Your Ultimate Source for OEM Repair Manuals

FactoryManuals.net is a great resource for anyone who wants to save money on repairs by doing their own work. The manuals provide detailed instructions and diagrams that make it easy to understand how to fix a vehicle.

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

Go to manual page

Caution

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

Related PIDs

Item	Definition	Unit	Condition/Specification
ECT	Engine coolant temperature input from ECT sensor No.1	°C, °F	• Displays ECT
	ECT sensor No.1 voltage	V	• ECT is 20 °C {68 °F}: Approx. 3.10 V • ECT is 40 °C {104 °F}: Approx. 2.16 V • ECT is 60 °C {140 °F}: Approx. 1.40 V • ECT is 80 °C {176 °F}: Approx. 0.87 V • ECT is 100 °C {212 °F}: Approx. 0.54 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	VERIFY ENGINE CONDITION • Verify the engine condition. • Is the engine overheating?	Yes	Perform the symptom troubleshooting "NO.17 COOLING SYSTEM CONCERNS-OVERHEATING". (See NO.17 COOLING SYSTEM CONCERNS-OVERHEATING [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].)
		No	Go to the next step.
4	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 9.
		No	Go to the next step.

DTC P0123:00 [PCM (SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION))]

SM2896944

id0102t370190

DTC P0123:00	TP sensor No.1 circuit high input
DETECTION CONDITION	• If the PCM detects that the TP sensor No.1 voltage at the PCM terminal 1O is above 4.9 V, the PCM determines that the TP sensor No.1 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	• Restricts the upper limit of the engine speed. • PCM restricts engine torque.
POSSIBLE CAUSE	• Throttle body connector or terminals malfunction • PCM connector or terminals malfunction • TP sensor No.1 malfunction • Short to power supply in wiring harness between throttle body terminal A and PCM terminal 1O • Open circuit in wiring harness between the following terminals: — Throttle body terminal B—PCM terminal 1L — Throttle body terminal A—PCM terminal 1O — Throttle body terminal D—PCM terminal 1R • PCM malfunction

STEP	INSPECTION	RESULTS	ACTION
8	**INSPECT TP SENSOR No.1 SIGNAL CIRCUIT FOR OPEN CIRCUIT** • Verify that the throttle body connector is disconnected. • Switch the ignition off. • Disconnect the PCM connector. • Inspect for continuity between throttle body terminal A (wiring harness-side) and PCM terminal 1O (wiring harness-side). • Is there continuity?	Yes	Refer to the wiring diagram and verify whether or not there is a common connector between throttle body terminal A and PCM terminal 1O. **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 10.
		No	Refer to the wiring diagram and verify whether or not there is a common connector between throttle body terminal A and PCM terminal 1O. **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 10.
9	**INSPECT TP SENSOR No.1 CIRCUIT FOR OPEN CIRCUIT** • Verify that the throttle body connector is disconnected. • Switch the ignition off. • Disconnect the PCM connector. • Inspect for continuity between the following terminals (wiring harness-side): — Throttle body terminal B—PCM terminal 1L — Throttle body terminal D—PCM terminal 1R • Is there continuity?	Yes	Replace the throttle body, then go to the next step. (See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].)
		No	Refer to the wiring diagram and verify whether or not there is a common connector between the following terminals: • Throttle body terminal B—PCM terminal 1L • Throttle body terminal D—PCM terminal 1R **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.
10	**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.
11	**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.

11.Perform the DTC inspection again and verify that no DTCs are stored. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION))].)

12.Switch the ignition off.

13.Disconnect the M-MDS to the DLC-2.

KOEO/KOER SELF TEST [PCM (SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION))]

SM2897005

id0102t380120

KOEO Self Test

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 "KOEO On Demand Self Test" 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".

KOER Self Test

Note

• If a KOER self test is performed with the engine coolant temperature at less than 60 °C {140 °F}, a DTC for the variable valve timing may be detected even if the variable valve timing is normal.
• For vehicles with the variable valve timing control, execute a KOER self test after the variable valve timing learning is finished.

