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1995 MAZDA 323 C (BH) OEM Service and Repair Workshop Manual

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PID/DATA monitor item table

Item	Definition	Unit	Condition/Specification
MAF	Mass air flow input from MAF sensor	g/Sec	• Displays MAF
	MAF sensor voltage	V	• Ignition switched ON (engine off) (MAF: 0.59 g/s {0.078 lb/min}): Approx. 0.72 V • Idle (after warm up) (MAF: 2.17 g/s {0.287 lb/min}): Approx. 0.97 V • Racing (engine speed is 2,000 rpm) (MAF: 4.73 g/s {0.626 lb/min}): Approx. 1.26 V
MAP	Manifold absolute pressure input from MAP sensor	KPa {MPA}, mBar {BAR}, psi, in H20	• Displays MAP
MAP_V	MAP sensor voltage	V	• Ignition switched ON (engine off) (no load) (MAP: 102 kPa {1.04 kgf/cm ^{2}, 14.8 psi}): Approx. 1.75 V • Idle (after warm up) (no load) (MAP: 30 kPa {0.31 kgf/cm ^{2}, 4.4 psi}): Approx. 0.68 V • Racing (engine speed is 2,000 rpm) (no load) (MAP: 27 kPa {0.28 kgf/cm ^{2}, 3.9 psi}): Approx. 0.61 V

Function Inspection Using M-MDS

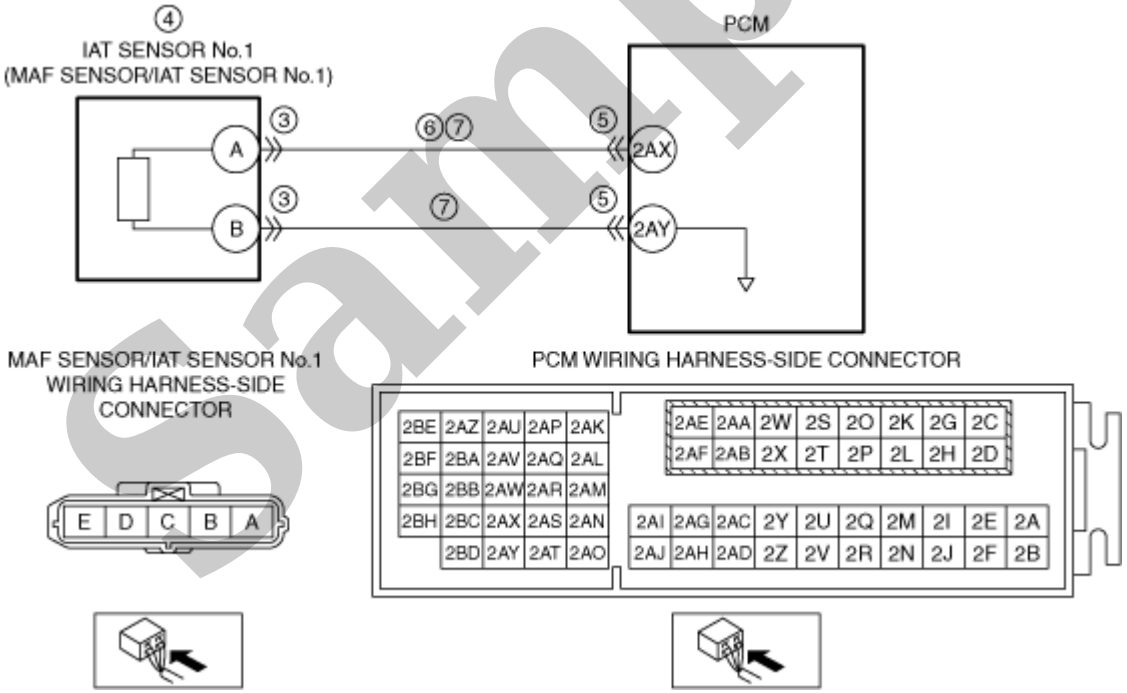
STEP	INSPECTION		ACTION
1	PURPOSE: RECORD VEHICLE STATUS AT TIME OF DTC DETECTION TO UTILIZE WITH REPEATABILITY VERIFICATION Note • Recording can be facilitated using the screen capture function of the PC. • Record the FREEZE FRAME DATA/snapshot data on the repair order.	–	Go to the next step.
2	PURPOSE: 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: IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA • Is the DTC P0402:00 on FREEZE FRAME DATA?	Yes	Go to the next step.
		No	Go to the troubleshooting procedure for DTC on FREEZE FRAME DATA. (See DTC TABLE [PCM (SKYACTIV-G 2.5T)].)
4	PURPOSE: VERIFY IF DIAGNOSTIC RESULT IS AFFECTED BY OTHER RELATED DTCs OCCURRING • Switch the ignition off, then ON (engine off). • Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5T)].) • Is the other PENDING CODE/DTC also present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [PCM (SKYACTIV-G 2.5T)].)
		No	Go to the next step.

