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1993 MAZDA 323 (BG) Hatchback OEM Service and Repair Workshop Manual

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1. Switch the ignition ON and leave for 5 s or more.
2. Clear the DTC from the PCM memory using the M-MDS. (See CLEARING DTC [PCM (SKYACTIV-G 2.5T)].)
3. After switching the ignition off, switch the ignition back ON and leave for 5 s or more.
4. Using the M-MDS, display DTCs and verify that DTC U0151:00 is not displayed. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5T)].)

PID Item/Simulation Item Used In Diagnosis

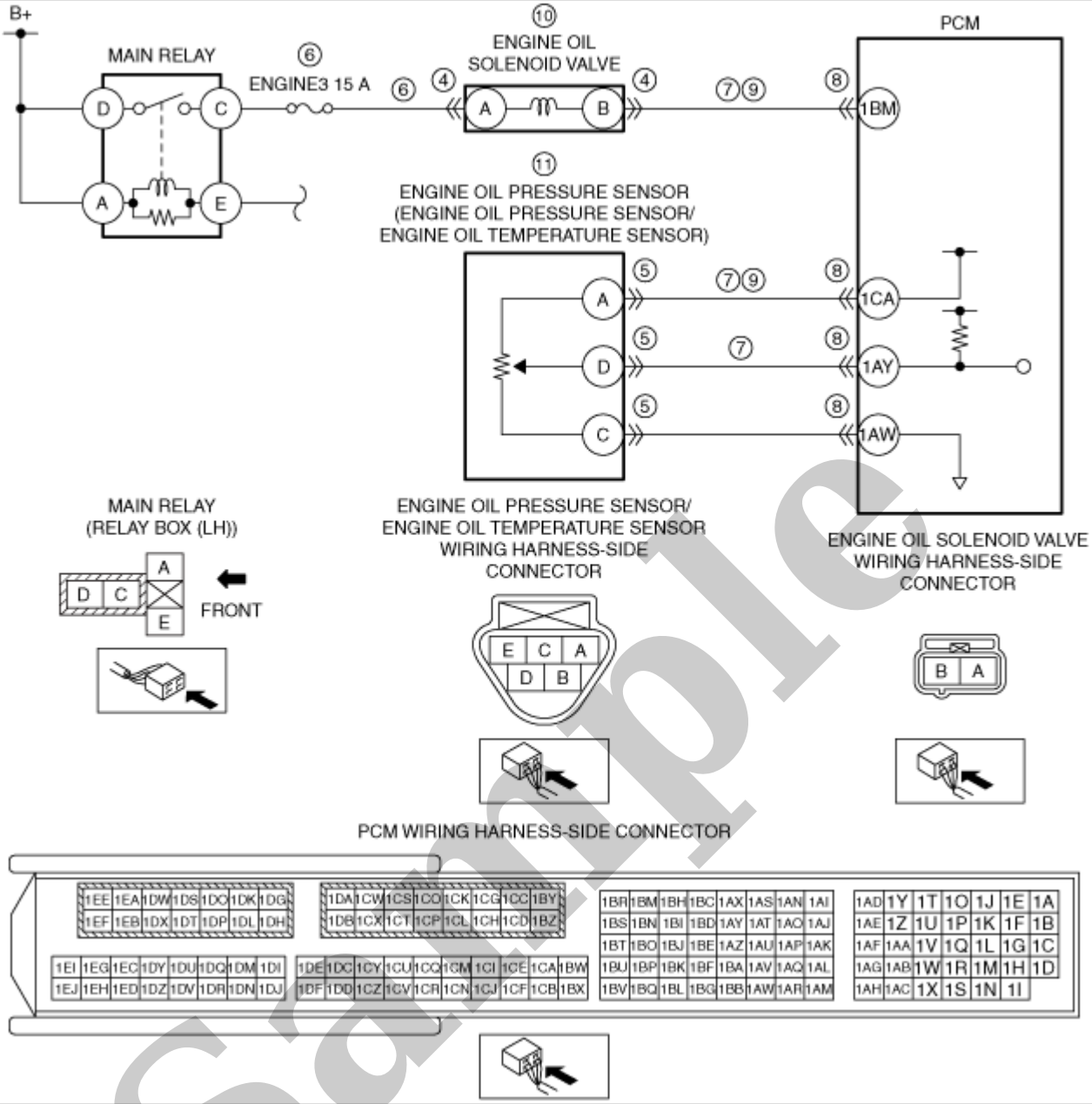
• Not applicable

Function Inspection Using M-MDS

STEP	INSPECTION	RESULTS	ACTION
1	PURPOSE: 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 snapshot data on the repair order.	–	Go to the next step.
2	PURPOSE: 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	PURPOSE: VERIFY IF OPERATION IS NORMAL AFTER VEHICLE COLLISION • Ask customer about vehicle collision experience. • Has the vehicle in for servicing been involved in a collision in which the air bag is deployed?	Yes	Explain to the customer that the DTC is recorded as a result of a vehicle collision. Go to Troubleshooting Diagnostic Procedure to perform the procedure from Step 1.
		No	Go to the next step.
4	PURPOSE: VERIFY IF DIAGNOSTIC RESULT IS AFFECTED BY DTC RELATED TO SAS CONTROL MODULE • Switch the ignition off, then ON (engine off). • Perform the SAS control module DTC inspection using the M-MDS. (See DTC INSPECTION [SAS CONTROL MODULE (STANDARD DEPLOYMENT CONTROL SYSTEM - MEXICO SPEC.)].) (See DTC INSPECTION [SAS CONTROL MODULE (TWO-STEP DEPLOYMENT CONTROL SYSTEM - US/CANADA/ISRAEL SPEC.)].) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SAS CONTROL MODULE (STANDARD DEPLOYMENT CONTROL SYSTEM - MEXICO SPEC.)].) (See DTC TABLE [SAS CONTROL MODULE (TWO-STEP DEPLOYMENT CONTROL SYSTEM - US/CANADA/ISRAEL SPEC.)].) Go to Troubleshooting Diagnostic Procedure to perform the procedure from Step 1.
