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1995 MAZDA 121/ Revue (Mk.2) OEM Service and Repair Workshop Manual

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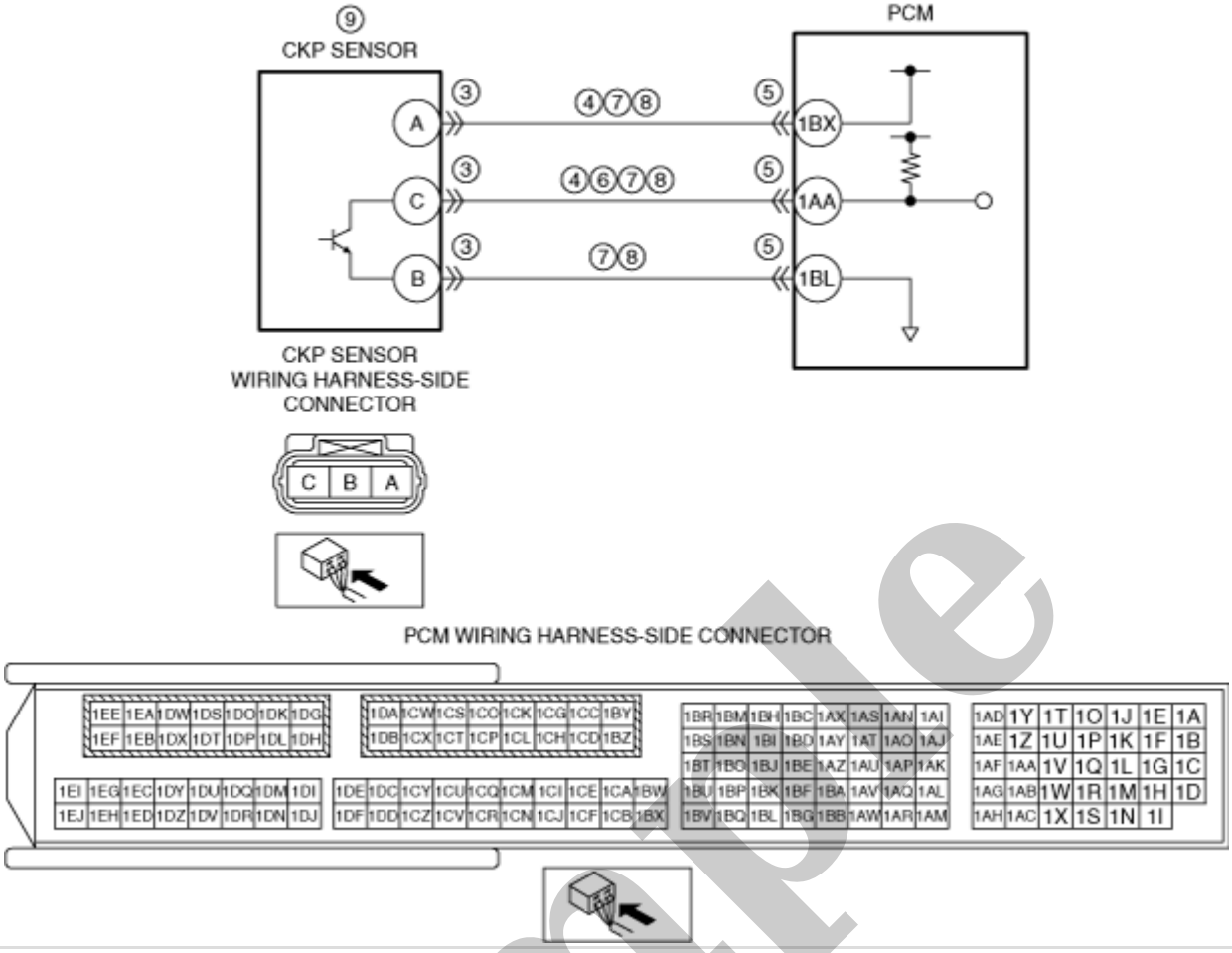
STEP	INSPECTION	RESULTS	ACTION
1	**PURPOSE: DETERMINE INTEGRITY OF SPARK PLUG** • Inspect the spark plug. (See SPARK PLUG INSPECTION [SKYACTIV-G 2.5T].) • Is there any malfunction?	Yes	Replace the spark plug, then go to Step 10. (See SPARK PLUG REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].)
		No	Go to the next step.
2	**PURPOSE: DETERMINE INTEGRITY OF IGNITION COIL** • Inspect the ignition coil. (See IGNITION COIL INSPECTION [SKYACTIV-G 2.5T].) • Is there any malfunction?	Yes	Replace the ignition coil/ion sensor, then go to Step 10. (See IGNITION COIL/ION SENSOR REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].)
		No	Go to the next step.
3	**PURPOSE: DETERMINE INTEGRITY OF FUEL INJECTOR** • Inspect the fuel injector. (See FUEL INJECTOR INSPECTION [SKYACTIV-G 2.5T].) • Is there any malfunction?	Yes	Replace the fuel injector, then go to Step 10. (See FUEL INJECTOR REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].)
		No	Go to the next step.
4	**PURPOSE: VERIFY IF MALFUNCTION RELATED TO INTAKE-AIR SYSTEM IS CAUSE OF MISFIRE** • Visually inspect for loose, cracked or damaged hoses on intake air system. • Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 10.
		No	Go to the next step.
5	**PURPOSE: VERIFY IF POOR DRIVE BELT ASSEMBLY IS CAUSE OF MISFIRE** • Verify the condition of the drive belt assembly. (See DRIVE BELT INSPECTION [SKYACTIV-G 2.5T].) • Is there any malfunction?	Yes	Assemble drive belt correctly, then go to Step 10. (See DRIVE BELT REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].)
