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2000 MAZDA 626 (Mk.5) Sedan OEM Service and Repair Workshop Manual

[Go to manual page](#)

STEP	INSPECTION	RESULTS	ACTION
4	VERIFY IF MALFUNCTION CAUSE WAS CORRECTED BY REFUELING <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. (See CLEARING DTC [PCM (SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION))].) • Perform the KOER self test. (See KOEO/KOER SELF TEST [PCM (SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION))].) • Is the same Pending DTC present? 	Yes	Note <ul style="list-style-type: none"> • A malfunction has occurred because carbon has accumulated in combustion chamber. Overhaul the engine and remove the carbon in the combustion chamber. Go to the next step.
		No	Go to Step 6.
5	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • 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 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. <ul style="list-style-type: none"> • 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.
6	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • 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.

STEP	INSPECTION	RESULTS	ACTION
3	INSPECT A/F SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • 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 9.
		No	Go to the next step.
4	INSPECT A/F SENSOR HEATER POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • Verify that the A/F sensor connector is disconnected. • Switch the ignition ON (engine off). <p>Note</p> <ul style="list-style-type: none"> • Another DTC may be stored by the PCM detecting an open circuit. • Measure the voltage at the A/F sensor terminal A (wiring harness-side). • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the ENGINE2 15 A fuse. <ul style="list-style-type: none"> • If the fuse is blown: <ul style="list-style-type: none"> — Refer to the wiring diagram and verify whether or not there is a common connector between ENGINE2 15 A fuse and A/F sensor terminal A. • If there is a common connector: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • Repair or replace the wiring harness which has a short to ground. • Replace the fuse. • If the fuse is damaged: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Refer to the wiring diagram and verify whether or not there is a common connector between sub relay terminal C and A/F sensor terminal A. • If there is a common connector: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • Repair or replace the wiring harness which has an open circuit. Go to Step 9.
5	INSPECT A/F SENSOR HEATER <ul style="list-style-type: none"> • Switch the ignition off. • Inspect the A/F sensor heater. (See AIR FUEL RATIO (A/F) SENSOR INSPECTION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].) • Is there any malfunction? 	Yes	Replace the A/F sensor, then go to Step 9. (See AIR FUEL RATIO (A/F) SENSOR INSPECTION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)] .)
		No	Go to the next step.

STEP	INSPECTION	RESULTS	ACTION
1	<p>RECORD FREEZE FRAME DATA/SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS TO UTILIZE WITH REPEATABILITY VERIFICATION</p> <p>Note</p> <ul style="list-style-type: none"> 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 heater, HO2S heater related) on the repair order. 	–	Go to the next step.
2	<p>VERIFY RELATED REPAIR INFORMATION AVAILABILITY</p> <ul style="list-style-type: none"> 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.
		No	Go to the next step.
3	<p>INSPECT A/F SENSOR CONNECTOR CONDITION</p> <ul style="list-style-type: none"> 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 7.
		No	Go to the next step.
4	<p>INSPECT PCM CONNECTOR CONDITION</p> <ul style="list-style-type: none"> 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.
5	<p>INSPECT A/F SENSOR HEATER CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY</p> <ul style="list-style-type: none"> Verify that the A/F sensor and PCM connectors are disconnected. Switch the ignition ON (engine off). <p>Note</p> <ul style="list-style-type: none"> Another DTC may be stored by the PCM detecting an open circuit. Measure the voltage at the A/F sensor terminal E (wiring harness-side). Is the voltage 0 V? 	Yes	Go to the next step.
		No	<p>Refer to the wiring diagram and verify whether or not there is a common connector between A/F sensor terminal E and PCM terminal 1CB.</p> <p>If there is a common connector:</p> <ul style="list-style-type: none"> 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. <p>If there is no common connector:</p> <ul style="list-style-type: none"> Repair or replace the wiring harness which has a short to power supply. <p>Go to Step 7.</p>
6	<p>INSPECT A/F SENSOR HEATER</p> <ul style="list-style-type: none"> Inspect the A/F sensor heater. (See AIR FUEL RATIO (A/F) SENSOR INSPECTION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].) Is there any malfunction? 	Yes	Replace the A/F sensor, then go to the next step. (See AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)] .)
		No	Go to the next step.