DTC P0112:00 [PCM (SKYACTIV-G 2.5T)]

SM2896536

id0102s870140

DTC P0112:00	IAT sensor No.1 circuit low input
DETECTION CONDITION	• The PCM monitors the IAT sensor No.1 signal. If the PCM detects that the IAT sensor No.1 voltage at the PCM terminal 2AX is below 0.2 V for 5 s, the PCM determines that the IAT 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	• Fixes the intake air temperature (for engine control) at 20 °C {68 °F}. • Inhibits the fuel cut control during shift change.
POSSIBLE CAUSE	• MAF sensor/IAT sensor No.1 connector or terminals malfunction • IAT sensor No.1 malfunction • PCM connector or terminals malfunction • Short to ground in wiring harness between MAF sensor/IAT sensor No.1 terminal A and PCM terminal 2AX • IAT sensor No.1 signal circuit and ground circuit are shorted to each other • PCM malfunction



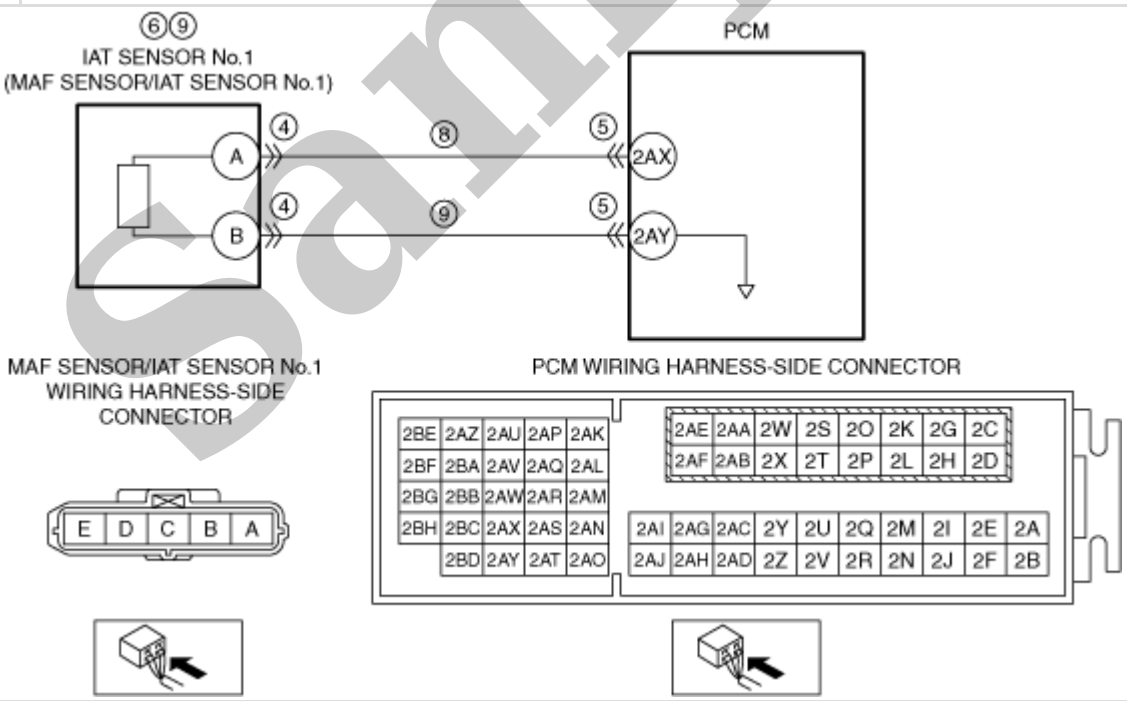
Diagnostic Procedure

DTC P0113:00 [PCM (SKYACTIV-G 2.5T)]

