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1996 MAZDA 626 (Mk.4) Hatchback OEM Service and Repair Workshop Manual

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STEP	INSPECTION	RESULTS	ACTION
7	**INSPECT FUEL PRESSURE SENSOR** • Bleed the remaining pressure in the fuel line using the following procedure. 1. Switch the ignition off. 2. Disconnect the high pressure fuel pump connector. 3. Start the engine and leave it idling for 1 min. • Display PID FUEL_PRES and simulation item FP using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) • Turn simulation item FP on. • Is the FUEL_PRES PID value approx. 0.56 V?	Yes	Go to the next step.
		No	Replace the fuel distributor, then go to the next step. (See FUEL INJECTOR REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].)
8	**INSPECT HIGH PRESSURE FUEL PUMP** • Inspect the high pressure fuel pump. (See HIGH PRESSURE FUEL PUMP INSPECTION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].) • Is there any malfunction?	Yes	Replace the high pressure fuel pump, then go to the next step. (See HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [SKYACTIV-G (WITHOUT EGR COOLER)].) (See HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [SKYACTIV-G (WITH EGR COOLER)].)
		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-G 2.5 (WITH CYLINDER DEACTIVATION))].) • Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) • 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 2.5 (WITH CYLINDER DEACTIVATION)].) 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-G 2.5 (WITH CYLINDER DEACTIVATION))].) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].)
		No	DTC troubleshooting completed.

DTC P0010:00 [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]

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DTC P0010:00	Electric variable valve timing control circuit range/performance problem
DETECTION CONDITION	• Any one of the following conditions is met: — A malfunction is detected in the results of the on-board diagnostic test received from the electric variable valve timing driver. — The motor speed signal received from the electric variable valve timing driver is in error. **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	• Stops activation of the electric variable valve timing driver.

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	**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 2.5 (WITH CYLINDER DEACTIVATION))].) • Is the PENDING CODE/DTC P1380:00 also present?	Yes	Go to the applicable PENDING CODE or DTC inspection. (See DTC P1380:00 [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].)
		No	Go to the next step.
4	**INSPECT ELECTRIC VARIABLE VALVE TIMING MOTOR/DRIVER CONNECTOR CONDITION** • Switch the ignition off. • Disconnect the electric variable valve timing motor/driver 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 19.
		No	Go to the next step.
5	**DETERMINE IF MALFUNCTION CAUSE IS ELECTRIC VARIABLE VALVE TIMING MOTOR/DRIVER POWER SUPPLY CIRCUIT OR OTHER** • Verify that the electric variable valve timing motor/driver connector is disconnected. • Start the engine. • Measure the voltage at the electric variable valve timing motor/driver terminal 2B (wiring harness-side). • Is the voltage B+?	Yes	Go to Step 11.
		No	Go to the next step.
6	**INSPECT ELECTRIC VARIABLE VALVE TIMING RELAY** • Switch the ignition off. • Remove the electric variable valve timing relay. (See RELAY LOCATION.) • Inspect the electric variable valve timing relay. (See RELAY INSPECTION.) • Is there any malfunction?	Yes	Replace the electric variable valve timing relay, then go to Step 19.
		No	Go to the next step.

STEP	INSPECTION	RESULTS	ACTION
11	**INSPECT ELECTRIC VARIABLE VALVE TIMING MOTOR/DRIVER GROUND CIRCUIT FOR OPEN CIRCUIT** • Verify that the electric variable valve timing motor/driver connector is disconnected. • Switch the ignition off. • Inspect for continuity between electric variable valve timing motor/driver terminal 2A (wiring harness-side) and body ground. • 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 electric variable valve timing motor/driver terminal 2A and body ground. **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:** • Inspect for the following: — Open circuit between electric variable valve timing motor/driver and body ground — Loose or lifting ground point • Repair or replace the malfunctioning part. Go to Step 19.
12	**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 19.
		No	Go to the next step.
13	**INSPECT ELECTRIC VARIABLE VALVE TIMING MOTOR/DRIVER CIRCUIT FOR SHORT TO GROUND** • Verify that the electric variable valve timing motor/driver and PCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: — Electric variable valve timing motor/driver terminal 1D — Electric variable valve timing motor/driver terminal 1C — Electric variable valve timing motor/driver terminal 1B — Electric variable valve timing motor/driver terminal 1A • Is there continuity?	Yes	Refer to the wiring diagram and verify whether or not there is a common connector between the following terminals: • Electric variable valve timing motor/driver terminal 1D—PCM terminal 1BV • Electric variable valve timing motor/driver terminal 1C—PCM terminal 1BM • Electric variable valve timing motor/driver terminal 1B—PCM terminal 1BN • Electric variable valve timing motor/driver terminal 1A—PCM terminal 1AD **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 19.
		No	Go to the next step.

