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1997 MAZDA Xedos 6 OEM Service and Repair Workshop Manual

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STEP	INSPECTION	RESULTS	ACTION
5	**INSPECT ION SENSOR No.3 POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT** • Verify that the ignition coil/ion sensor No.3 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 ignition coil/ion sensor No.3 terminal A (wiring harness-side). • Is the voltage B+?	Yes	Go to the next step.
		No	Inspect the ENGINE2 15 A fuse. • If the fuse is blown: — Refer to the wiring diagram and verify whether or not there is a common connector between ENGINE2 15 A fuse and ignition coil/ion sensor No.3 terminal A. **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 sub relay terminal C and ignition coil/ion sensor No.3 terminal A. **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 12.

DTC P00FE: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	**Evaporator system: clogging between fuel tank and fuel tank pressure sensor**	
DETECTION CONDITION	Determination conditions	• The following conditions are all met while the vehicle is being driven: — If negative pressure is inducted to the fuel tank via the intake manifold by the operation of the purge solenoid valve with the fuel tank in a sealed condition and the target negative pressure is reached within a shorter period of time than the estimated time. — When the barometric pressure in the fuel tank is fixed and the purge solenoid valve is opened/closed, the negative pressure fluctuation in the fuel tank generates negative pressure exceeding the threshold.
	Preconditions	• Evaporative gas flow amount: Exceeds 10,000 cm^3/min or fuel tank vacuum is high • Fuel tank pressure: −4,340.2−4,030.1 Pa {−442.57−410.95 kgf/m^2, −0.62949−0.58452 psi} *1 • IAT sensor No.1: 4.44−43.33 °C {40.0−109.9 °F} *1 • Vehicle speed: 64−145 km/h {40.0−90.0 mph} *1 • Barometric pressure: above 72.23 kPa {0.7365 kgf/cm^2, 10.48 psi} *1 • Period ignition is switched off before engine starts: 210 min or more • Fuel level in fuel tank: 15−85 % *1 • Minimum value of intake manifold vacuum: 4 kPa {0.04 kgf/cm^2, 0.6 psi} or more • Minimum value of intake air amount: above 2 g/sec • Battery voltage: above 11 V *1 • The following DTCs are not detected: — ECT sensor: P0117:00, P0118:00 — TP sensor No.1: P0122:00, P0123:00 — TP sensor No.2: P0222:00, P0223:00 — Purge solenoid valve: P0443:00 — CV solenoid valve: P0446:00 — MAF sensor: P0100:00 — Fuel tank pressure sensor: P0451:00, P0452:00, P0453:00 — IAT sensor No.1: P0110:00 — MAP sensor: P0069:00, P0107:00, P0108:00 — BARO sensor: P2226:00, P2228:00, P2229:00 — VSS signal: P0500:00 — Fuel gauge sender unit: P0460:00, P0461:00, P0462:00, P0463:00 *1: Standard can be verified by displaying PIDs using M-MDS
	Malfunction determination period	• 75 s period
	Drive cycle	• 2
	Self test type	• CMDTC self test
	Sensor used	• Fuel tank pressure sensor
FAIL-SAFE FUNCTION	• Not applicable	

Item	Definition	Unit	Condition/Specification
FTP	Fuel tank pressure input from fuel tank	Pa {KPA}, mBar {BAR}, psi, in H20	• Ignition switched ON (engine off): Approx. −23 Pa {−2.3 kgf/m ^{2}, −0.0033 psi} • Idle (after warm up): −282− −46 Pa {−28.7− −4.7 kgf/m ^{2}, −0.0409− −0.0067 psi} • Racing (Engine speed 2,000 rpm): −1.47− −0.869 kPa {−0.0149− −0.0089 kgf/cm ^{2}, −0.213− −0.127 psi} • Racing (Engine speed 4,000 rpm): −1.69− −1.07 kPa {−0.0172− −0.0110 kgf/cm ^{2}, −0.245− −0.156 psi}
	Fuel tank pressure sensor voltage	V	• Ignition switched ON (engine off): Approx. 2.6 V • Idle (after warm up): 2.2−2.62 V • Racing (Engine speed 2,000 rpm): 1.9−1.91 V • Racing (Engine speed 4,000 rpm): 1.73−1.76 V

