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1989 MAZDA 323 (BF) Station Wagon OEM Service and Repair Workshop Manual

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DTC P06A5:00 [PCM (SKYACTIV-D 2.2)]

SM2896115

id0102j530930

DTC P06A5:00	Fuel injector No.2 and No.3 power supply circuit high input
DETECTION CONDITION	• If the PCM detects 5 V power supply is above 5.16 V for 0.5 s with the following condition met, the PCM determines that power supply voltage is high. MONITORING CONDITIONS — Battery voltage: 8 V or more 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	• Not applicable
POSSIBLE CAUSE	• Fuel injector No.2 connector or terminals malfunction • Fuel injector No.3 connector or terminals malfunction • PCM connector or terminals malfunction • Short to power supply in wiring harness between the following terminals: — Fuel injector No.2 terminal C—PCM terminal 1BX — Fuel injector No.3 terminal C—PCM terminal 1BV • PCM malfunction

STEP	INSPECTION		ACTION
6	**INSPECT FUEL INJECTOR CIRCUIT FOR SHORT TO POWER SUPPLY** • Verify that the fuel injector No.2, fuel injector No.3, 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 following terminals (wiring harness-side): — Fuel injector No.2 terminal C — Fuel injector No.3 terminal C • 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: • Fuel injector No.2 terminal C–PCM terminal 1BX • Fuel injector No.3 terminal C–PCM terminal 1BV **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 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-D 2.2)].) • Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [PCM (SKYACTIV-D 2.2)].) • Is the same DTC present?	Yes	Repeat the inspection from Step 1. • If the malfunction recurs, replace the PCM. (See PCM REMOVAL/INSTALLATION [SKYACTIV-D 2.2].) 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-D 2.2)].) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [PCM (SKYACTIV-D 2.2)].)
		No	DTC troubleshooting completed.

STEP	INSPECTION	RESULTS	ACTION
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 GLOW PLUG No.3 CONNECTOR CONDITION** • Switch the ignition off. • Disconnect the glow plug No.3 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 14.
		No	Go to the next step.
4	**INSPECT GLOW CONTROL MODULE CONNECTOR CONDITION** • Disconnect the glow control module 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 14.
		No	Go to the next step.
5	**INSPECT GLOW PLUG No.3 CONTROL CIRCUIT FOR SHORT TO GROUND** • Verify that the glow plug No.3 and glow control module connectors are disconnected. • Inspect for continuity between glow plug No.3 terminal C (wiring harness-side) and body ground. • Is there continuity?	Yes	Refer to the wiring diagram and verify whether or not there is a common connector between glow plug No.3 terminal C and glow control module terminal D. **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 14.
		No	Go to the next step.
6	**INSPECT GLOW PLUG No.3 CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY** • Verify that the glow plug No.3 and glow control module 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 glow plug No.3 terminal C (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 glow plug No.3 terminal C and glow control module terminal D. **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 14.

DTC P06B9:00 [PCM (SKYACTIV-D 2.2)]