		No	Go to the next step.
6	**PURPOSE: VERIFY IF FOREIGN MATTER ON DRIVE BELT IS CAUSE OF MISFIRE** • Verify if oil is on the drive belt. • Is there foreign matter on the drive belt?	Yes	Remove the foreign matter on the drive belt, then go to Step 10.
		No	Go to the next step.
7	**PURPOSE: DETERMINE INTEGRITY OF DRIVE BELT AUTO TENSIONER** • Inspect the drive belt auto tensioner. (See DRIVE BELT AUTO TENSIONER INSPECTION [SKYACTIV-G 2.5T].) • Is there any malfunction?	Yes	Replace the drive belt auto tensioner, then go to Step 10. (See DRIVE BELT AUTO TENSIONER REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].)
		No	Go to the next step.
8	**PURPOSE: VERIFY IF MALFUNCTION RELATED TO ENGINE COMPRESSION IS CAUSE OF MISFIRE** • Inspect the engine compression. (See COMPRESSION INSPECTION [SKYACTIV-G 2.5T].) • Are compression pressures within specification?	Yes	Go to the next step.
		No	Replace or overhaul the engine, then go to Step 10.
9	**PURPOSE: VERIFY IF MALFUNCTION RELATED TO SEALING OF ENGINE UNIT (COMBUSTION CHAMBER AND ENGINE COOLANT PASSAGE) IS CAUSE OF MISFIRE** • Perform the "ENGINE COOLANT LEAKAGE INSPECTION". (See ENGINE COOLANT LEAKAGE INSPECTION [SKYACTIV-G 2.5T].) • Does the radiator cap tester needle drop even though there is no engine coolant leakage from the radiator or the hoses?	Yes	Engine coolant leakage from the engine (between the combustion chamber and the engine coolant passage) may have occurred. • Verify the conditions of the gasket and the cylinder head. — If there is any malfunction: • Repair or replace the malfunctioning part according to the inspection results, then go to the next step.
		No	Go to the next step.