Simulation item table

Item	Applicable component	Operation	Operation condition	
			Engine condition	Other condition
EVAPCP	Purge solenoid valve	Changes % and forcibly drives/stops purge solenoid valve.	• Under the following conditions: — Ignition is switched ON (engine off) — Idle (no load)	Not applicable
EVAPCV	CV solenoid valve	Select OFF/ON to forcibly drive/stop the CV solenoid valve.	• Under the following conditions: — Ignition is switched ON (engine off) — Idle (no load)	Caution • Do not add fuel with the CV solenoid valve closed. Otherwise, it will result in air pollution because the evaporative gas in the fuel tank will escape directly into the atmosphere. Note • Override drive parameter: Off — CV solenoid valve: open • Override drive parameter: On — CV solenoid valve: close

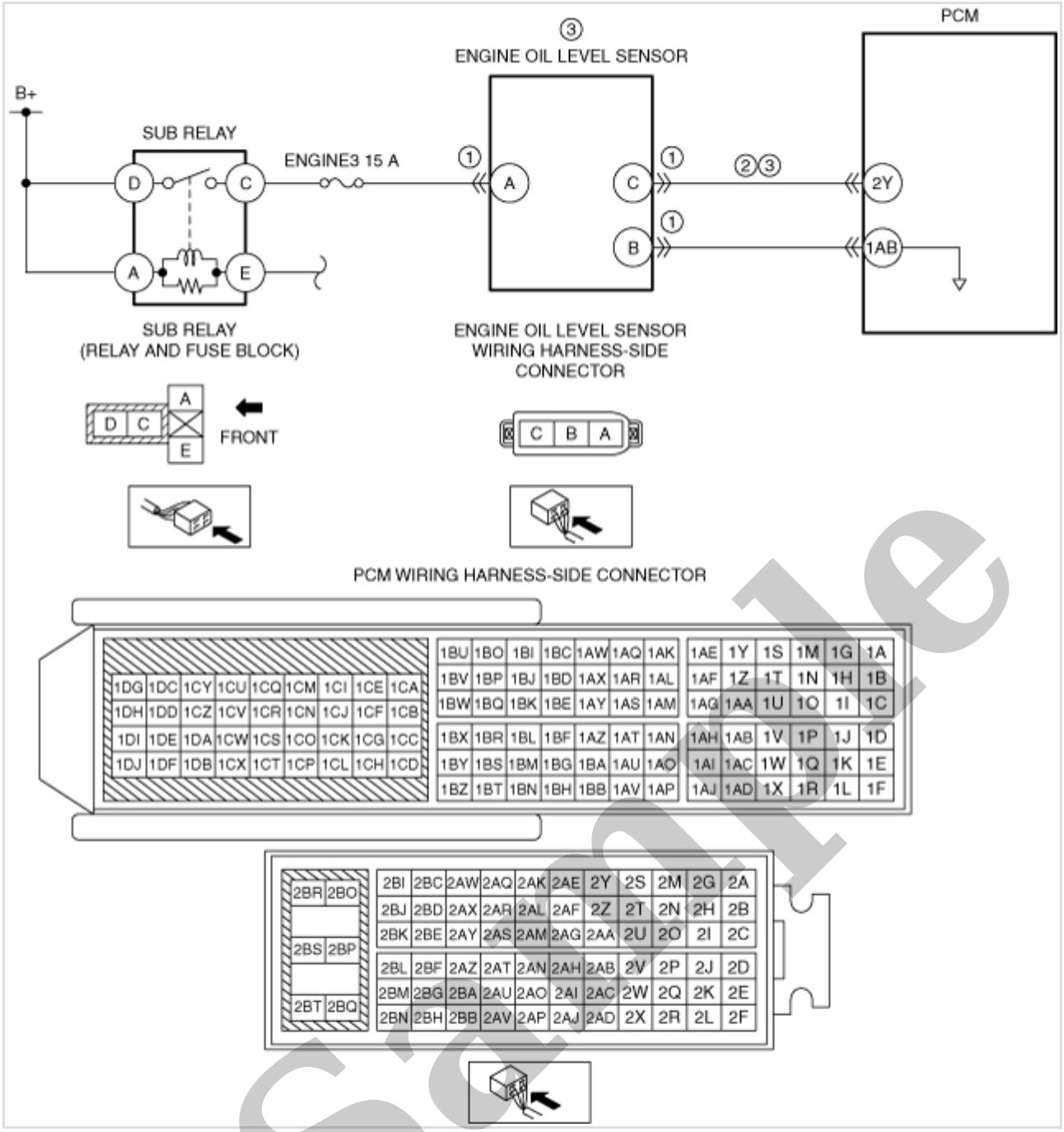
Function Inspection Using M-MDS

— Inspect for clogging between fuel tank pressure sensor and fuel tank.

• Step 6–7

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

STEP	INSPECTION	RESULTS	ACTION
1	PURPOSE: DETERMINE INTEGRITY OF FUEL TANK PRESSURE SENSOR • Inspect the fuel tank pressure sensor. (See FUEL TANK PRESSURE SENSOR INSPECTION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].) • Is there any malfunction?	Yes	Replace the charcoal canister, then go to Step 6. (See CHARCOAL CANISTER REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].)
		No	Go to the next step.
2	PURPOSE: DETERMINE INTEGRITY OF PURGE SOLENOID VALVE • Inspect the purge solenoid valve. (See PURGE SOLENOID VALVE INSPECTION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].) • Is there any malfunction?	Yes	Replace the purge solenoid valve, then go to Step 6. (See POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].)
		No	Go to the next step.
3	PURPOSE: VERIFY IF THERE IS CLOGGING BETWEEN FUEL TANK PRESSURE SENSOR AND FUEL TANK • Verify the following passage hoses, pipe connection condition, and that there is no clogging. — Between fuel tank pressure sensor and fuel shut-off valve • Is there any poor connection or clogging?	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 6.