SM2896537

id0102s870150

DTC P0113:00	IAT sensor No.1 circuit high input
DETECTION CONDITION	• The PCM monitors the IAT sensor No.1 signal. If the PCM detects that the IAT sensor No.1 voltage at the PCM terminal 2AX is above 4.62 V for 5 s, the PCM determines that the IAT 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	• Fixes the intake air temperature (for engine control) at 20 °C {68 °F}. • Inhibits the fuel cut control during shift change.
POSSIBLE CAUSE	• MAF sensor/IAT sensor No.1 connector or terminals malfunction • PCM connector or terminals malfunction • IAT sensor No.1 malfunction • Short to power supply in wiring harness between MAF sensor/IAT sensor No.1 terminal A and PCM terminal 2AX • Open circuit in wiring harness between the following terminals: — MAF sensor/IAT sensor No.1 terminal A–PCM terminal 2AX — MAF sensor/IAT sensor No.1 terminal B–PCM terminal 2AY • PCM malfunction



Caution

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

Related PIDs

STEP	INSPECTION	RESULTS	ACTION
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 2.5T)].) • 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.
11	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
5	**DETERMINE IF ECT SENSOR OR WIRING HARNESS MALFUNCTION** • Reconnect all disconnected connectors. • Access the ECT PID using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5T)].) • Verify the ECT PID value when disconnecting the ECT sensor connector. • Does the ECT PID value change?	Yes	Replace the ECT sensor, then go to Step 9. (See ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].)
		No	Go to the next step.
6	**INSPECT ECT SENSOR SIGNAL CIRCUIT FOR SHORT TO GROUND** • Verify that the ECT sensor connector is disconnected. • Switch the ignition off. • Inspect for continuity between ECT sensor terminal A (wiring harness-side) and body ground. • 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 ECT sensor terminal A and PCM terminal 1BI. **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 9.
		No	Go to the next step.
7	**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.
8	**INSPECT ECT SENSOR SIGNAL CIRCUIT AND GROUND CIRCUIT FOR SHORT TO EACH OTHER** • Verify that the ECT sensor and PCM connectors are disconnected. • Inspect for continuity between ECT sensor terminals A and B (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: • ECT sensor terminal A—PCM terminal 1BI • ECT sensor terminal B—PCM terminal 1AM **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 the next step.
		No	Go to the next step.

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

Related PIDs

Item (definition)	Unit/Condition	Definition	Condition/Specification (Reference)
ECT	°C, °F	Engine coolant temperature input from ECT sensor	• Displays ECT
	V	ECT sensor voltage	Ignition switched ON (engine off) • ECT is 29 °C {84 °F}: Approx. 2.65 V Idle (after warm up) • ECT is 88 °C {190 °F}: Approx. 0.71 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 ECT SENSOR CONNECTOR CONDITION • Switch the ignition off. • Disconnect the ECT 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 8.
		No	Go to the next step.
4	DETERMINE IF ECT SENSOR OR WIRING HARNESS MALFUNCTION • Verify that the ECT sensor connector is disconnected. • Access the ECT PID using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5T)].) • Connect a jumper wire between ECT sensor terminals A and B (wiring harness-side). • Verify the ECT PID value. • Is the voltage 4.9 V or below?	Yes	Replace the ECT sensor, then go to Step 8. (See ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].)
		No	Go to the next step.

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

Related PIDs

Item (definition)	Unit/Condition	Definition	Condition/Specification (Reference)
TP1	%	Throttle valve position No.1	• Accelerator pedal released: Approx. 22% • Accelerator pedal fully depressed: Approx. 92%
	V	TP sensor No.1 voltage	• Accelerator pedal released: Approx. 3.92 V • Accelerator pedal fully depressed: Approx. 0.41 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.

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 PURGE SOLENOID VALVE CONNECTOR CONDITION** • Switch the ignition off. • Disconnect the purge solenoid valve 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 10.
		No	Go to the next step.

STEP	INSPECTION	RESULTS	ACTION
11	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.