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2000 MAZDA B Series / Bravo Dual Cab OEM Service and Repair Workshop Manual

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DTC P0107:00 [PCM (SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION))]

SM2896939

id0102t370110

DTC P0107:00	MAP sensor circuit low input
DETECTION CONDITION	• The PCM monitors the input voltage from the MAP sensor. If the input voltage at the PCM terminal 1X is below 0.08 V for 5 s, the PCM determines that the MAP 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	• Estimates MAP using MAF sensor and engine speed. • Restricts the upper limit of the engine speed. • Inhibits the evaporative purge control.
POSSIBLE CAUSE	• MAP sensor/IAT sensor No.2 connector or terminals malfunction • PCM connector or terminals malfunction • Short to ground in wiring harness between the following terminals: — MAP sensor/IAT sensor No.2 terminal C−PCM terminal 1J — MAP sensor/IAT sensor No.2 terminal D−PCM terminal 1X • Open circuit in wiring harness between MAP sensor/IAT sensor No.2 terminal C and PCM terminal 1J • MAP sensor signal circuit and ground circuit are shorted to each other • MAP sensor malfunction • PCM malfunction

STEP	INSPECTION	RESULTS	ACTION
6	**INSPECT MAP SENSOR CIRCUIT FOR OPEN CIRCUIT** • Verify that the MAP sensor/IAT sensor No.2 connector is disconnected. • Inspect for continuity between the following terminals (wiring harness-side): — MAP sensor/IAT sensor No.2 terminal C—PCM terminal 1J • Is there continuity?	Yes	Go to the next step.
		No	Refer to the wiring diagram and verify whether or not there is a common connector between the following terminals: • MAP sensor/IAT sensor No.2 terminal C—PCM terminal 1J **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 9.
7	**INSPECT MAP SENSOR SIGNAL CIRCUIT AND GROUND CIRCUIT FOR SHORT TO EACH OTHER** • Verify that the MAP sensor/IAT sensor No.2 and PCM connectors are disconnected. • Inspect for continuity between MAP sensor/IAT sensor No.2 terminals D and A (wiring harness-side). • Is there continuity?	Yes	Refer to the wiring diagram and verify whether or not there is a common connector between the following terminals: • MAP sensor/IAT sensor No.2 terminal D—PCM terminal 1X • MAP sensor/IAT sensor No.2 terminal A—PCM terminal 1BH **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 each other. • Repair or replace the malfunctioning part. **If there is no common connector:** • Repair or replace the wiring harness which has a short to each other. Go to Step 9.
		No	Go to the next step.
8	**INSPECT MAP SENSOR** • Reconnect all disconnected connectors. • Inspect the MAP sensor. (See MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR INSPECTION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].) • Is there any malfunction?	Yes	Replace the MAP sensor/IAT sensor No.2, then go to the next step. (See MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR/INTAKE AIR TEMPERATURE (IAT) SENSOR NO.2 REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].)
		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 2.5 (WITHOUT CYLINDER DEACTIVATION))].) • Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [PCM (SKYACTIV-G 2.5 (WITHOUT 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 (WITHOUT CYLINDER DEACTIVATION)].) 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 2.5 (WITHOUT CYLINDER DEACTIVATION))].) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [PCM (SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION))].)
		No	DTC troubleshooting completed.

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 MAP SENSOR/IAT SENSOR No.2 CONNECTOR CONDITION** • Switch the ignition off. • Disconnect the MAP sensor/IAT sensor No.2 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.
4	**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 9.
		No	Go to the next step.
5	**INSPECT MAP SENSOR CIRCUIT FOR SHORT TO POWER SUPPLY** • Verify that the MAP sensor/IAT sensor No.2 connector is disconnected. • Switch the ignition ON (engine off). • Measure the voltage at the following terminals (wiring harness-side): **Note** **• Another DTC may be stored by the PCM detecting an open circuit.** — MAP sensor/IAT sensor No.2 terminal C — MAP sensor/IAT sensor No.2 terminal D • Is the voltage 0 V?	Yes	Go to the next step.
		No	Refer to the wiring diagram and verify whether or not there is a common connector between the following terminals: • MAP sensor/IAT sensor No.2 terminal C–PCM terminal 1J • MAP sensor/IAT sensor No.2 terminal D–PCM terminal 1X **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 power supply. • Repair or replace the malfunctioning part. **If there is no common connector:** • Repair or replace the wiring harness which has a short to power supply. Go to Step 9.