DTC P2243:00 [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]

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Note

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

Details On DTCs

DESCRIPTION	A/F sensor reference voltage circuit open	
DETECTION CONDITION	Determination conditions	• A condition in which the PCM terminal 1T voltage is the specified value or more continues for 30 s.
	Preconditions	• Switch the ignition ON (engine off or on) • Battery voltage: 11–18 V *1 • The following DTCs are not detected: — A/F sensor heater: P0031:00, P0032:00 *1: Standard can be verified by displaying PIDs using M-MDS
	Malfunction determination period	• 30 s period
	Drive cycle	• 2
	Self test type	• CMDTC self test, KOER self test
	Sensor used	• A/F sensor
FAIL-SAFE FUNCTION	• Not applicable	
VEHICLE STATUS WHEN DTCs ARE OUTPUT	• Illuminates check engine light.	
POSSIBLE CAUSE	• A/F sensor connector or terminals malfunction • PCM connector or terminals malfunction • Open circuit in wiring harness between A/F sensor terminal F and PCM terminal 1T • A/F sensor malfunction • PCM malfunction	

System Wiring Diagram

STEP	INSPECTION	RESULTS	ACTION
6	**PURPOSE: DETERMINE INTEGRITY OF A/F SENSOR** • Start the engine and warm it up completely. • Access the O2S11 PID using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) • Drive the vehicle under the following conditions. **Warning** **• When the M-MDS is used to observe monitor system status while driving, be sure to have another technician with you, or record the data in the M-MDS using the PID/DATA MONITOR AND RECORD capturing function and inspect later.** **• While performing this step, always operate the vehicle in a safe and lawful manner.** — After increasing the engine speed to 3,000 rpm, decelerate using engine braking. • Is the displayed PID value as follows? — O2S11: 0.25 mA or more	Yes	Go to Troubleshooting Diagnostic Procedure to perform the procedure from Step 1.
		No	Go to the next step.
7	**PURPOSE: INSPECT RELATED SENSOR WIRING HARNESS AND CONNECTOR** • Access the O2S11 PID using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) • Does the PID value fluctuate when the PCM and A/F sensor connectors are shaken?	Yes	Inspect the related wiring harness and connector. • Repair or replace the malfunctioning part. Go to Troubleshooting Diagnostic Procedure to perform the procedure from Step 1.
		No	Replace the A/F sensor. (See AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].) Go to Troubleshooting Diagnostic Procedure to perform the procedure from Step 1.

Troubleshooting Diagnostic Procedure

Intention of troubleshooting procedure

• Step 1–2

— Verify that the primary malfunction is resolved and there are no other malfunctions.

STEP	INSPECTION	RESULTS	ACTION
1	**PURPOSE: VERIFICATION OF VEHICLE REPAIR COMPLETION** • Always reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See CLEARING DTC [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) • Perform the KOER self test. (See KOEO/KOER SELF TEST [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) • 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-G 2.5 (WITH CYLINDER DEACTIVATION)].) Go to the next step.
		No	Go to the next step.

STEP	INSPECTION	RESULTS	ACTION
3	**VERIFY STORED DTC IN INSTRUMENT CLUSTER** • Switch the ignition off, then ON (engine off). • Retrieve the instrument cluster DTC using the M-MDS. (See DTC INSPECTION [INSTRUMENT CLUSTER].) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [INSTRUMENT CLUSTER].)
		No	Go to the next step.
4	**INSPECT INSTRUMENT CLUSTER BACKUP VOLTAGE CIRCUIT** • Switch the ignition off. • Remove the MAIN 200 A fuse and ROOM 15 A fuse. • Inspect the MAIN 200 A fuse and ROOM 15 A fuse. • Is there any malfunction?	Yes	Replace the malfunctioning fuse. Switch the ignition ON (engine on) and wait for 10 s or more. Switch the ignition off. Go to the next step.
		No	Replace the instrument cluster, then go to the next step. (See INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
5	**VERIFY DTC TROUBLESHOOTING COMPLETED** • Always reconnect all disconnected connectors. **Note** **• DTC P2610:00 can be cleared by performing the engine start and stop procedure.** • Start the engine. • Stop the engine. • Clear the DTC from the PCM memory using the M-MDS. (See CLEARING DTC [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) • Perform the KOER self test. (See KOEO/KOER SELF TEST [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) • 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-G 2.5 (WITH CYLINDER DEACTIVATION)].) Go to the next step.
		No	Go to the next step.
6	**VERIFY AFTER REPAIR PROCEDURE** • Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].)
		No	DTC troubleshooting completed.

STEP	INSPECTION	RESULTS	ACTION
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.
4	**INSPECT PURGE SOLENOID VALVE POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT** • Verify that the purge solenoid valve 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 purge solenoid valve terminal B (wiring harness-side). • Is the voltage B+?	Yes	Go to the next step.
		No	Inspect the ENGINE4 15 A fuse. • If the fuse is blown: — Refer to the wiring diagram and verify whether or not there is a common connector between ENGINE4 15 A fuse and purge solenoid valve terminal B. **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. • Replace the fuse. • If the fuse is damaged: — Replace the fuse. • If the fuse is normal: — Refer to the wiring diagram and verify whether or not there is a common connector between main relay terminal C and purge solenoid valve terminal B. **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 10.
5	**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 10.
		No	Go to the next step.

DTC P0480:00 [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]

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DTC P0480:00	Cooling fan relay No.2 control circuit malfunction
DETECTION CONDITION	• The cooling fan relay No.2 control voltage at the PCM terminal 2AM is low or cooling fan relay No.2 control current is high for a continuous 5 s relative to the PCM control signal. 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	• Cooling fan relay No.2 malfunction • PCM connector or terminals malfunction • Short to ground or open circuit in cooling fan relay No.2 power supply circuit — Short to ground in wiring harness between ENGINE3 15 A fuse and cooling fan relay No.2 terminal A — ENGINE3 15 A fuse malfunction — Open circuit in wiring harness between sub relay terminal C and cooling fan relay No.2 terminal A • Short to ground in wiring harness between cooling fan relay No.2 terminal E and PCM terminal 2AM • Short to power supply in wiring harness between cooling fan relay No.2 terminal E and PCM terminal 2AM • Open circuit in wiring harness between cooling fan relay No.2 terminal E and PCM terminal 2AM • PCM malfunction