Is there any malfunction?	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].)
		No	Go to the next step.
4	**VERIFY DTC TROUBLESHOOTING COMPLETED** • Clear the DTC from the PCM memory using the M-MDS. (See CLEARING DTC [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) • Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) • Is the same Pending DTC present?	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].)
		No	Go to the next step.

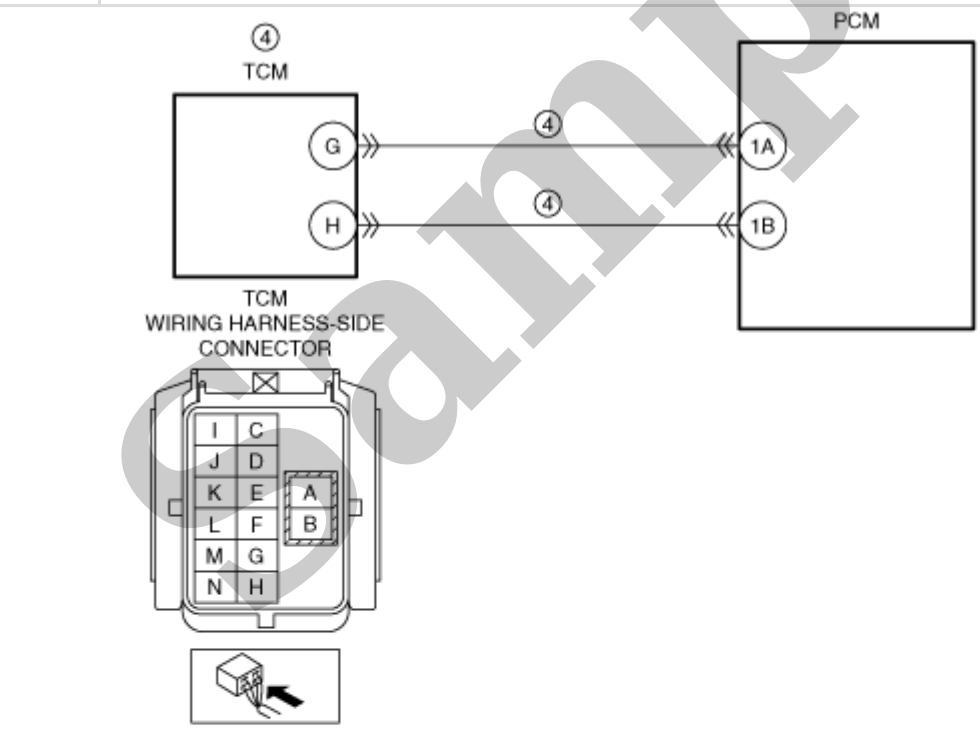
STEP	INSPECTION	RESULTS	ACTION
5	VERIFY AFTER REPAIR PROCEDURE • Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].)
		No	DTC troubleshooting completed.

DTC U0074:00 [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]

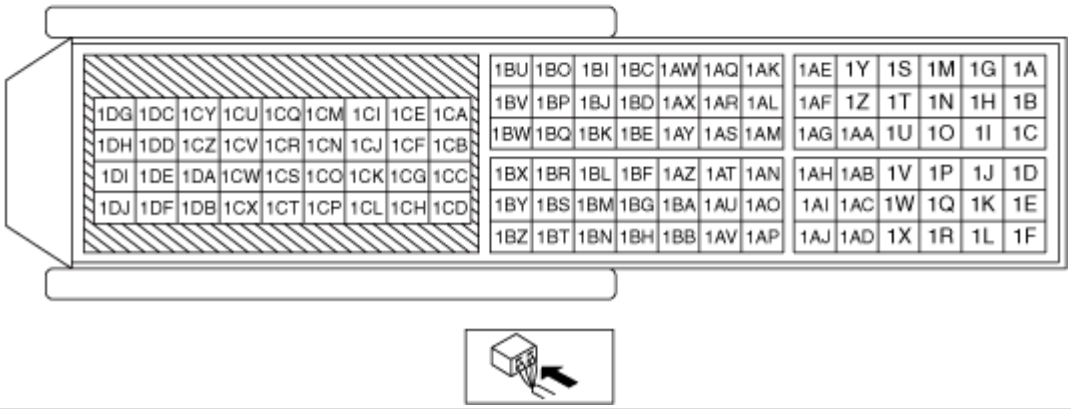
SM2896716

id0102s933960

DTC U0074:00	CAN system communication error (local CAN between PCM and TCM)
DETECTION CONDITION	• Malfunction in CAN bus communication line. Diagnostic support note • This is a continuous monitor (other). • The check engine light does not illuminate. • FREEZE FRAME DATA is not available. • Snapshot data is available. • DTC is stored in the PCM memory.
FAIL-SAFE FUNCTION	• Not applicable
POSSIBLE CAUSE	• CAN communication line malfunction between PCM and TCM (local CAN between PCM and TCM) — TCM terminal G—PCM terminal 1A — TCM terminal H—PCM terminal 1B • TCM DTC is stored. • PCM malfunction • TCM malfunction