OBD-II ON-BOARD SYSTEM READINESS TEST [PCM (SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION))]

SM2897000

id0102t380060

• This shows the OBD-II systems operating status. If any monitor function is incomplete, the M-MDS will identify which monitor functio has not been completed. Misfires, Fuel System and Comprehensive Components (CCM) are continuous monitoring-type functions. The catalyst, evaporation system and oxygen sensor will be monitored under drive cycles. The OBD-II diagnostic system is initialized by performing the DTC cancellation procedure or disconnecting the negative battery terminal.

ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION))]

SM2897003

id0102t380100

DTC Reading Procedure

1.Connect the M-MDS to the DLC-2.

2.After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

(1)Select "Self Test".

(2)Select "Modules".

(3)Select "PCM".

3.Then, select the "Retrieve CMDTCs" and perform procedures according to the directions on the M-MDS screen.

4.Verify the DTC according to the directions on the M-MDS screen.

• If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.

5.After completion of repairs, clear all DTCs stored in the PCM, while referring to "AFTER REPAIR PROCEDURE".

Pending Trouble Code Access Procedure

1.Connect the M-MDS to the DLC-2.

2.After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

(1)Select "Self Test".

(2)Select "Modules".

(3)Select "PCM".

3.Then, select the "Retrieve CMDTCs" and perform procedures according to the directions on the M-MDS screen.

4.Retrieve the pending trouble codes according to the directions on the M-MDS screen.

Snapshot data item	Unit	Definition	Data read/use method	Corresponding PID data monitor item
AAT	°C, °F	Ambient air temperature	–	AAT
ALT_CUR_DSD	A	Generator current desired	–	–
ALTT_V	V	Generator output voltage	–	ALTT V
APP1	%	Accelerator pedal position No.1	–	APP1
APP2	%	Accelerator pedal position No.2	–	APP2
BARO	KPa {MPA}, mBar {BAR}, psi, in H20	Barometric pressure	–	BARO
BATT_RES	mΩ	Battery inferred internal resistance	–	BATT_RES
CATT11_DSD	°C, °F	Estimated catalytic converter temperature	–	CATT11_DSD
CLR_CNT	–	Number of warm-up cycle after DTC cleared	–	–
CLR_DIST	km, ft, mi	Mileage after DTC cleared	–	CLR_DIST
DTC	–	DTC causing snapshot data record	–	–
ECT	°C, °F	Engine coolant temperature	–	ECT
ECT1_SUP	No/Yes	Engine coolant temperature No.1 support	–	–
ECT2	°C, °F	Engine coolant temperature No.2	–	–
ECT2_SUP	No/Yes	Engine coolant temperature No.2 support	–	–
EG_RUN_TIME	hh:mm:ss	Time from engine start	–	–
EQ_RAT11_DSD	–	Target equivalence ratio (lambda)	–	EQ_RAT11_DSD
ETC_DSD	%	Target throttle valve position	–	ETC_DSD
EVAPCP	%	Purge solenoid valve controlled value	–	–
FLI	%	Fuel level in fuel tank	–	FLI
FRP#1	KPa {MPA}, mBar {BAR}, psi, in H20	Fuel pressure (absolute)	–	FUEL_PRES
FRP_A	KPa {MPA}, mBar {BAR}, psi, in H20	Actual fuel distributor pressure	–	FRP_A
FRP_A_CMD	KPa {MPA}, mBar {BAR}, psi, in H20	Target fuel distributor pressure	–	FRP_A_CMD
FRP_A_CMD_S	No/Yes	Presence/non-presence of target fuel distributor pressure	–	FRP_A_CMD_S
FRP_A_S	No/Yes	Presence/non-presence of actual fuel distributor	–	FRP_A_S
FRT_A	°C, °F	Fuel distributor temperature	–	FRT_A
FT_A_S	No/Yes	Presence/non-presence of fuel distributor temperature	–	FT_A_S
FTP	Pa {KPA}, mBar {BAR}, psi, in H20	Fuel tank pressure	–	FTP
FUEL_PRES	KPa {MPA}, mBar {BAR}, psi, in H20	Fuel pressure	–	FUEL_PRES