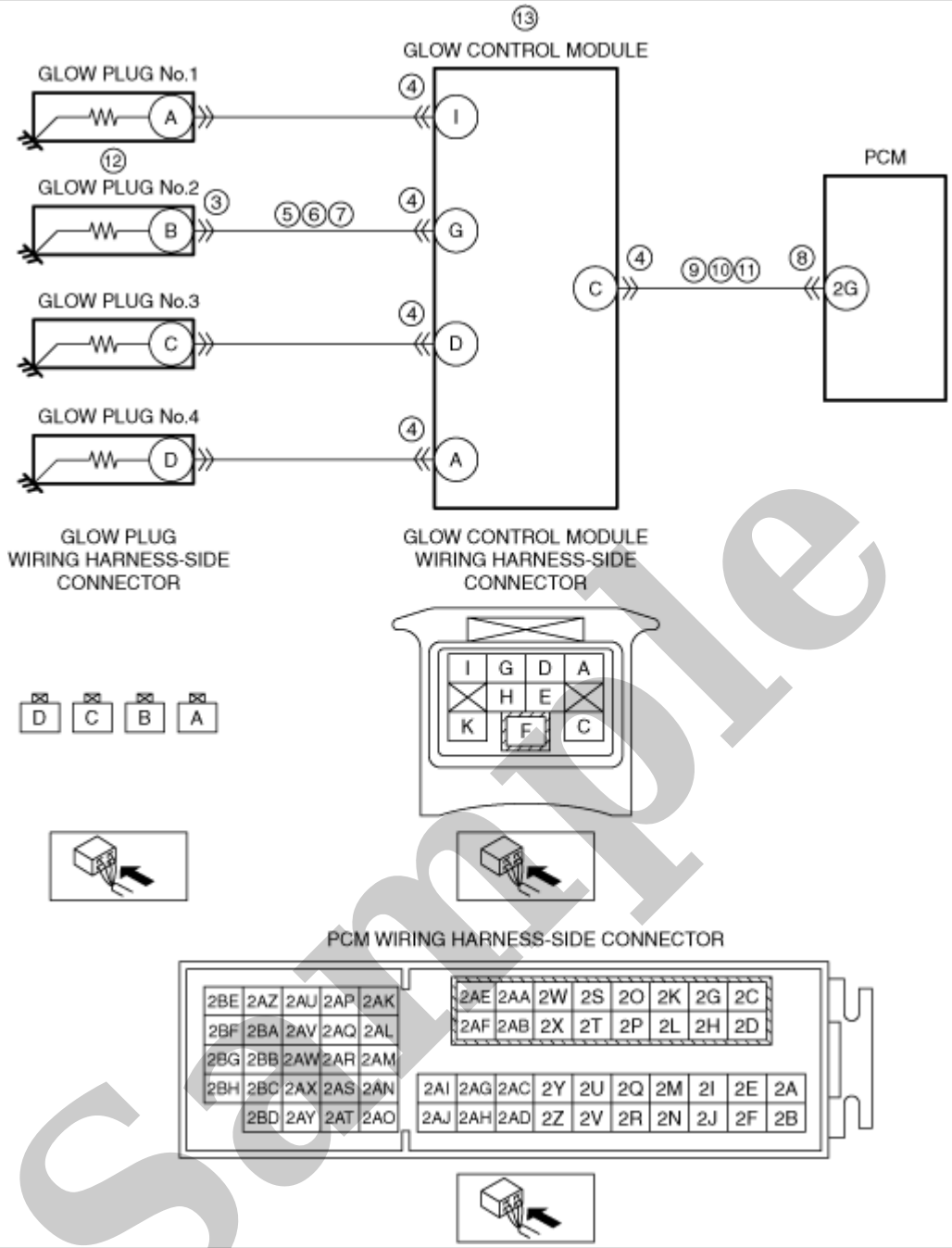
SM2896116

id0102j530950

DTC P06B9:00	Glow plug No.1 control circuit range/performance problem
DETECTION CONDITION	• If the glow plug No.1 impedance is above 2.1 ohms for 5 s, the PCM determines that glow plug No.1 circuit has a malfunction. MONITORING CONDITIONS — Ignition switched ON (engine off or on) — Battery voltage: 8 V or more — 0.2 s have elapsed since power supply voltage of 6 V or more is supplied to glow plug — The following DTCs are not detected: • LIN communication system: U0106:00 • Glow plug control module: P052F:00 • Glow plug No.1: P0671:00 Diagnostic support note • This is a continuous monitor (CCM). • 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/Snapshot data is available. • DTC is stored in the PCM memory.
FAIL-SAFE FUNCTION	• Not applicable
POSSIBLE CAUSE	• Glow plug No.1 connector or terminals malfunction • Glow control module connector or terminals malfunction • Short to ground in wiring harness between glow plug No.1 terminal A and glow control module terminal I • Short to power supply in wiring harness between glow plug No.1 terminal A and glow control module terminal I • Open circuit in wiring harness between glow plug No.1 terminal A and glow control module terminal I • PCM connector or terminals malfunction • Short to ground in wiring harness between glow control module terminal C and PCM terminal 2G • Short to power supply in wiring harness between glow control module terminal C and PCM terminal 2G • Open circuit in wiring harness between glow control module terminal C and PCM terminal 2G • Glow plug No.1 malfunction • Glow control module malfunction • PCM malfunction

STEP	INSPECTION	RESULTS	ACTION
7	**INSPECT GLOW PLUG No.1 CONTROL CIRCUIT FOR OPEN CIRCUIT** • Verify that the glow plug No.1 and glow control module connectors are disconnected. • Switch the ignition off. • Inspect for continuity between glow plug No.1 terminal A (wiring harness-side) and glow control module terminal I (wiring harness-side). • 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 glow plug No.1 terminal A and glow control module terminal I. **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 14.
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 14.
		No	Go to the next step.
9	**INSPECT GLOW CONTROL MODULE SIGNAL CIRCUIT FOR SHORT TO GROUND** • Verify that the glow plug No.1, glow control module and PCM connectors are disconnected. • Inspect for continuity between glow control module terminal C (wiring harness-side) and body ground. • Is there continuity?	Yes	Refer to the wiring diagram and verify whether or not there is a common connector between glow control module terminal C and PCM terminal 2G. **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 14.
		No	Go to the next step.
10	**INSPECT GLOW CONTROL MODULE SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY** • Verify that the glow plug No.1, glow control module 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 glow control module terminal C (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 glow control module terminal C and PCM terminal 2G. **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 14.

DTC P06BA:00	Glow plug No.2 control circuit range/performance problem



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.