- If the ignition is switched off after the engine oil level warning light begins illumination, it stops the engine oil level warning light from illumination.
- After verifying an engine oil level deficiency, the PCM re-implements the *1 determination if the ignition is switched ON and if it determines that the engine oil level is insufficient, it turns on the engine oil level warning light in the instrument cluster.
- After verifying an engine oil level deficiency, the PCM re-implements the *1 determination if the ignition is switched ON and if it determines that the engine oil level is insufficient, it displays the engine oil level warning indication in the multi-information display. (With multi-information display)

Repeatability Verification Procedure

Note

- Match the engine oil temperature in the recorded snapshot data, the vehicle speed, and engine speed values to the best extent possible while driving the vehicle.

1. Try to reproduce the malfunction by driving the vehicle based on the values in the snapshot data.

PID Item/Simulation Item Used In Diagnosis

PID/DATA monitor item table

Item	Definition	Unit	Condition/Specification
EOL	Engine oil level	mm, in	• Displays engine oil level

Function Inspection Using M-MDS

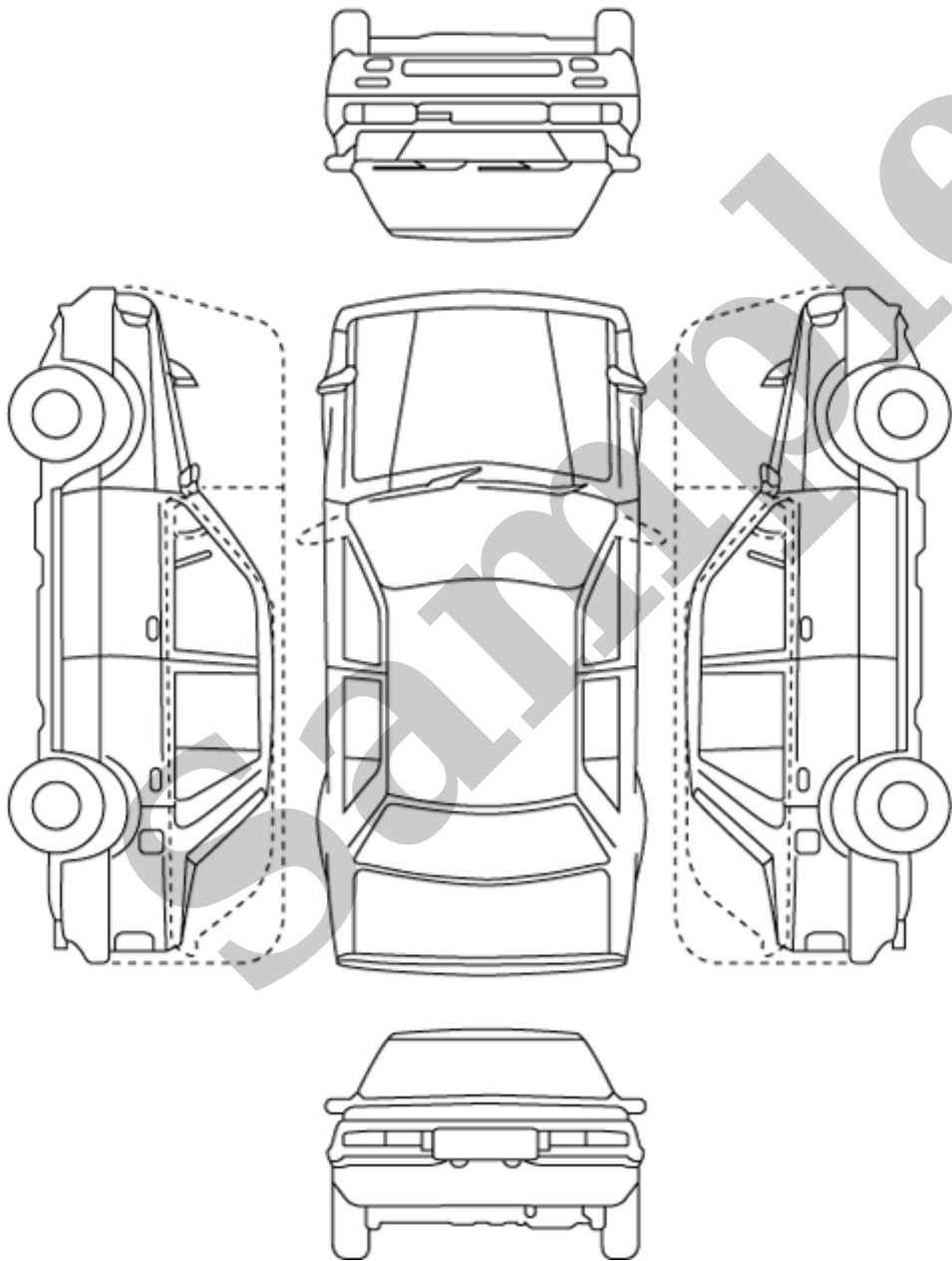
STEP	INSPECTION	RESULTS	ACTION
1	PURPOSE: RECORD VEHICLE STATUS AT TIME OF DTC DETECTION TO UTILIZE WITH REPEATABILITY VERIFICATION Note <ul style="list-style-type: none"> • Recording can be facilitated using the screen capture function of the PC. • Record the snapshot data on the repair order. 	–	Go to the next step.
2	PURPOSE: VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • 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: VERIFY IF DIAGNOSTIC RESULT IS AFFECTED BY OTHER RELATED DTCs OCCURRING <ul style="list-style-type: none"> • 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 2.5 (WITHOUT CYLINDER DEACTIVATION))].) • Is the other PENDING CODE/DTC also present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [PCM (SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION))].)
		No	Go to the next step.