		No	Go to Troubleshooting Diagnostic Procedure to perform the procedure from Step 1.

Troubleshooting Diagnostic Procedure

DTC P06DD:00	Engine oil pressure switch control circuit high input



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 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.

STEP	INSPECTION	RESULTS	ACTION
7	**INSPECT ENGINE OIL SOLENOID VALVE CIRCUIT AND ENGINE OIL PRESSURE SENSOR CIRCUIT FOR SHORT TO GROUND** • Verify that the engine oil solenoid valve and engine oil pressure sensor/engine oil temperature sensor connectors are disconnected. • Switch the ignition off. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: — Engine oil solenoid valve terminal B — Engine oil pressure sensor/engine oil temperature sensor terminal A — Engine oil pressure sensor/engine oil temperature sensor terminal D • Is there continuity?	Yes	Disconnect the PCM connector and inspect the wiring harness for short to ground. • If the short to ground circuit could be detected in the wiring harness: — Refer to the wiring diagram and verify whether or not there is a common connector between the following terminals: • Engine oil solenoid valve terminal B–PCM terminal 1BM • Engine oil pressure sensor/engine oil temperature sensor terminal A–PCM terminal 1CA • Engine oil pressure sensor/engine oil temperature sensor terminal D–PCM terminal 1AY **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. • If the short to ground circuit could not be detected in the wiring harness: — Replace the PCM (short to ground in the PCM internal circuit). (See PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].) Go to Step 12.
		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 connector and/or terminals, then go to Step 12.
		No	Go to the next step.

DTC P06DE:00 [PCM (SKYACTIV-G 2.5T)]