PCM WIRING HARNESS-SIDE CONNECTOR



DTC P0524:00 [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]

SM2896717

id0102s933970

DTC P0524:00	Engine oil pressure too low
DETECTION CONDITION	• After 10 s have elapsed since engine start and 3 s have elapsed since the actual oil pressure falls below the specified value. *1 *1: With the conditions met, the engine oil warning light turns on. **Diagnostic support note** • This is a continuous monitor (other). • The check engine light 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 is not available. • Snapshot data is available. • DTC is stored in the PCM memory.
FAIL-SAFE FUNCTION	• Restricts the upper limit of the engine speed.
POSSIBLE CAUSE	• Engine oil leakage • Improper engine oil level • Engine oil temperature sensor/engine oil pressure sensor connector or terminals malfunction • Engine oil solenoid valve connector or terminals malfunction • PCM connector or terminals malfunction • Short to ground in wiring harness between the following terminals: — Engine oil temperature sensor/engine oil pressure sensor terminal A—PCM terminal 1D — Engine oil temperature sensor/engine oil pressure sensor terminal D—PCM terminal 1AS — Engine oil solenoid valve terminal B—PCM terminal 1CK • Engine oil pressure sensor malfunction • Engine oil solenoid valve connector malfunction • Oil pump malfunction • PCM malfunction

STEP	INSPECTION	RESULTS	ACTION
8	**INSPECT ENGINE OIL TEMPERATURE SENSOR/ENGINE OIL PRESSURE SENSOR OR ENGINE OIL SOLENOID VALVE CIRCUIT FOR SHORT TO GROUND** • Verify that the engine oil temperature sensor/engine oil pressure sensor, engine oil solenoid valve and PCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: — Engine oil temperature sensor/engine oil pressure sensor terminal A — Engine oil temperature sensor/engine oil pressure sensor terminal D — Engine oil solenoid valve terminal B • Is there continuity?	Yes	Refer to the wiring diagram and verify whether or not there is a common connector between the following terminals: • Engine oil temperature sensor/engine oil pressure sensor terminal A—PCM terminal 1D • Engine oil temperature sensor/engine oil pressure sensor terminal D—PCM terminal 1AS • Engine oil solenoid valve terminal B—PCM terminal 1CK **If there is a common connector:** — Determine the malfunctioning part by inspecting the common connector and the terminal for corrosion, damage, or pin disconnection, and the common wiring harness for a short to ground. — Repair or replace the malfunctioning part. **If there is no common connector:** — Repair or replace the wiring harness which has a short to ground. Go to Step 11.
		No	Go to the next step.
9	**INSPECT ENGINE OIL PRESSURE SENSOR** • Inspect the engine oil pressure sensor. (See ENGINE OIL PRESSURE SENSOR INSPECTION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].) • Is there any malfunction?	Yes	Replace the engine oil pressure sensor, then go to the next step. (See ENGINE OIL TEMPERATURE SENSOR/ENGINE OIL PRESSURE SENSOR REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].)
		No	Go to the next step.
10	**INSPECT ENGINE OIL SOLENOID VALVE** • Inspect the engine oil solenoid valve. (See ENGINE OIL SOLENOID VALVE INSPECTION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].) • Is there any malfunction?	Yes	Replace the engine oil solenoid valve, then go to the next step. (See ENGINE OIL SOLENOID VALVE REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].)
		No	Replace the oil pump, then go to the next step. (See OIL PUMP REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].)
11	**VERIFY DTC TROUBLESHOOTING COMPLETED** • Always reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See CLEARING DTC [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) • Start the engine. • Increase and keep the engine speed at 2,500 rpm for 5 s. • Perform the DTC Reading Procedure. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) • Is the same Pending DTC present?	Yes	Repeat the inspection from Step 1. • If the malfunction recurs, replace the PCM. (See PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].) 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 [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].)
		No	DTC troubleshooting completed.

7. Drive the vehicle for 30 min at a speed of 50 km/h {31 mph} or more (to increase temperature in fuel tank and generate evaporative gas).

Note

• If driving the vehicle for 30 min at a speed of 50 km/h {31 mph} or more is not feasible, the vehicle can be driven for a continuous 15 min or more with the engine coolant temperature at 80 °C {176 °F} or more.