		No	Go to the next step.
4	PURPOSE: DETERMINE INTEGRITY OF FUEL SHUT-OFF VALVE • Inspect the fuel shut-off valve. (See FUEL TANK INSPECTION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].) • Is there any malfunction?	Yes	Replace the fuel tank, then go to Step 6. (See FUEL TANK REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].)
		No	Go to the next step.
5	PURPOSE: DETERMINE INTEGRITY OF ROLLOVER VALVE • Inspect the rollover valve. (See FUEL TANK INSPECTION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].) • Is there any malfunction?	Yes	Replace the fuel tank, then go to the next step. (See FUEL TANK REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].)
		No	Go to the next step.
6	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 2.5 (WITH CYLINDER DEACTIVATION))].) • Implement the repeatability verification procedure. (See Repeatability Verification Procedure.) • Perform the Pending Trouble Code Access Procedure. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) • Is the PENDING CODE for this 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 2.5 (WITH CYLINDER DEACTIVATION)].) Go to the next step.
		No	Go to the next step.
7	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 2.5 (WITH CYLINDER DEACTIVATION))].)
		No	DTC troubleshooting completed.



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Function Explanation (DTC Detection Outline)

• The PCM receives the signal from the engine oil level sensor and diagnoses the following malfunctions.

— With an engine oil temperature of −35 °C {−31 °F} or more, the PCM receives an error signal related to the engine oil temperature from the engine oil level sensor continuously for the specified time or more.
— The PCM receives an error signal from the engine oil level sensor continuously for the specified time or more.
— The engine oil level signal of the engine oil level sensor received by the PCM does not change for the specified time or more under the following certain diagnostic conditions.