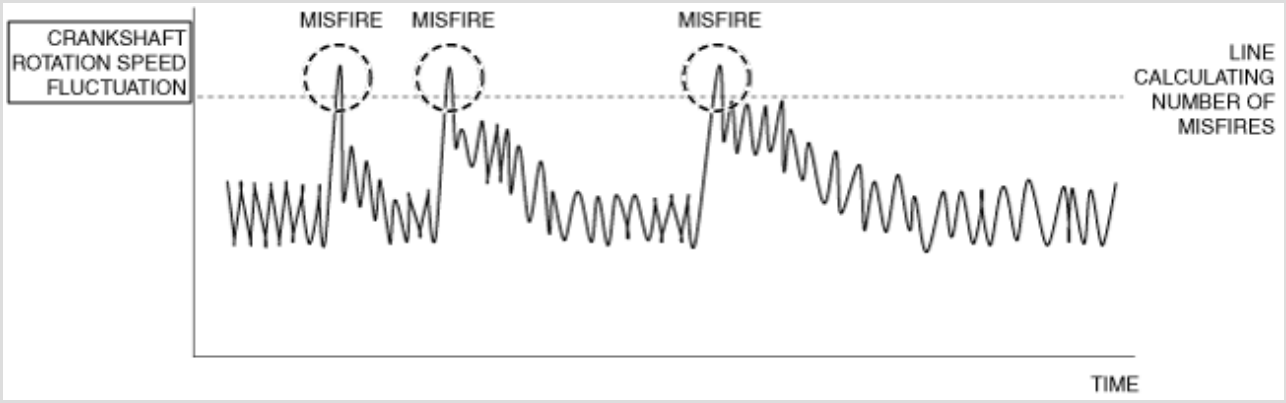
DTC P0335:00	CKP sensor circuit problem



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.
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.

STEP	INSPECTION	RESULTS	ACTION
10	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)].) • Start the engine and race it. • Perform the 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.
11	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.



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Repeatability Verification Procedure

1. Drive the vehicle at a speed of 40 km/h {25 mph} or more.
2. Shift to 3rd gear and rapidly accelerate the vehicle to 60 km/h {37 mph} (to execute misfire monitor).
3. Release the accelerator pedal and decelerate the vehicle to 40 km/h {25 mph}.
4. Repeat Step 1 to 3 operations above 5 times.

Note

• Match the engine coolant temperature in the recorded FREEZE FRAME DATA/snapshot data, the vehicle speed, and engine speed values to the best extent possible while driving the vehicle.

5. Try to reproduce the malfunction by driving the vehicle for 5 min based on the values in the FREEZE FRAME DATA/snapshot data.

PID Item/Simulation Item Used In Diagnosis

PID/DATA monitor item table

–: Not applicable

Item	Definition	Unit	Condition/Specification
APP1	Accelerator pedal opening angle (absolute value) input from APP sensor No.1	%	• Accelerator pedal released: Approx. 16% • Accelerator pedal fully depressed: Approx. 91%
	APP sensor No.1 voltage	V	• 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%
	APP sensor No.2 voltage	V	• Accelerator pedal released: Approx. 0.39 V • Accelerator pedal fully depressed: Approx. 2.27 V
ECT	Engine coolant temperature input from ECT sensor	°C, °F	• Displays ECT
	ECT sensor voltage	V	**Ignition switched ON (engine off)** • ECT is 29 °C {84 °F}: Approx. 2.65 V **Idle (after warm up)** • ECT is 88 °C {190 °F}: Approx. 0.71 V

STEP	INSPECTION	RESULTS	ACTION
5	**PURPOSE: VERIFY IF THERE IS PID ITEM CAUSING DRASTIC CHANGES OF ACCELERATION FLUCTUATION BY INPUT SIGNAL TO PCM** • Start the engine. • Access the following PIDs using the M-MDS: (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5T)].) — APP1 — APP2 — ECT — IAT — MAF — MAP — MAP_V — RPM — TP_REL — VSS • Is there a PID item affected by acceleration fluctuation?	Yes	Inspect the suspected sensor and related wiring harness. • If there is any malfunction: — Repair or replace the malfunctioning part. — Go to the Troubleshooting Diagnostic Procedure to perform the procedure from Step 11. • If there is no malfunction: — Go to the next step.
		No	Go to the next step.
6	**PURPOSE: RECORD NUMBER OF CURRENT MISFIRES FOR USE WITH MISFIRE INSPECTION** • Display the misfire rate and record the number of misfires. — Access the following PIDs using the M-MDS (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5T)].) (See PCM INSPECTION [SKYACTIV-G 2.5T].) • MF_CAT1 • MF_CAT_2 • MF_CAT_3 • MF_CAT_4 • MF_EMI1 • MF_EMI_2 • MF_EMI_3 • MF_EMI_4	–	Go to the next step.