8. Stop the engine.
9. Leave the vehicle for 1 h or more.

PID Item/Simulation Item Used In Diagnosis

PID/DATA monitor item table

Item	Definition	Unit	Condition/Specification
FTP	Fuel tank pressure input from fuel tank	Pa {KPA}, mBar {BAR}, psi, in H20	• Ignition switched ON (engine off): Approx. −23 Pa {−2.3 kgf/m ^{2}, −0.0033 psi} • Idle (after warm up): −282− −46 Pa {−28.7− −4.7 kgf/m ^{2}, −0.0409− −0.0067 psi} • Racing (Engine speed 2,000 rpm): −1.47− −0.869 kPa {−0.0149− −0.0089 kgf/cm ^{2}, −0.213− −0.127 psi} • Racing (Engine speed 4,000 rpm): −1.69− −1.07 kPa {−0.0172− −0.0110 kgf/cm ^{2}, −0.245− −0.156 psi}
	Fuel tank pressure sensor voltage	V	• Ignition switched ON (engine off): Approx. 2.6 V • Idle (after warm up): 2.2−2.62 V • Racing (Engine speed 2,000 rpm): 1.9−1.91 V • Racing (Engine speed 4,000 rpm): 1.73−1.76 V

Simulation item table

Item	Applicable component	Operation	Operation condition	
			Engine condition	Other condition
EVAPCP	Purge solenoid valve	Changes % and forcibly drives/stops purge solenoid valve.	• Under the following conditions: — Ignition is switched ON (engine off) — Idle (no load)	Not applicable

Troubleshooting Diagnostic Procedure

Intention of troubleshooting procedure

- Step 1
  - — Perform a PCM input signal part-related inspection.
- Step 2–4
  - — Verify if there is restriction in atmosphere release passage.
- Step 5
  - — Perform the inspection for a purge solenoid valve stuck open.
- Step 6–7
  - — Verify that the primary malfunction is resolved and there are no other malfunctions.

STEP	INSPECTION	RESULTS	ACTION
1	**PURPOSE: DETERMINE INTEGRITY OF FUEL TANK PRESSURE SENSOR** • Inspect the fuel tank pressure sensor. (See FUEL TANK PRESSURE SENSOR INSPECTION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].) • Is there any malfunction?	Yes	Replace the charcoal canister, then go to Step 6. (See CHARCOAL CANISTER REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].)
		No	Go to the next step.
2	**PURPOSE: DETERMINE INTEGRITY OF CV SOLENOID VALVE** • Inspect the CV solenoid valve. (See CANISTER VENT (CV) SOLENOID VALVE INSPECTION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].) • Is there any malfunction?	Yes	Replace the CV solenoid valve, then go to Step 6. (See CANISTER VENT (CV) SOLENOID VALVE REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].)
		No	Go to the next step.
3	**PURPOSE: VERIFY IF THERE IS RESTRICTION BETWEEN CHARCOAL CANISTER AND ATMOSPHERE RELEASE PASSAGE** • Verify the following passage hoses, pipe connection condition, and that there is no restriction. — Between charcoal canister and CV solenoid valve — Between CV solenoid valve and atmosphere release • Is there any poor connection or restriction?	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 6.
		No	Go to the next step.
4	**PURPOSE: DETERMINE INTEGRITY OF CHARCOAL CANISTER** • Inspect the charcoal canister. (See CHARCOAL CANISTER INSPECTION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].) • Is there any malfunction?	Yes	Replace the charcoal canister, then go to Step 6. (See CHARCOAL CANISTER REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].)
		No	Go to the next step.
5	**PURPOSE: DETERMINE INTEGRITY OF PURGE SOLENOID VALVE** • Inspect the purge solenoid valve. (See PURGE SOLENOID VALVE INSPECTION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].) • Is there any malfunction?	Yes	Replace the purge solenoid valve, then go to the next step. (See POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].)
		No	Go to the next step.

STEP	INSPECTION	RESULTS	ACTION
4	**INSPECT PCM CONNECTOR CONDITION** • Switch the ignition off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction?	Yes	Repair or replace the connector and/or terminals, then go to the next step.
		No	Perform the PCM configuration (using read/write function) again. (See PCM CONFIGURATION (USING READ/WRITE FUNCTION) [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].) • If the malfunction recurs, perform the PCM configuration (using as-built data). (See PCM CONFIGURATION (USING AS-BUILT DATA) [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].) Go to the next step.
5	**VERIFY DTC TROUBLESHOOTING COMPLETED** • Always reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See CLEARING DTC [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) • Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) • Is the same Pending DTC present?	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].)
		No	Go to the next step.
6	**VERIFY AFTER REPAIR PROCEDURE** • Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].)
		No	DTC troubleshooting completed.