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1993 MAZDA 626 (Mk.4) Hatchback OEM Service and Repair Workshop Manual

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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 (EVAP system related) on the repair order.	–	Go to the next step.
3	**PURPOSE: VERIFY IF DIAGNOSTIC RESULT IS AFFECTED BY MALFUNCTION OF CONTROL PART REQUIRED FOR DIAGNOSIS** • Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5T)].) • Is the PENDING CODE/DTC P0443:00, P0446:00, P0451:00, P0452:00 or P0453:00 also present?	Yes	Go to the applicable PENDING CODE or DTC inspection. (See DTC P0443:00 [PCM (SKYACTIV-G 2.5T)].) (See DTC P0446:00 [PCM (SKYACTIV-G 2.5T)].) (See DTC P0451:00 [PCM (SKYACTIV-G 2.5T)].) (See DTC P0452:00 [PCM (SKYACTIV-G 2.5T)].) (See DTC P0453:00 [PCM (SKYACTIV-G 2.5T)].)
		No	Go to the next step.
4	**PURPOSE: VERIFY FUEL FILLER CAP MALFUNCTION** • Access the FCL PID using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5T)].) • Is the FCL PID value On?	Yes	Go to the Troubleshooting Diagnostic Procedure to perform the procedure from Step 1.
		No	Go to the next step.
5	**PURPOSE: SPECIFY LOCATION OF EVAPORATIVE GAS LEAKAGE (FUEL TANK SIDE)** • Disconnect the evaporative hose of the following: (See QUICK RELEASE CONNECTOR (EMISSION SYSTEM) REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].) — Between charcoal canister and purge solenoid valve (charcoal canister side) — Between charcoal canister and CV solenoid valve (charcoal canister side) • Plug the charcoal canister. • Open the fuel-filler cap. • Access the following PIDs using the M-MDS: (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5T)].) — BARO — FTP • Does the FTP PID value correspond to the BARO PID value?	Yes	Go to the next step.
		No	Go to the Troubleshooting Diagnostic Procedure to perform the procedure from Step 3.

STEP	INSPECTION	RESULTS	ACTION
7	PURPOSE: DETERMINE INTEGRITY OF CHARCOAL CANISTER • Inspect the charcoal canister. (See CHARCOAL CANISTER INSPECTION [SKYACTIV-G 2.5T].) • Is there any malfunction?	Yes	Replace the charcoal canister, then go to Step 12. (See CHARCOAL CANISTER REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].)
		No	Go to the next step.
8	PURPOSE: DETERMINE INTEGRITY OF CATCH TANK • Inspect the catch tank. (See CATCH TANK INSPECTION [SKYACTIV-G 2.5T].) • Is there any malfunction?	Yes	Replace the catch tank, then go to Step 12. (See PURGE SOLENOID VALVE REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].)
		No	Go to the next step.
9	PURPOSE: DETERMINE INTEGRITY OF PURGE SOLENOID VALVE • Inspect the purge solenoid valve. (See PURGE SOLENOID VALVE INSPECTION [SKYACTIV-G 2.5T].) • Is there any malfunction?	Yes	Replace the purge solenoid valve, then go to Step 12. (See PURGE SOLENOID VALVE REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].)
		No	Go to the next step.
10	PURPOSE: DETERMINE INTEGRITY OF CV SOLENOID VALVE • Inspect the CV solenoid valve. (See CANISTER VENT (CV) SOLENOID VALVE INSPECTION [SKYACTIV-G 2.5T].) • Is there any malfunction?	Yes	Replace the CV solenoid valve, then go to Step 12. (See CANISTER VENT (CV) SOLENOID VALVE REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].)
		No	Go to the next step.
11	PURPOSE: DETERMINE INTEGRITY OF FUEL TANK PRESSURE SENSOR • Inspect the fuel tank pressure sensor. (See FUEL TANK PRESSURE SENSOR INSPECTION [SKYACTIV-G 2.5T].) • Is there any malfunction?	Yes	Replace the charcoal canister, then go to the next step. (See CHARCOAL CANISTER REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].)
		No	Go to the next step.
12	PURPOSE: VERIFICATION OF VEHICLE REPAIR COMPLETION • Reconnect all the removed parts. • Clear the DTC from the PCM memory using the M-MDS. (See CLEARING DTC [PCM (SKYACTIV-G 2.5T)].) • Implement the repeatability verification procedure. (See Repeatability Verification Procedure.) • Perform the Pending Trouble Code Access Procedure. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5T)].) • Is the same Pending DTC present?	Yes	Repeat the inspection from Step 1 of the troubleshooting diagnostic procedure. • 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.
13	PURPOSE: VERIFY IF THERE IS ANY OTHER MALFUNCTION • Is any other DTC or pending code stored?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [PCM (SKYACTIV-G 2.5T)].)
		No	DTC troubleshooting completed.