STEP	INSPECTION	RESULTS	ACTION
11	**INSPECT GLOW CONTROL MODULE SIGNAL CIRCUIT FOR OPEN CIRCUIT** • Verify that the glow plug No.2, glow control module and PCM connectors are disconnected. • Switch the ignition off. • Inspect for continuity between glow control module terminal C (wiring harness-side) and PCM terminal 2G (wiring harness-side). • 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 glow control module terminal C and PCM terminal 2G. **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 14.
12	**INSPECT GLOW PLUG No.2** • Inspect the glow plug No.2. (See GLOW PLUG INSPECTION [SKYACTIV-D 2.2].) • Is there any malfunction?	Yes	Replace the glow plug No.2, then go to Step 14. (See GLOW PLUG REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
		No	Go to the next step.
13	**INSPECT GLOW CONTROL MODULE** • Inspect the glow control module. (See GLOW PLUG CONTROL MODULE INSPECTION [SKYACTIV-D 2.2].) • Is there any malfunction?	Yes	Replace the glow control module, then go to the next step. (See GLOW PLUG CONTROL MODULE REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
		No	Go to the next step.
14	**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-D 2.2)].) • Perform the KOEO self test. (See KOEO/KOER SELF TEST [PCM (SKYACTIV-D 2.2)].) • Is the same DTC present?	Yes	Repeat the inspection from Step 1. • If the malfunction recurs, replace the PCM. (See PCM REMOVAL/INSTALLATION [SKYACTIV-D 2.2].) Go to the next step.
		No	Go to the next step.
15	**VERIFY AFTER REPAIR PROCEDURE** • Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [PCM (SKYACTIV-D 2.2)].) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [PCM (SKYACTIV-D 2.2)].)
		No	DTC troubleshooting completed.

STEP	INSPECTION		ACTION
3	VERIFY RELATED PENDING CODE AND/OR DTC • 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-D 2.2)].) • Are any other PENDING CODEs and/or DTCs present?	Yes	Go to the applicable PENDING CODE or DTC inspection. (See DTC TABLE [PCM (SKYACTIV-D 2.2)].)
		No	Go to the next step.
4	INSPECT CKP SENSOR CONNECTOR CONDITION • Switch the ignition off. • Disconnect the CKP 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.
5	INSPECT CKP SENSOR INSTALLATION CONDITION • Inspect for CKP sensor looseness. • Is the CKP sensor loosen?	Yes	Install the CKP sensor properly, then go to Step 8. (See CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
		No	Go to the next step.
6	INSPECT CKP SENSOR • Inspect the CKP sensor. (See CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [SKYACTIV-D 2.2].) • Is there any malfunction?	Yes	Replace the CKP sensor, then go to Step 8. (See CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
		No	Go to the next step.
7	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	Damage to the CKP sensor pulse wheel can be considered the cause. • Overhaul the engine, inspect the CKP sensor pulse wheel. — If there is any malfunction: • Replace the CKP sensor pulse wheel, then go to the next step. — If there is no malfunction: • Go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED • Always reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [PCM (SKYACTIV-D 2.2)].) • Perform the KOER self test. (See KOEO/KOER SELF TEST [PCM (SKYACTIV-D 2.2)].) • Is the PENDING CODE for this DTC present?	Yes	Repeat the inspection from Step 1. • If the malfunction recurs, replace the PCM. (See PCM REMOVAL/INSTALLATION [SKYACTIV-D 2.2].) Go to the next step.
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE • Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [PCM (SKYACTIV-D 2.2)].) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [PCM (SKYACTIV-D 2.2)].)
		No	DTC troubleshooting completed.

STEP	INSPECTION	RESULTS	ACTION
3	**CONFIRM FRONT BODY CONTROL MODULE (FBCM) DTC** • Perform the front body control module (FBCM) DTC inspection using the M-MDS. (See DTC INSPECTION [FRONT BODY CONTROL MODULE (FBCM)].) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [FRONT BODY CONTROL MODULE (FBCM)].)
		No	Go to the next step.
4	**INSPECT A/C RELAY** • Switch the ignition off. • Remove the A/C relay. (See RELAY LOCATION.) • Inspect the A/C relay. (See RELAY INSPECTION.) • Is there any malfunction?	Yes	Replace the A/C relay, then go to Step 11. (See RELAY LOCATION.)
		No	Go to the next step.
5	**INSPECT A/C RELAY CONNECTOR CONDITION** • A/C relay is removed. • 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 11.
		No	Go to the next step.
6	**INSPECT FRONT BODY CONTROL MODULE (FBCM) CONNECTOR CONDITION** • Disconnect the front body control module (FBCM) 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 11.
		No	Go to the next step.
7	**INSPECT A/C RELAY CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY** • Verify that the A/C relay is removed. • Verify that the front body control module (FBCM) connector is 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 A/C relay 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 front body control module (FBCM) terminal 1C and A/C relay 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 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 11.
8	**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 11.
		No	Go to the next step.