STEP	INSPECTION	RESULTS	ACTION
9	PURPOSE: VERIFY IF MALFUNCTION RELATED TO ENGINE COMPRESSION IS CAUSE OF MISFIRE • Inspect the engine compression. (See COMPRESSION INSPECTION [SKYACTIV-G 2.5T].) • Are compression pressures within specification?	Yes	Go to the next step.
		No	Replace or overhaul the engine, then go to Step 11.
10	PURPOSE: VERIFY IF MALFUNCTION RELATED TO SEALING OF ENGINE UNIT (COMBUSTION CHAMBER AND ENGINE COOLANT PASSAGE) IS CAUSE OF MISFIRE • Perform the "ENGINE COOLANT LEAKAGE INSPECTION". (See ENGINE COOLANT LEAKAGE INSPECTION [SKYACTIV-G 2.5T].) • Does the radiator cap tester needle drop even though there is no engine coolant leakage from the radiator or the hoses?	Yes	Engine coolant leakage from the engine (between the combustion chamber and the engine coolant passage) may have occurred. • Verify the conditions of the gasket and the cylinder head. — If there is any malfunction: • Repair or replace the malfunctioning part according to the inspection results, then go to the next step.
		No	Go to the next step.
11	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 2.5T)].) • 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. • 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.
12	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	PURPOSE: INSPECT FOR OTHER RELATED DTCs • 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)].) • Is the PENDING CODE/DTC P0171:00 also present?	Yes	Repair or replace the malfunctioning part according to the applicable DTC troubleshooting. (See DTC P0171:00 [PCM (SKYACTIV G 2.5T)].) Go to Troubleshooting Diagnostic Procedure to perform the procedure from Step 1.
		No	Go to Troubleshooting Diagnostic Procedure to perform the procedure from Step 1.

Troubleshooting Diagnostic Procedure

Intention of troubleshooting procedure

- Step 1
  - — Verify if deposit cleaner has been added lately.
- Step 2
  - — Refill the fuel.
- Step 3
  - — Add deposit cleaner.

Step	Inspection	Results	Action
1	PURPOSE: VERIFY IF DEPOSIT CLEANER HAS BEEN ADDED LATELY • Ask the customer if deposit cleaner has been added lately. • Has deposit cleaner been added lately?	Yes	DTC troubleshooting completed.
		No	Go to the next step.
2	PURPOSE: REFILL THE FUEL • Refuel the vehicle.	–	Go to the next step.
3	PURPOSE: ADD DEPOSIT CLEANER • Add deposit cleaner. **Note** **• To maintain the effect of deposit cleaner, strongly advise the customer to not add fuel until the fuel tank is near empty.** • To maintain the effect of deposit cleaner, if deposit cleaner has been added lately and then more fuel has not been added, it is not necessary to recharge deposit cleaner.	–	DTC troubleshooting completed. **Note** **• DTC P1200:00 is stored again until the deposit cleaner takes effect and the deposit is removed even though the DTC is cleared. The DTC is cleared automatically after the deposit cleaner takes effect and the deposit is removed.** **• Because the traveled distance is reset if the PCM is replaced, the PCM cannot determine DTC P1200:00 until the vehicle is driven 2,400 km {1,491 miles} or more which is the precondition for the DTC.**

DTC P2228:00 [PCM (SKYACTIV-G 2.5T)]

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DTC P2228:00	BARO sensor circuit low input
DETECTION CONDITION	• The PCM monitors input voltage from the BARO sensor. If the input voltage is low for 5 s, the PCM determines that the BARO sensor 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	• Fixes the barometric pressure for the engine control at 101.32 kPa {1.0332 kgf/cm^2, 14.695 psi}.
POSSIBLE CAUSE	• BARO sensor (built-into PCM) 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)
BARO	KPa {MPA}, mBar {BAR}, psi, in H20	Actually measured barometric pressure input from barometric pressure sensor built into PCM	• Displays BARO

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
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 BARO SENSOR • Inspect the BARO sensor. (See BAROMETRIC PRESSURE (BARO) SENSOR INSPECTION [SKYACTIV-G 2.5T].) • Is there any malfunction?	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].)
		No	Go to the next step.
4	VERIFY DTC TROUBLESHOOTING COMPLETED • 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	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].)
		No	Go to the next step.
5	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.