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1991 MAZDA 626 (Mk.3) Sedan OEM Service and Repair Workshop Manual

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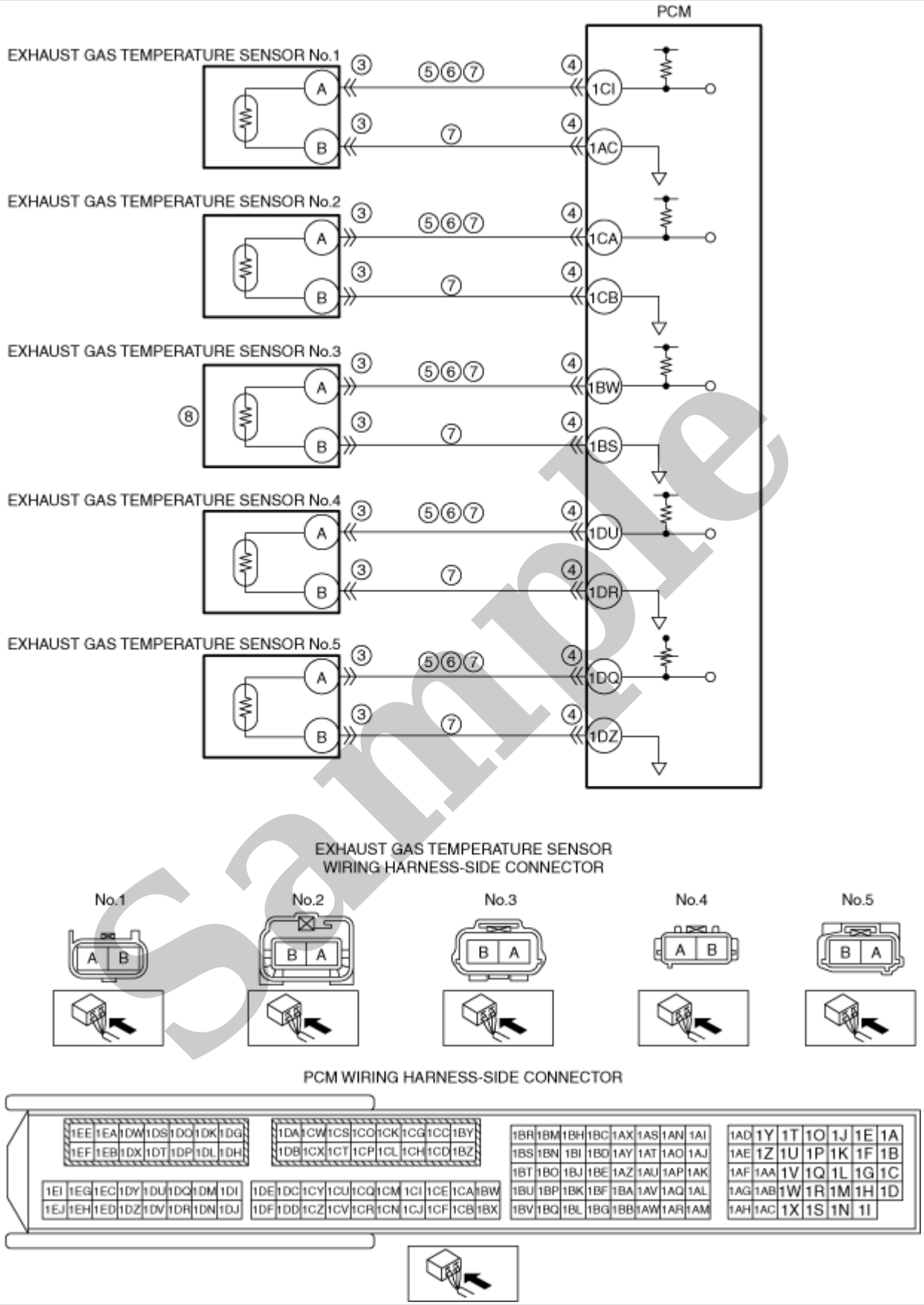
DTC P242B:00	Exhaust gas temperature sensor No.3 circuit range/performance problem
DETECTION CONDITION	• The PCM detects the following condition A, B, or C. **Condition A:** • When the PCM detects that the difference in temperature of all of the following exceeds 44.4 °C {112 °F}: — Difference between temperatures detected by exhaust gas temperature sensors No.1 and No.3 — Difference between temperatures detected by exhaust gas temperature sensors No.2 and No.3 — Difference between temperatures detected by exhaust gas temperature sensors No.4 and No.3 — Difference between temperatures detected by exhaust gas temperature sensors No.5 and No.3 **MONITORING CONDITIONS** • When all of the following conditions are met: — Soak time: 360 min or more — Battery voltage: 8 V or more — Ignition switched ON (engine off or on) — Vehicle is not equipped with engine block heater (determined based on changed in engine coolant temperature) — The following DTCs are not detected: • ECT sensor No.1: P0116:00, P0117:00, P0118:00, P011A:00 • Exhaust gas temperature sensor No.1: P0545:00, P0546:00 • Exhaust gas temperature sensor No.2: P2032:00, P2033:00 • Exhaust gas temperature sensor No.3: P242C:00, P242D:00 • Exhaust gas temperature