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1988 MAZDA 626 (Mk.3) Sedan OEM Service and Repair Workshop Manual

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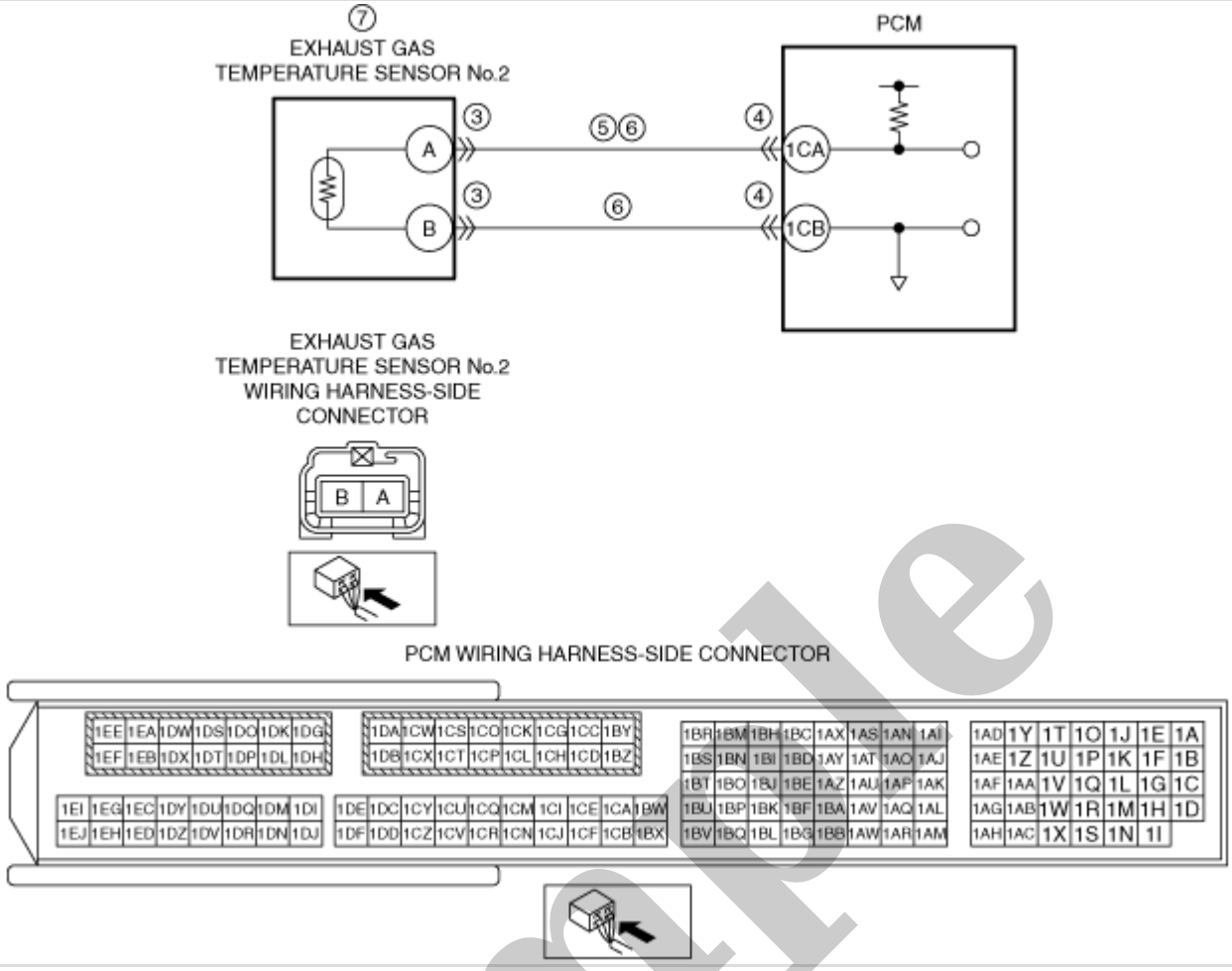
STEP	INSPECTION		ACTION
3	**PURPOSE: INSPECT INTAKE AIR SYSTEM FOR AIR SUCTION** • Inspect for air leakage at the following: — Around connection of turbocharger and intake manifold **Note** **• Engine speed may change when rust penetrating agent is sprayed on the air suction area.** • Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 13.
		No	Go to the next step.
4	**PURPOSE: INSPECT VACUUM PIPING AND POSITIVE PRESSURE PIPING OF REGULATING VALVE** • Inspect vacuum piping and positive pressure piping of regulating valve. (See TURBOCHARGER REMOVAL/INSTALLATION [SKYACTIV-D 2.2].) • Is there hose leakage or damage in the vacuum piping and positive pressure piping?	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 13.
		No	Go to the next step.
5	**PURPOSE: INSPECT VACUUM PIPING AND POSITIVE PRESSURE PIPING OF WASTEGATE VALVE** • Inspect vacuum piping and positive pressure piping of wastegate valve. (See TURBOCHARGER REMOVAL/INSTALLATION [SKYACTIV-D 2.2].) • Is there hose leakage or damage in the vacuum piping and positive pressure piping?	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 13.
		No	Go to the next step.
6	**PURPOSE: INSPECT VACUUM PIPING AND POSITIVE PRESSURE PIPING OF COMPRESSOR BYPASS VALVE** • Inspect vacuum piping and positive pressure piping of compressor bypass valve. (See TURBOCHARGER REMOVAL/INSTALLATION [SKYACTIV-D 2.2].) • Is there hose leakage or damage in the vacuum piping and positive pressure piping?	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 13.
		No	Go to the next step.
7	**PURPOSE: INSPECT REGULATING SOLENOID VALVE** • Inspect the regulating solenoid valve. (See REGULATING SOLENOID VALVE INSPECTION [SKYACTIV-D 2.2].) • Is there any malfunction?	Yes	Replace the regulating solenoid valve, then go to Step 13. (See REGULATING SOLENOID VALVE REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
		No	Go to the next step.
8	**PURPOSE: INSPECT REGULATING VALVE POSITION SENSOR** • Inspect the regulating valve position sensor. (See REGULATING VALVE POSITION SENSOR INSPECTION [SKYACTIV-D 2.2].) • Is there any malfunction?	Yes	Replace the turbocharger, then go to Step 13. (See TURBOCHARGER REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
		No	Go to the next step.
9	**PURPOSE: INSPECT WASTEGATE SOLENOID VALVE** • Inspect the wastegate solenoid valve. (See WASTEGATE SOLENOID VALVE INSPECTION [SKYACTIV-D 2.2].) • Is there any malfunction?	Yes	Replace the wastegate solenoid valve, then go to Step 13. (See WASTEGATE SOLENOID VALVE REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
		No	Go to the next step.