- If there is any vehicle malfunction complaint lodged by a customer, perform malfunction diagnosis according to the troubleshooting procedure.

Troubleshooting Procedure

Sample

Dealer name:		Vehicle body number:				Odometer reading:	
Vehicle-in date:		Estimated repair completion date:				Person in-charge:	
Subject (Content):							
Audio memory							
	1	2	3	4	5	6	Fuel level
FM1							E F
FM2							
AM							



ac5uuw00006318

Action for Non-repeatable Malfunction

- If the malfunction does not recur, verify the malfunction cause by performing the following actions:
 - Based on the repair order form, attempt to drive the vehicle or perform tests to replicate the malfunction, record the data at that time, and detect the malfunction cause.

OBD-II FREEZE FRAME DATA [PCM (SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION))]

SM2896999

id0102t380050

- This is technical data which indicates the engine condition at the time of the first malfunction. This data will remain in the memory even if another emission-related DTC is stored, with the exception of the Misfire or Fuel System DTCs. Once FREEZE FRAME DATA for the Misfire or Fuel System DTC is stored, it will overwrite any previous data and the FREEZE FRAME DATA will not be overwritten again.

Sample

STEP	INSPECTION	RESULTS	ACTION
7	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • 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 KOER self test. (See KOEO/KOER SELF TEST [PCM (SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION))].) • Is the PENDING CODE for this DTC present? 	Yes	Repeat the inspection from Step 1. <ul style="list-style-type: none"> • 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.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • 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.

STEP	INSPECTION	RESULTS	ACTION
3	VERIFY CURRENT INPUT SIGNAL STATUS IS CONCERN INTERMITTENT OR CONSTANT <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. (See CLEARING DTC [PCM (SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION))].) • Start the engine. • Access the following PIDs using the M-MDS: (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION))].) <ul style="list-style-type: none"> — ECT — TP_REL — RPM • Warm up the engine until the ECT PID is above 70 °C {158 °F}. • Perform the following: <ol style="list-style-type: none"> 1. Depress the accelerator pedal to increase the engine speed to approx. 5,000 rpm. 2. Release the accelerator pedal to decrease the engine speed to idle speed. 3. Repeat Step 1 and Step 2 operations above 3 times in succession. • Perform the Pending Trouble Code Access Procedure. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION))].) • Is the PENDING CODE for this DTC present? 	Yes	Go to the next step.
		No	Intermittent concern exists. • Perform the “INTERMITTENT CONCERN TROUBLESHOOTING” procedure. (See INTERMITTENT CONCERN TROUBLESHOOTING [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)] .)
4	INSPECT MAP SENSOR/IAT SENSOR No.2 CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition off. • Disconnect the MAP sensor/IAT sensor 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 14.
		No	Go to the next step.
5	INSPECT MAF SENSOR/IAT SENSOR No.1 CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the MAF sensor/IAT 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 14.
		No	Go to the next step.
6	INSPECT INSTALLATION OF MAP SENSOR/IAT SENSOR No.2 <ul style="list-style-type: none"> • Inspect installation of MAP sensor/IAT sensor No.2. • Is the MAP sensor/IAT sensor No.2 installed securely? 	Yes	Go to the next step.
		No	Retighten the MAP sensor/IAT sensor No.2, then go to Step 14. (See MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR/INTAKE AIR TEMPERATURE (IAT) SENSOR NO.2 REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)] .)