Diagnostic Monitoring Test Results Access Procedure

1.Connect the M-MDS to the DLC-2.

2.After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

(1)Select “Powertrain”.

(2)Select “OBD Test Modes”.

(3)Select “Mode 6 On-Board Test Results”.

3.Verify the diagnostic monitoring test result according to the directions on the M-MDS screen.

Active Command Modes Procedure

1.Connect the M-MDS to the DLC-2.

2.After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

(1)Select “DataLogger”.

(2)Select “Modules”.

(3)Select “PCM”.

3.Select the simulation items from the PID table.

4.Using the active command modes function, inspect the operation of each part.

• If the operation of output parts cannot be verified after the active command mode inspection is performed, this could indicate the possibility of an open or short circuit, sticking, or operation malfunction in the output parts.

STEP	INSPECTION	RESULTS	ACTION
3	**INSPECT ECT SENSOR No.1 CONNECTOR CONDITION** • Switch the ignition off. • Disconnect the ECT sensor No.1 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 8.
		No	Go to the next step.
4	**DETERMINE IF ECT SENSOR No.1 OR WIRING HARNESS MALFUNCTION** • Verify that the ECT sensor No.1 connector is disconnected. • Access the ECT PID using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION))].) • Connect a jumper wire between ECT sensor No.1 terminals A and B (wiring harness-side). • Verify the ECT PID value. • Is the voltage 4.94 V or below?	Yes	Replace the ECT sensor No.1, then go to Step 8. (See ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].)
		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 8.
		No	Go to the next step.
6	**INSPECT ECT SENSOR No.1 SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY** • Verify that the ECT sensor No.1 and PCM 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 ECT sensor No.1 terminal A (wiring harness-side). • Is the voltage 0 V?	Yes	Go to the next step.
		No	Refer to the wiring diagram and verify whether or not there is a common connector between ECT sensor No.1 terminal A and PCM terminal 1AH. **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 power supply. • Repair or replace the malfunctioning part. **If there is no common connector:** • Repair or replace the wiring harness which has a short to power supply. Go to Step 8.
7	**INSPECT ECT SENSOR No.1 CIRCUIT FOR OPEN CIRCUIT** • Verify that the ECT sensor No.1 and PCM connectors are disconnected. • Switch the ignition off. • Inspect for continuity between the following terminals (wiring harness-side): — ECT sensor No.1 terminal A–PCM terminal 1AH — ECT sensor No.1 terminal B–PCM terminal 1AB • Is there continuity?	Yes	Go to the next step.
		No	Refer to the wiring diagram and verify whether or not there is a common connector between the following terminals: • ECT sensor No.1 terminal A–PCM terminal 1AH • ECT sensor No.1 terminal B–PCM terminal 1AB **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 the next step.

Caution

• Verify the malfunction symptom according to not only the PID value but also the symptom troubleshooting.

Related PIDs

Item	Definition	Unit	Condition/Specification
TP1	Throttle valve position No.1	%	• Accelerator pedal released: Approx. 22% • Accelerator pedal fully depressed: Approx. 92%
	TP sensor No.1 voltage	V	• Accelerator pedal released: Approx. 1.11 V • Accelerator pedal fully depressed: Approx. 4.59 V

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 THROTTLE BODY CONNECTOR CONDITION • Switch the ignition off. • Disconnect the throttle body 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 8.
		No	Go to the next step.
4	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 8.
		No	Go to the next step.