DTC P2033:00	Exhaust gas temperature sensor No.2 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 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.

DTC P2147:00 [PCM (SKYACTIV-D 2.2)]

SM2896030

id0102j515270

DTC P2147:00	Fuel injector No.1 and No.4 circuit low input
DETECTION CONDITION	• When the following condition is met, the PCM detects the control current at fuel injectors No.1 and No.4 as exceeding 39 A 12 times and control voltage at fuel injectors No.1 and No.4 as 42 V or less 12 times: MONITORING CONDITIONS — Battery voltage: 8 V or more — Fuel-cut control is not implemented Diagnostic support note • This is an intermittent 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	• Inhibits the automatic diesel particulate filter regeneration control and compulsory diesel particulate filter regeneration control. • Inhibits the DENOx/DESOx control. • Fully opens the intake shutter valve opening angle. • Inhibits the EGR control. • PCM restricts engine-transaxle integration control.
POSSIBLE CAUSE	• Fuel injector No.1 connector or terminals malfunction • Fuel injector No.4 connector or terminals malfunction • PCM connector or terminals malfunction • Short to ground in wiring harness between the following terminals: — Fuel injector No.1 terminal F—PCM terminal 1EA — Fuel injector No.1 terminal E—PCM terminal 1EE — Fuel injector No.4 terminal F—PCM terminal 1DW — Fuel injector No.4 terminal E—PCM terminal 1EF • Fuel injector No.1 malfunction • Fuel injector No.4 malfunction • PCM malfunction

STEP	INSPECTION		ACTION
7	INSPECT FUEL INJECTOR No.1 • Inspect the fuel injector No.1. (See FUEL INJECTOR INSPECTION [SKYACTIV-D 2.2].) • Is there any malfunction?	Yes	Replace the fuel injector No.1, then go to Step 9. (See FUEL INJECTOR REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
		No	Go to the next step.
8	INSPECT FUEL INJECTOR No.4 • Inspect the fuel injector No.4. (See FUEL INJECTOR INSPECTION [SKYACTIV-D 2.2].) • Is there any malfunction?	Yes	Replace the fuel injector No.4, then go to the next step. (See FUEL INJECTOR REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
		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-D 2.2)].) • Perform the 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.
10	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.