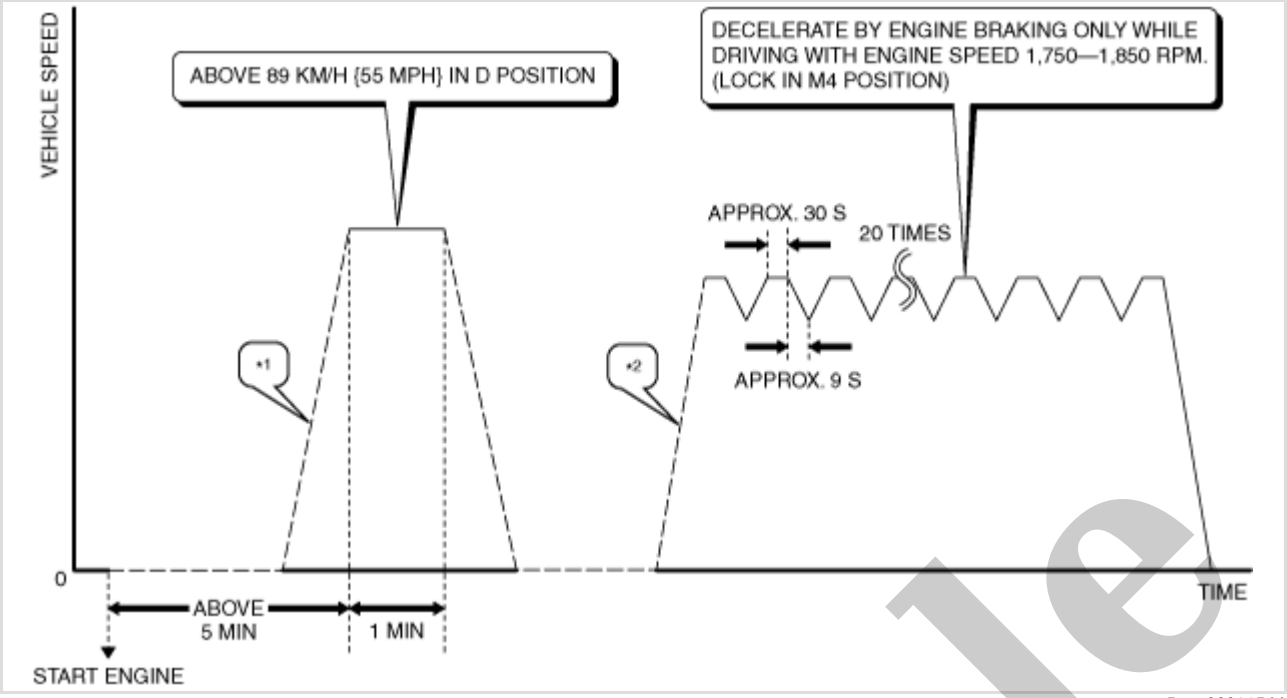
— A KOER self test cannot be executed if the variable timing valve learning in not finished.
— The variable valve timing learning is cleared if the PCM backup power supply is interrupted (including battery removal), or after reprogramming.
— To perform variable valve timing learning, the engine speed needs to be increased momentarily to approx. 2,000 rpm.

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

2.Start engine and run it at idle.

3.After the vehicle is identified, access the ECT PID using the M-MDS.

3.Drive the vehicle as shown in the graph.



ac5uuw00011566

*1:Accelerate to 89 km/h {55 mph} within 20 s in D position.

*2:Accelerate to 45 km/h {28 mph} within 15 s in D position.

4.To verify the completion of the drive mode, stop the vehicle and display the following menu from the M-MDS initial screen. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION))].)

(1)Select "Tool Box".

(2)Select "Powertrain".

(3)Select "OBD Test Modes".

(4)Select "Mode 1 Powertrain Data".

- If the drive mode has been completed, ***_EVAL of the PID ***SUP item indicating Yes changes from No to Yes.
- If not completed, switch the ignition off then repeat from Step 3.

5.Access the DIAGNOSTIC MONITORING TEST RESULTS menu of GENERIC OBD-II FUNCTIONS to verify the monitor results. (See DIAGNOSTIC MONITORING TEST RESULTS [PCM (SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION))].)

- If detected values are not within specification, repair has not been completed.

6.Verify that no DTCs are displayed.

Mode 06 (EVAP System Repair Verification Drive Mode)

Note

- If "EVAP System Repair Verification Drive Mode" cannot be performed (it is impossible to drive the vehicle under this Drive Mode condition), perform the evaporative system test procedure as an alternative. (See ENGINE CONTROL SYSTEM

(3)Select “OBD Test Modes”.

(4)Select “Mode 1 Powertrain Data”.

- If the drive mode has been completed, ***_EVAL of the PID ***SUP item indicating Yes changes from No to Yes.
- If not completed, switch the ignition off, then perform the applicable specific Drive Mode for any monitoring item that was not in the detection condition.

7.Access the DIAGNOSTIC MONITORING TEST RESULTS to verify the monitor results. (See CLEARING DTC [PCM (SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION))].)

- If detected values are not within specification, repair has not been completed.

Item	Definition	Unit	Condition/Specification
O2S11	A/F sensor current	μA	• Idle (after warm up): Approx. −39 μA • Deceleration fuel cut (accelerator pedal released from engine speed of 4,000 rpm or more): Approx. 3.84 mA