SM2896481

id0102s821550

DTC P06DE:00	Engine oil pressure switch control circuit low input
DETECTION CONDITION	• When the following condition is met, the actual engine oil pressure is 800 kPa {8.16 kgf/cm^2, 116.0 psi} or more for 5 s. MONITORING CONDITIONS — Engine oil temperature sensor: Normal — Engine oil pressure sensor: Normal — OCV: Normal — The following DTCs are not detected: • Malfunction due to no engine oil pressure: P0524:00 Diagnostic support note • This is an intermittent 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	• Engine oil leakage • Improper engine oil level • Engine oil solenoid valve connector or terminals malfunction • Engine oil pressure sensor/engine oil temperature sensor connector or terminals malfunction • Short to ground or open circuit in engine oil solenoid valve power supply circuit — Short to ground in wiring harness between ENGINE3 15 A fuse and engine oil solenoid valve terminal A — ENGINE3 15 A fuse malfunction — Open circuit in wiring harness between main relay terminal C and engine oil solenoid valve terminal A • Short to ground in wiring harness between the following terminals: — Engine oil solenoid valve terminal B—PCM terminal 1BM — Engine oil pressure sensor/engine oil temperature sensor terminal A—PCM terminal 1CA — Engine oil pressure sensor/engine oil temperature sensor terminal D—PCM terminal 1AY • PCM connector or terminals malfunction • Open circuit in wiring harness between the following terminals: — Engine oil solenoid valve terminal B—PCM terminal 1BM — Engine oil pressure sensor/engine oil temperature sensor terminal A—PCM terminal 1CA • Engine oil solenoid valve malfunction • Engine oil pressure sensor malfunction • Oil strainer clogging • Oil pump malfunction • PCM malfunction

STEP	INSPECTION	RESULTS	ACTION
8	INSPECT ENGINE OIL SOLENOID VALVE POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT • Verify that the engine oil solenoid valve and engine oil pressure sensor/engine oil temperature sensor connectors are disconnected. • Switch the ignition ON (engine off). **Note** **• Another DTC may be stored by the PCM detecting an open circuit.** • Measure the voltage at the engine oil solenoid valve terminal A (wiring harness-side). • Is the voltage B+?	Yes	Go to the next step.
		No	Inspect the ENGINE3 15 A fuse. • If the fuse is blown: — Refer to the wiring diagram and verify whether or not there is a common connector between ENGINE3 15 A fuse and engine oil solenoid valve terminal A. **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. • Replace the fuse. • If the fuse is damaged: — Replace the fuse. • If the fuse is normal: — Refer to the wiring diagram and verify whether or not there is a common connector between main relay terminal C and engine oil solenoid valve terminal A. **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 an open circuit. • Repair or replace the malfunctioning part. **If there is no common connector:** • Repair or replace the wiring harness which has an open circuit. Go to Step 15.

STEP	INSPECTION	RESULTS	ACTION
15	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 2.5T)].) • Start the engine and warm it up completely. **Caution** **• While performing this step, always operate the vehicle in a safe and lawful manner.** **• When the M-MDS is used to observe monitor system status while driving, be sure to have another technician with you, or record the data in the M-MDS using the PID/DATA MONITOR AND RECORD capturing function and inspect later.** • Drive the vehicle under the snapshot data condition. • Perform the DTC Reading Procedure. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5T)].) • 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 2.5T].) 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 [PCM (SKYACTIV-G 2.5T)].) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [PCM (SKYACTIV-G 2.5T)].)
		No	DTC troubleshooting completed.

STEP	INSPECTION	RESULTS	ACTION
3	**VERIFY DTC FOR MODULE COMMUNICATION** • Switch the ignition off, then ON (engine off). • Perform the DTC Reading Procedure. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5T)].) • Is the DTC U0155:00 also present?	Yes	Go to the applicable DTC inspection. (See DTC U0073:00, U0101:00, U0104:00, U0121:00, U0131:00, U0140:00, U0151:00, U0155:00, U0214:00, U023A:00 [PCM (SKYACTIV-G 2.5T)].)
		No	Go to the next step.
4	**CONFIRM INSTRUMENT CLUSTER DTC** • Perform the instrument cluster DTC inspection using the M-MDS. (See DTC INSPECTION [INSTRUMENT CLUSTER].) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [INSTRUMENT CLUSTER].)
		No	Go to the next step.
5	**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 Step 9.
		No	Go to the next step.
6	**INSPECT INSTRUMENT CLUSTER CONNECTOR CONDITION** • Disconnect the instrument cluster 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 Step 9.
		No	Go to the next step.
7	**INSPECT INSTALLATION OF INSTRUMENT CLUSTER** • Inspect installation of instrument cluster. • Is the instrument cluster installed securely?	Yes	Go to the next step.
		No	Retighten the instrument cluster, then go to Step 9. (See INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
8	**INSPECT INSTRUMENT CLUSTER** • Inspect the instrument cluster. (See INSTRUMENT CLUSTER INSPECTION.) • Is there any malfunction?	Yes	Replace the instrument cluster, then go to the next step. (See INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.
9	**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 2.5T)].) • Switch the ignition ON (engine off) and wait for 15 s or more. • Switch the ignition off. • Wait until the main relay is off (approx. 1 min). • Perform the KOER self test. (See KOEO/KOER SELF TEST [PCM (SKYACTIV-G 2.5T)].) • 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 2.5T].) Go to the next step.
		No	Go to the next step.
10	**VERIFY AFTER REPAIR PROCEDURE** • Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [PCM (SKYACTIV-G 2.5T)].) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [PCM (SKYACTIV-G 2.5T)].)
		No	DTC troubleshooting completed.