• The PCM performs diagnosis when each of the preconditions is met during a drive cycle. If any of the above malfunctions is detected a malfunction is determined, DTCs are stored and the engine oil level warning light is turned on.

• The PCM performs diagnosis when each of the preconditions is met during a drive cycle. If any of the above malfunctions is detected a malfunction is determined, DTCs are stored and the master warning light is turned on. (Without multi-information display)

• The PCM performs diagnosis when each of the preconditions is met during a drive cycle. If any of the above malfunctions is detected a malfunction is determined, DTCs are stored and the master warning indication or engine oil level warning indication is displayed on the multi-information display. (With multi-information display)

STEP	INSPECTION	RESULTS	ACTION
9	PURPOSE: VERIFY IF CAUSE IS ENGINE OIL LEVEL SENSOR STICKING MALFUNCTION • Access the following PID using the M-MDS: (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) PCM: — EOL • Start the engine while verifying the monitor value with the ignition switched ON (engine off). • Leave for 30 s or more. • Does the monitor value decrease by 7 mm {0.3 in} or more compared to the value with the ignition switched ON (engine off)?	Yes	The cause is an excessive engine oil amount exceeding the measurable range of the engine oil level sensor. Replace the engine oil because there is the possibility that the engine oil is diluted. (See ENGINE OIL REPLACEMENT [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].) Go to the troubleshooting procedure to perform the procedure from Step 4.
		No	Go to the troubleshooting procedure to perform the procedure from Step 1.

Troubleshooting Diagnostic Procedure

Intention of troubleshooting procedure

• Step 1–3

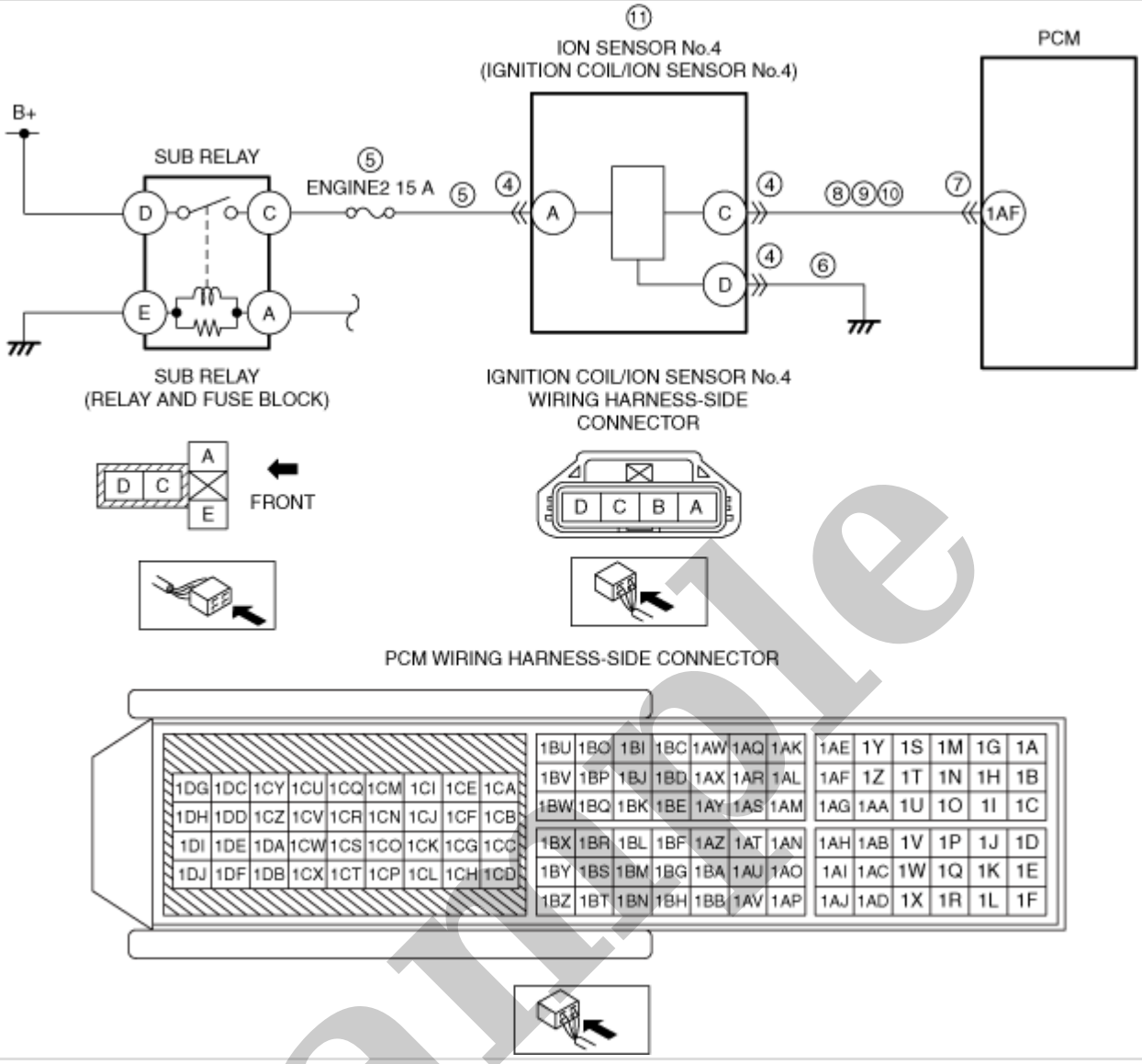
— Perform the LIN communication line inspection.