sensor No.4: P2470:00, P2471:00 • Exhaust gas temperature sensor No.5: P2481:00, P2482:00 **Condition B:** • Maximum exhaust gas temperature detected by exhaust gas temperature sensor No.3 is less than 130 °C {266 °F} for a continuous 0.1 s. **MONITORING CONDITIONS** • When all of the following conditions are met: — Soak time: 360 min or more — Less than 192 s after any one of the following conditions is met • Engine stalls after engine start • Fuel cut with engine speed of 700 rpm or more — Accumulated fuel injection amount for diesel particulate filter regeneration control: 0 mm^3/st — Automatic diesel particulate filter regeneration control: Stopped — Accumulated fuel injection amount from ignition switched ON: 10 mm^3/st–9600000 mm^3/st — Time from engine start: Less than 60 minutes — Intake air temperature: -10 °C {14 °F} or more — Battery voltage: 8 V or more — Vehicle is not equipped with engine block heater (determined based on changed in engine coolant temperature) — Exhaust gas temperature detected by exhaust gas temperature sensor No.4 increases to above 150 °C {302 °F} from 50 °C {302 °F} or less. — The following DTCs are not detected: • ECT sensor No.1: P0116:00, P0117:00, P0118:00, P011A:00 • Exhaust gas temperature sensor No.2: P2032:00, P2033:00 • Exhaust gas temperature sensor No.3: P242C:00, P242D:00 • Exhaust gas temperature sensor No.4: P2470:00, P2471:00 • IAT sensor No.1: P0111:00, P0112:00, P0113:00