STEP	INSPECTION	RESULTS	ACTION
6	**INSPECT WASTEGATE VALVE ACTUATOR** • Switch the ignition off. • Inspect the wastegate valve actuator. (See WASTEGATE VALVE ACTUATOR INSPECTION [SKYACTIV-G 2.5T].) • Is there any malfunction?	Yes	Replace the dynamic pressure turbo (DPT), then go to the next step. (See DYNAMIC PRESSURE TURBO REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].)
		No	Go to the next step.
7	**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 2.5T)].) • Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [PCM (SKYACTIV-G 2.5T)].) • 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 2.5T].) Go to the next step.
		No	Go to the next step.
8	**VERIFY AFTER REPAIR PROCEDURE** • Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [PCM (SKYACTIV-G 2.5T)].) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [PCM (SKYACTIV-G 2.5T)].)
		No	DTC troubleshooting completed.

DESCRIPTION	P0442:00 • Evaporative gas leakage (leakage amount: low) P0455:00 • Evaporative gas leakage (leakage amount: large) P0456:00 • Evaporative gas leakage (leakage amount: extremely low)
POSSIBLE CAUSE	• Missing or loose fuel filler cap • Fuel filler cap malfunction • Fuel tank pressure sensor malfunction • CV solenoid valve malfunction • Purge solenoid valve malfunction • Evaporative gas passage malfunction — Improper connection of evaporative hose — Evaporative hose damaged • Charcoal canister malfunction • Catch tank malfunction • Fuel pump unit loose • Fuel tank malfunction • PCM malfunction

System Wiring Diagram

• Not applicable

Function Explanation (DTC Detection Outline)

• The pressure change of the evaporative gas passage is measured using barometric pressure and intake manifold vacuum to detect evaporative gas leakage. The PCM introduces barometric pressure or intake manifold vacuum into the evaporative gas passage by opening/closing the purge solenoid valve and CV solenoid valve, and measures the pressure change using the fuel tank pressure sensor.

P0455:00

• The PCM closes the CV solenoid valve while the vehicle is being driven, and seals the fuel tank. The PCM introduces intake manifold vacuum into the fuel tank and measures the pressure change of the fuel tank using the fuel tank pressure sensor by opening the purge solenoid valve after sealing the fuel tank. If the pressure of the fuel tank does not reach the target value after the specified time has elapsed since the pressure was measured, the PCM determines that there is an evaporative gas leakage. If the PCM determines that refueling is not performed before the engine starts according to the result of the refuel determination, DTC P0455:00 is stored (if the PCM determines that refueling is performed, DTC P0457:00 is stored).

• If the fuel tank level increases after the engine starts, the PCM determines that refueling was performed by comparing the fuel tank level before one drive cycle with the fuel tank level after engine start.

P0442:00

• The PCM closes the purge solenoid valve after diagnosing (normal) DTC P0455:00, and seals the fuel tank. The pressure change of the fuel tank is measured by the fuel tank pressure sensor after the fuel tank is sealed. The PCM determines a temporary malfunction if the pressure change is the specified value or more after the specified time has elapsed since the pressure was measured. If the CV solenoid valve is open after determining a temporary malfunction and the pressure change (increase) of the fuel tank is the specified value or less, the PCM determines that there is an evaporative gas leakage and a DTC is stored.