Function Inspection Using M-MDS

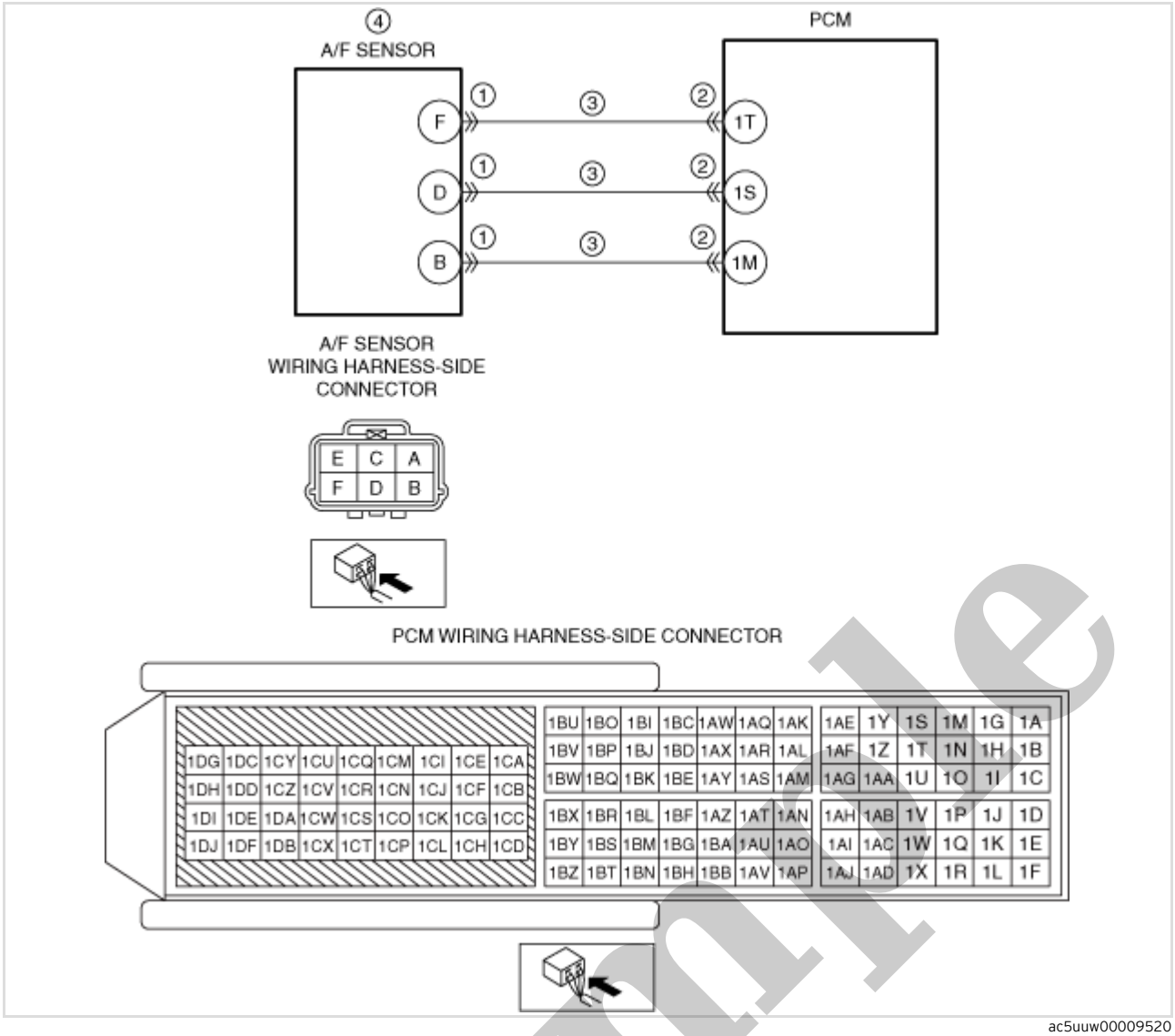
STEP	INSPECTION	RESULTS	ACTION
1	PURPOSE: VERIFY RELATED REPAIR INFORMATION AVAILABILITY • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to the available repair information. • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	PURPOSE: RECORD FREEZE FRAME DATA/SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS 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 and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) on the repair order.	–	Go to Troubleshooting Diagnostic Procedure to perform the procedure from Step 1.

Troubleshooting Diagnostic Procedure

Intention of troubleshooting procedure

- Step 1−2
  - — Perform an inspection of the A/F sensor and PCM-related connectors.
- Step 3
  - — Inspect the wiring harness between the A/F sensor and PCM for deterioration.
- Step 4
  - — Perform a unit inspection of the A/F sensor.
- Step 5−6
  - — Verify that the primary malfunction is resolved and there are no other malfunctions.

STEP	INSPECTION	RESULTS	ACTION
1	PURPOSE: INSPECT A/F SENSOR CONNECTOR CONDITION • Switch the ignition off. • Disconnect the A/F sensor 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 5.
		No	Go to the next step.
2	PURPOSE: 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 5.
		No	Go to the next step.



ac5uuw00009520

Function Explanation (DTC Detection Outline)

• If any of the following conditions is detected, the PCM determines a short to ground between the A/F sensor terminal and PCM terminal and stores a DTC.

— Voltage of A/F sensor terminal F is less than specified value
— Voltage of A/F sensor terminal D is less than specified value
— Voltage of A/F sensor terminal B is less than specified value

Repeatability Verification Procedure

1. Start the engine and leave it idling for 1 min.

PID Item/Simulation Item Used In Diagnosis

PID/DATA monitor item table