• Step 4–5

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

STEP	INSPECTION	RESULTS	ACTION
1	PURPOSE: INSPECT ENGINE OIL LEVEL SENSOR CONNECTOR CONDITION • Switch the ignition off. • Disconnect the engine oil level sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction?	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminals, then go to Step 4.
2	PURPOSE: INSPECT ENGINE OIL LEVEL SENSOR CONTROL CIRCUIT FOR SHORT TO GROUND • Disconnect the PCM connector. • Verify that the engine oil level sensor and PCM connectors are disconnected. • Inspect for continuity between engine oil level sensor terminal C (wiring harness-side) and body ground. • Is there continuity?	Yes	Refer to the wiring diagram and verify whether or not there is a common connector between engine oil level sensor terminal C and PCM terminal 2Y. **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 4.
		No	Go to the next step.

DTC P2311:00	Ion sensor No.4 circuit problem

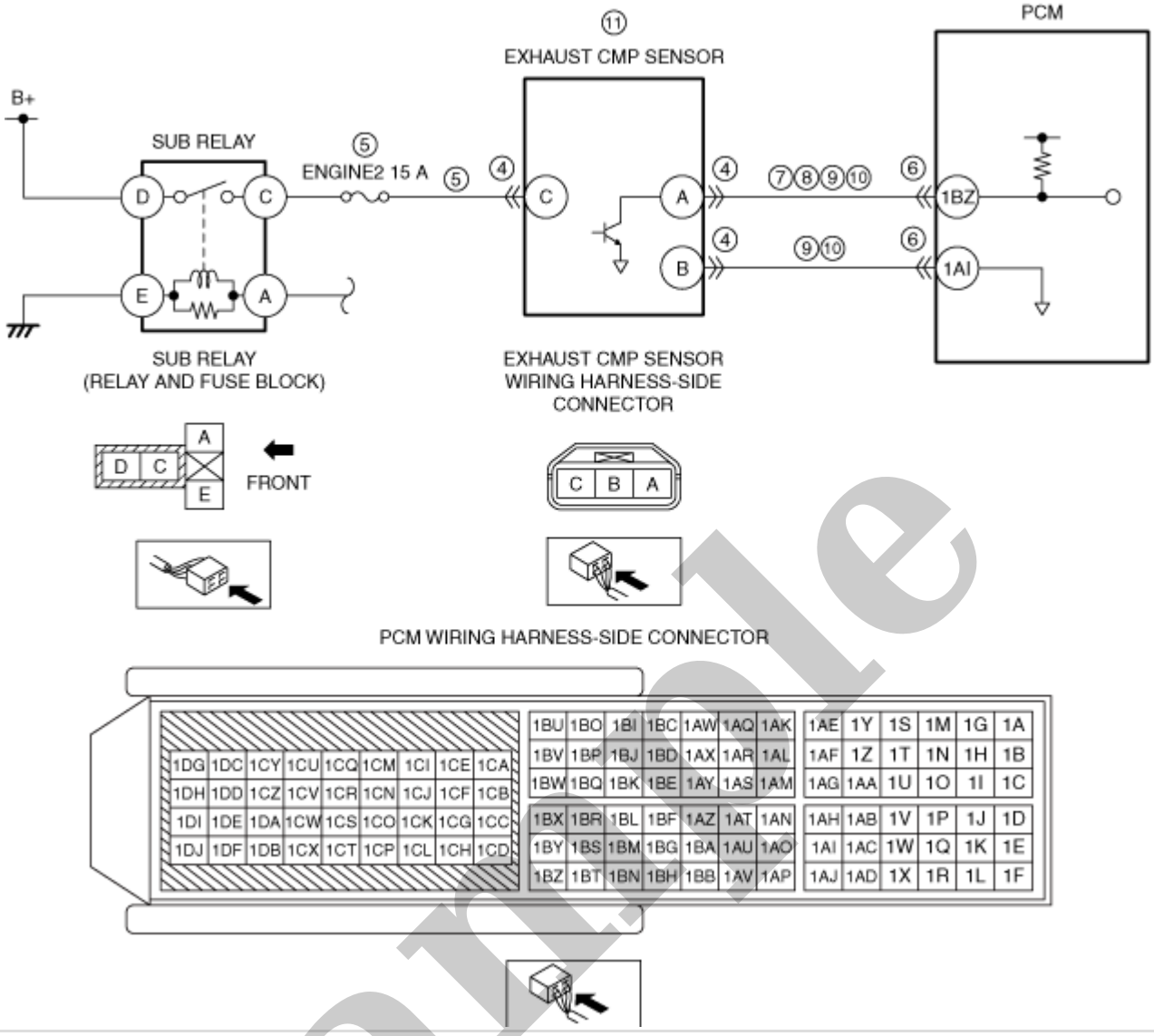


Diagnostic Procedure

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 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
6	**INSPECT ION SENSOR No.4 GROUND CIRCUIT FOR OPEN CIRCUIT** • Verify that the ignition coil/ion sensor No.4 connector is disconnected. • Switch the ignition off. • Inspect for continuity between ignition coil/ion sensor No.4 terminal D (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 ignition coil/ion sensor No.4 terminal D 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 ignition coil/ion sensor No.4 and body ground — Loose or lifting ground point • Repair or replace the malfunctioning part. Go to Step 12.
7	**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 12.
		No	Go to the next step.
8	**INSPECT ION SENSOR No.4 SIGNAL CIRCUIT FOR SHORT TO GROUND** • Verify that the ignition coil/ion sensor No.4 and PCM connectors are disconnected. • Inspect for continuity between ignition coil/ion sensor No.4 terminal C (wiring harness-side) and body ground. • Is there continuity?	Yes	Refer to the wiring diagram and verify whether or not there is a common connector between ignition coil/ion sensor No.4 terminal C and PCM terminal 1AF. **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 12.
		No	Go to the next step.
9	**INSPECT ION SENSOR No.4 SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY** • Verify that the ignition coil/ion sensor 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 ignition coil/ion sensor No.4 terminal C (wiring harness-side). • 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 ignition coil/ion sensor No.4 terminal C and PCM terminal 1AF. **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 12.

DTC P0365:00	Exhaust CMP 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.