STEP	INSPECTION	RESULTS	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-G 2.5T)].) • Are any other PENDING CODEs and/or DTCs present?	Yes	Go to the applicable PENDING CODE or DTC inspection. (See DTC TABLE [PCM (SKYACTIV-G 2.5T)].)
		No	Go to the next step.
4	INSPECT TCM CONNECTOR CONDITION • Switch the ignition off. • Disconnect the TCM 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 7.
		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 7.
		No	Go to the next step.
6	VERIFY TCM DTC • Reconnect all disconnected connectors. • Perform the TCM DTC inspection using the M-MDS. (See ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [TCM (GW6A-EL, GW6AX-EL)].) • Are any DTCs present?	Yes	DTC U0074:00 or U0115:00 is displayed: • CAN communication line can be considered the cause. — Repair or replace the wiring harness between PCM and TCM, then go to the next step. DTC other than U0074:00 and U0115:00 is displayed: • Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [TCM (GW6A-EL, GW6AX-EL)].)
		No	TCM can be considered the cause. • Replace the control valve body, then go to the next step. (See CONTROL VALVE BODY REMOVAL/INSTALLATION [GW6A-EL, GW6AX-EL].)
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-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.
8	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
4	VERIFY EPS CONTROL MODULE DTC • Perform the EPS control module DTC inspection using the M-MDS. (See DTC INSPECTION [ELECTRIC POWER STEERING (EPS) CONTROL MODULE].) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [ELECTRIC POWER STEERING (EPS) CONTROL MODULE].)
		No	Go to the next step.
5	INSPECT EPS CONTROL MODULE CONNECTOR CONDITION • Switch the ignition off. • Disconnect the EPS 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 7.
		No	Go to the next step.
6	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 the next step.
		No	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-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.
8	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.

DTC U0315:00 [PCM (SKYACTIV-G 2.5T)]