DTC P242B:00	Exhaust gas temperature sensor No.3 circuit range/performance problem



Diagnostic Procedure

STEP	INSPECTION		ACTION
6	INSPECT EXHAUST GAS TEMPERATURE SENSOR CIRCUIT FOR SHORT TO POWER SUPPLY • Verify that the exhaust gas temperature sensor No.1, exhaust gas temperature sensor No.2, exhaust gas temperature sensor No.3, exhaust gas temperature sensor No.4, exhaust gas temperature sensor No.5 and PCM connectors are disconnected. • Switch the ignition ON (engine off). • Measure the voltage at the following terminals (wiring harness-side): — Exhaust gas temperature sensor No.1 terminal A — Exhaust gas temperature sensor No.2 terminal A — Exhaust gas temperature sensor No.3 terminal A — Exhaust gas temperature sensor No.4 terminal A — Exhaust gas temperature sensor No.5 terminal A • 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 the following terminals: • Exhaust gas temperature sensor No.1 terminal A—PCM terminal 1CI • Exhaust gas temperature sensor No.2 terminal A—PCM terminal 1CA • Exhaust gas temperature sensor No.3 terminal A—PCM terminal 1BW • Exhaust gas temperature sensor No.4 terminal A—PCM terminal 1DU • Exhaust gas temperature sensor No.5 terminal A—PCM terminal 1DQ **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 9.
7	INSPECT EXHAUST GAS TEMPERATURE SENSOR CIRCUIT FOR OPEN CIRCUIT • Verify that the exhaust gas temperature sensor No.1, exhaust gas temperature sensor No.2, exhaust gas temperature sensor No.3, exhaust gas temperature sensor No.4, exhaust gas temperature sensor No.5 and PCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): — Exhaust gas temperature sensor No.1 terminal A—PCM terminal 1CI — Exhaust gas temperature sensor No.1 terminal B—PCM terminal 1AC — Exhaust gas temperature sensor No.2 terminal A—PCM terminal 1CA — Exhaust gas temperature sensor No.2 terminal B—PCM terminal 1CB — Exhaust gas temperature sensor No.3 terminal A—PCM terminal 1BW — Exhaust gas temperature sensor No.3 terminal B—PCM terminal 1BS — Exhaust gas temperature sensor No.4 terminal A—PCM terminal 1DU — Exhaust gas temperature sensor No.4 terminal B—PCM terminal 1DR — Exhaust gas temperature sensor No.5 terminal A—PCM terminal 1DQ — Exhaust gas temperature sensor No.5 terminal B—PCM terminal 1DZ • 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 the following terminals: • Exhaust gas temperature sensor No.1 terminal A—PCM terminal 1CI • Exhaust gas temperature sensor No.1 terminal B—PCM terminal 1AC • Exhaust gas temperature sensor No.2 terminal A—PCM terminal 1CA • Exhaust gas temperature sensor No.2 terminal B—PCM terminal 1CB • Exhaust gas temperature sensor No.3 terminal A—PCM terminal 1BW • Exhaust gas temperature sensor No.3 terminal B—PCM terminal 1BS • Exhaust gas temperature sensor No.4 terminal A—PCM terminal 1DU • Exhaust gas temperature sensor No.4 terminal B—PCM terminal 1DR • Exhaust gas temperature sensor No.5 terminal A—PCM terminal 1DQ • Exhaust gas temperature sensor No.5 terminal B—PCM terminal 1DZ **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 9.

DESCRIPTION	Exhaust temperature too low	
DETECTION CONDITION	Determination conditions	• The exhaust gas temperature measured before diesel particulate filter by exhaust gas temperature sensor No.3 is less than 440 °C {824 °F} for a continuous 5 s.
	Preconditions	• When any of the following conditions is met: — Fuel injection control performs diesel particulate filter regeneration control post injection — During diesel particulate filter auto regeneration or during High Temp. F/B control by DeSOx control — Barometric pressure: 72 kPa {0.73 kgf/cm^2, 10 psi} or more — Engine coolant temperature: 40 °C {104 °F} or more — Intake air temperature: -10 °C {14 °F} or more — Estimated diesel particulate filter temperature: 440 °C {824 °F} or more — The following DTCs are not detected: • BARO sensor: P2227:00, P2228:00, P2229:00 • ECT sensor No.1: P0116:00, P0117:00, P0118:00, P011A:00 • Exhaust gas temperature sensor No.1: P0545:00, P0546:00, P2080:00 • Exhaust gas temperature sensor No.2: P2031:00, P2032:00, P2033:00 • Exhaust gas temperature sensor No.3: P242B:00, P242C:00, P242D:00 • Exhaust gas pressure sensor No.1: P0471:00, P0472:00, P0473:00 • Fuel injection quantity: P1051:00, P1052:00, P1053:00, P1054:00, P1055:00, P1056:00, P1057:00, P1058:00 • Fuel pressure sensor (integrated with fuel injector): P10CB:00, P10CC:00, P10CD:00 • Fuel temperature sensor (built-into fuel injector): P10D1:00, P10D2:00, P10D3:00, P10D4:00, P10D5:00 • IAT sensor No.1: P0111:00, P0112:00, P0113:00 • MAP sensor No.2: P0106:00, P0107:00, P0108:00 • MAF sensor: P0101:00, P0102:00, P0103:00 • Exhaust gas pressure sensor No.2: P2453:00, P2454:00, P2455:00
	Drive cycle	• 2
	Self test type	• CMDTC self test
	Sensor used	• Exhaust gas temperature sensor No.2 • Exhaust gas temperature sensor No.3 • IAT sensor No.2 • PCM
FAIL-SAFE FUNCTION	• Inhibits the automatic diesel particulate filter regeneration control and compulsory diesel particulate filter regeneration control. • Inhibits the DENOx/DESOx control. • Inhibits the EGR control.	
VEHICLE STATUS WHEN DTCs ARE OUTPUT	• Not applicable	
POSSIBLE CAUSE	• A/F sensor malfunction • Fuel injector malfunction • Turbo system malfunction • Catalytic converter malfunction • PCM malfunction • Misfire	