DTC P2148:00 [PCM (SKYACTIV-D 2.2)]

SM2896031

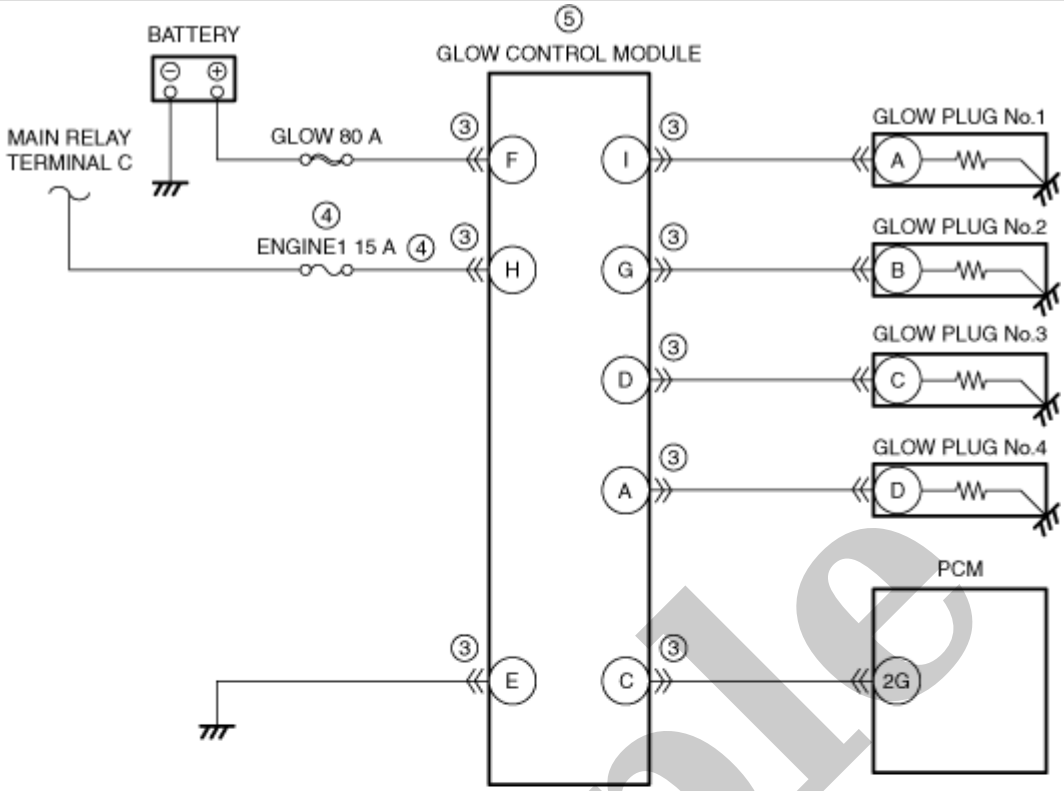
id0102j515290

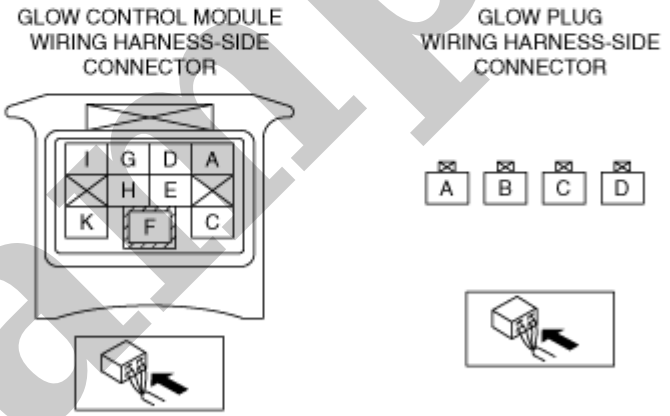
DTC P2148:00	Fuel injector No.1 and No.4 circuit high input
DETECTION CONDITION	• When the following condition is met, the PCM detects the charge current at fuel injectors No.1 and No.4 as exceeding 39 A and discharge current as exceeding 40 A 4 times: MONITORING CONDITIONS — Battery voltage: 8 V or more — Fuel-cut control is not implemented • When the following condition is met, the PCM detects the charge current at fuel injectors No.1 as exceeding 35 A 4 times: MONITORING CONDITIONS — Battery voltage: 8 V or more — Fuel-cut control is not implemented • When the following condition is met, the PCM detects the charge current at fuel injectors No.4 as exceeding 35 A 4 times: MONITORING CONDITIONS — Battery voltage: 8 V or more — Fuel-cut control is not implemented Diagnostic support note • This is an intermittent 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	• Inhibits the automatic diesel particulate filter regeneration control and compulsory diesel particulate filter regeneration control. • Inhibits the DENOx/DESOx control. • Fully opens the intake shutter valve opening angle. • Inhibits the EGR control. • PCM restricts engine-transaxle integration control.
POSSIBLE CAUSE	• Fuel injector No.1 connector or terminals malfunction • Fuel injector No.4 connector or terminals malfunction • PCM connector or terminals malfunction • Short to power supply in wiring harness between the following terminals: — Fuel injector No.1 terminal F—PCM terminal 1EA — Fuel injector No.1 terminal E—PCM terminal 1EE — Fuel injector No.4 terminal F—PCM terminal 1DW — Fuel injector No.4 terminal E—PCM terminal 1EF • Fuel injector No.1 malfunction • Fuel injector No.4 malfunction • PCM malfunction