SM2896620

id0102s890120

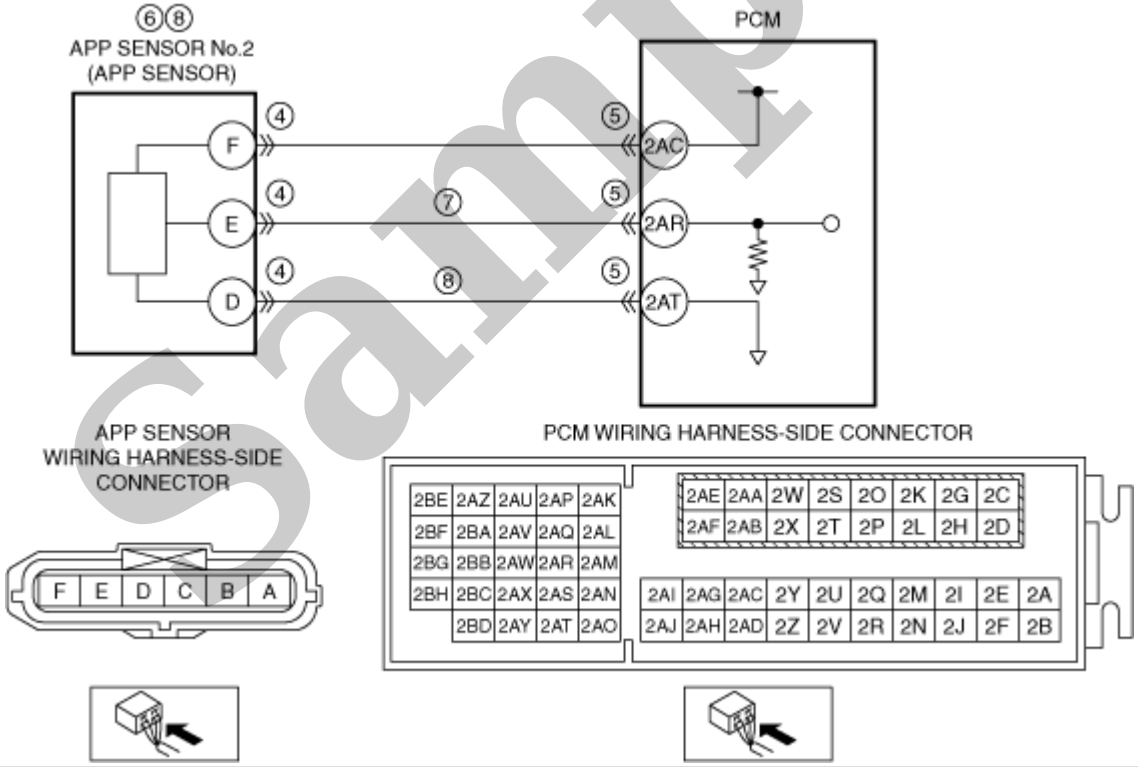
DTC U0315:00	DSC HU/CM error
DETECTION CONDITION	• When any of the following conditions is met: — CAN communication line malfunction between DSC HU/CM and PCM — DSC HU/CM internal malfunction **Diagnostic support note** • This is a continuous monitor (other). • The check engine light does not illuminate. • FREEZE FRAME DATA is not available. • Snapshot data is available. • DTC is stored in the PCM memory.
FAIL-SAFE FUNCTION	• Not applicable
POSSIBLE CAUSE	• CAN drive error (DSC HU/CM or PCM) • CAN communication line malfunction between DSC HU/CM and PCM — DSC HU/CM terminal AF—PCM terminal 2AK — DSC HU/CM terminal AC—PCM terminal 2AL • DSC HU/CM connector or terminals malfunction • PCM connector or terminals malfunction • DSC HU/CM malfunction • PCM malfunction

DTC P2128:00 [PCM (SKYACTIV-G 2.5T)]

SM2896579

id0102s870860

DTC P2128:00	APP sensor No.2 circuit high input
DETECTION CONDITION	• The PCM monitors the input voltage from APP sensor No.2. If the input voltage at the PCM terminal 2AR is more than 4.9 V, the PCM determines that the APP sensor No.2 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	• Regulates the upper limit of the APP sensor output.
POSSIBLE CAUSE	• APP sensor connector or terminals malfunction • PCM connector or terminals malfunction • APP sensor No.2 malfunction • Short to power supply in wiring harness between APP sensor terminal E and PCM terminal 2AR • Open circuit in wiring harness between APP sensor terminal D and PCM terminal 2AT • PCM malfunction



Caution

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

Related PIDs

DTC P2135:00 [PCM (SKYACTIV-G 2.5T)]

SM2896580

id0102s870870

DTC P2135:00	TP sensor No.1/No.2 voltage correlation problem
DETECTION CONDITION	• The PCM compares the input voltage from TP sensor No.1 with the input voltage from TP sensor No.2. If the difference is more than the specification, the PCM determines that there is a TP sensor No.1/No.2 voltage correlation problem. 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. • Stops the drive-by-wire control (throttle valve is open at approx. 8 ° by return spring force).
POSSIBLE CAUSE	• Throttle body connector or terminals malfunction • PCM connector or terminals malfunction • TP sensor No.1 malfunction • TP sensor No.2 malfunction • PCM malfunction
SYSTEM WIRING DIAGRAM	• Not applicable

Caution

• 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. 1.11 V • Accelerator pedal fully depressed: Approx. 4.59 V
TP2	%	Throttle valve position No.2	• Accelerator pedal released: Approx. 22% • Accelerator pedal fully depressed: Approx. 92%
	V	TP sensor No.2 voltage	• Accelerator pedal released: Approx. 3.92 V • Accelerator pedal fully depressed: Approx. 0.41 V

Diagnostic Procedure

DTC P2138:00 [PCM (SKYACTIV-G 2.5T)]

SM2896581

id0102s870880

DTC P2138:00	APP sensor No.1/No.2 voltage correlation problem
DETECTION CONDITION	• The PCM compares the input voltage from APP sensor No.1 with the input voltage from APP sensor No.2. If the difference is more than the specification, the PCM determines that there is an APP sensor No.1/No.2 angle correlation problem. 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. • Stops the drive-by-wire control (throttle valve is open at approx. 8 ° by return spring force).
POSSIBLE CAUSE	• APP sensor connector or terminals malfunction • PCM connector or terminals malfunction • APP sensor No.1 malfunction • APP sensor No.2 malfunction • PCM malfunction
SYSTEM WIRING DIAGRAM	• Not applicable

Caution

• 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)
APP1	%	Accelerator pedal opening angle (absolute value) input from APP sensor No.1	• Accelerator pedal released: Approx. 16% • Accelerator pedal fully depressed: Approx. 91%
	V	APP sensor No.1 voltage	• Accelerator pedal released: Approx. 0.78 V • Accelerator pedal fully depressed: Approx. 4.54 V
APP2	%	Accelerator pedal opening angle (absolute value) input from APP sensor No.2	• Accelerator pedal released: Approx. 7.84% • Accelerator pedal fully depressed: Approx. 45.49%
	V	APP sensor No.2 voltage	• Accelerator pedal released: Approx. 0.39 V • Accelerator pedal fully depressed: Approx. 2.27 V

Diagnostic Procedure

DTC P2502:00 [PCM (SKYACTIV-G 2.5T)]

SM2896582

id0102s870950

Note

• To determine the malfunctioning part, proceed with the diagnostics from "Function Inspection Using M-MDS".

Details On DTCs

DESCRIPTION	**Generator system: Malfunction in voltage generated by generator**	
DETECTION CONDITION	Determination conditions	• The voltage generated by the generator is 17 V or higher and the battery voltage is 11 V or less for a continuous specified time.
	Preconditions	• While engine is running
	Malfunction determination period	• 5 s period
	Drive cycle	• 1
	Self test type	• CMDTC self test
	Sensor used	• PCM • Generator
FAIL-SAFE FUNCTION	• Generator control is inhibited.	
VEHICLE STATUS WHEN DTCs ARE OUTPUT	• A warning message is displayed in the display. • Illuminates charging system warning light. • The charging system warning indication is displayed on the multi-information display. (With multi-information display) • If the vehicle continues to be driven while the DTC is detected the battery will be depleted. — A malfunction occurs with an electrical device and the vehicle stops. • The following vehicle conditions differ depending on the type of malfunction: — Vehicle shock may occur due to generator load. — Idling feel due to generator-stop may occur.	
POSSIBLE CAUSE	• Poor connection of the following parts: — Battery — Generator — PCM • Connector or terminal malfunction of the following parts: — Battery — Generator — PCM • Short to ground or open circuit in generator charge/discharge circuit — Short to ground in wiring harness between battery positive terminal and generator terminal 1A — STR 200 A fuse malfunction — Open circuit in wiring harness between battery positive terminal and generator terminal 1A • Generator malfunction • Battery malfunction • PCM malfunction	