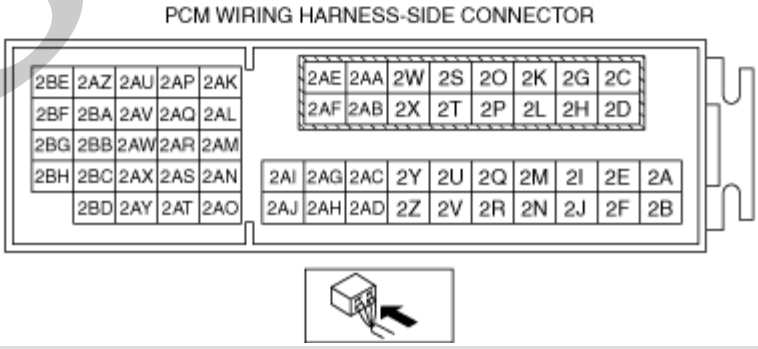
STEP	INSPECTION		ACTION
6	**INSPECT FUEL INJECTOR CIRCUIT FOR SHORT TO POWER SUPPLY** • Verify that the fuel injector No.1, fuel injector No.4, and PCM connectors are disconnected. • Switch the ignition ON (engine off). **Note** **• Another DTC may be stored by the PCM detecting an open circuit.** • Measure the voltage at the following terminals (wiring harness-side): — Fuel injector No.1 terminal F — Fuel injector No.1 terminal E — Fuel injector No.4 terminal F — Fuel injector No.4 terminal E • 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.1 terminal F–PCM terminal 1EA • Fuel injector No.1 terminal E–PCM terminal 1EE • Fuel injector No.4 terminal F–PCM terminal 1DW • Fuel injector No.4 terminal E–PCM terminal 1EF **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.
7	**INSPECT FUEL INJECTOR No.1** • Inspect the fuel injector No.1. (See FUEL INJECTOR INSPECTION [SKYACTIV-D 2.2].) • Is there any malfunction?	Yes	Replace the fuel injector No.1, then go to Step 9. (See FUEL INJECTOR REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
		No	Go to the next step.
8	**INSPECT FUEL INJECTOR No.4** • Inspect the fuel injector No.4. (See FUEL INJECTOR INSPECTION [SKYACTIV-D 2.2].) • Is there any malfunction?	Yes	Replace the fuel injector No.4, then go to the next step. (See FUEL INJECTOR REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
		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-D 2.2)].) • Perform the 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.
10	**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
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 FUEL INJECTOR NO.2 CONNECTOR CONDITION** • Switch the ignition off. • Disconnect the fuel injector 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 FUEL INJECTOR NO.3 CONNECTOR CONDITION** • Disconnect the fuel injector 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 9.
		No	Go to the next step.
5	**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.
6	**INSPECT FUEL INJECTOR CIRCUIT FOR OPEN CIRCUIT** • Verify that the fuel injector No.2, fuel injector No.3 and PCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): — Fuel injector No.2 terminal E –PCM terminal 1CT — Fuel injector No.3 terminal E –PCM terminal 1CS • 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: • Fuel injector No.2 terminal E–PCM terminal 1CT • Fuel injector No.3 terminal E–PCM terminal 1CS **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 FUEL INJECTOR NO.2** • Inspect the fuel injector No.2. (See FUEL INJECTOR INSPECTION [SKYACTIV-D 2.2].) • Is there any malfunction?	Yes	Replace the fuel injector No.2, then go to Step 9. (See FUEL INJECTOR REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
		No	Go to the next step.

DTC P064C:00	Glow control module error







Diagnostic Procedure

STEP	INSPECTION		ACTION
7	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.