STEP	INSPECTION		ACTION
1	PURPOSE: INSPECT FUEL INJECTOR • Inspect the fuel injector. (See FUEL INJECTOR INSPECTION [SKYACTIV-D 2.2].) • Is there any malfunction?	Yes	Replace the fuel injector, then go to Step 3. (See FUEL INJECTOR REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
		No	Go to the next step.
2	PURPOSE: INSPECT TURBOCHARGER • Inspect the turbocharger. (See TURBOCHARGER INSPECTION [SKYACTIV-D 2.2].) • Is there any malfunction?	Yes	Replace the turbocharger, then go to the next step. (See TURBOCHARGER REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
		No	Replace the catalytic converter, then go to the next step. (See EXHAUST SYSTEM REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
3	PURPOSE: VERIFY IF MISFIRE IS OCCURRING • Verify if a misfire is occurring referring to the troubleshooting procedure for DTC P0300:00. (See DTC P0300:00 [PCM (SKYACTIV-D 2.2)].) • Has a misfire occurred?	Yes	Specify the cause of the misfire and repair or replace the malfunctioning location referring to the troubleshooting procedure for DTC P0300:00. (See DTC P0300:00 [PCM (SKYACTIV-D 2.2)].) Go to the next step.
		No	Go to the next step.
4	PURPOSE: PERFORM DTC INSPECTION AND VERIFY IF MALFUNCTIONING PART IS PCM • Always reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See CLEARING DTC [PCM (SKYACTIV-D 2.2)].) • Implement the repeatability verification procedure. (See Repeatability Verification Procedure.) • Perform the Pending Trouble Code Access Procedure. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-D 2.2)].) • 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-D 2.2].) Go to the next step.
		No	Go to the next step.
5	PURPOSE: VERIFY AFTER REPAIR PROCEDURE • Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [PCM (SKYACTIV-D 2.2)].) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [PCM (SKYACTIV-D 2.2)].)
		No	DTC troubleshooting completed.

Function Explanation (DTC Detection Outline)

• The PCM calculates the EGR gas temperature before and after the EGR cooler and the cooling efficiency of the EGR cooler from the engine coolant temperature, and then performs diagnosis of the EGR cooler.
• If the calculated EGR cooler cooling efficiency is the specified value or less, the PCM determines that there is a malfunction in the EGR cooler.
• The PCM performs diagnosis when each of the preconditions during drive cycle is met. When an EGR cooler malfunction condition is met during 1 drive cycle, a malfunction is determined and a pending code is stored.
• If the PCM determines that the malfunction recurs from the next drive cycle and thereafter, it stores a DTC and turns on the check engine light.

Repeatability Verification Procedure

Warning

• While performing this step, always operate the vehicle in a safe and lawful manner.

1. Start the engine and warm it up completely.
2. Drive the vehicle at a constant speed of 50 km/h {31 mph} for 10 s, then release the accelerator pedal and decelerate to 0 km/h {0 mph}.

PID Item/Simulation Item Used In Diagnosis

• Not applicable

Function Inspection Using M-MDS

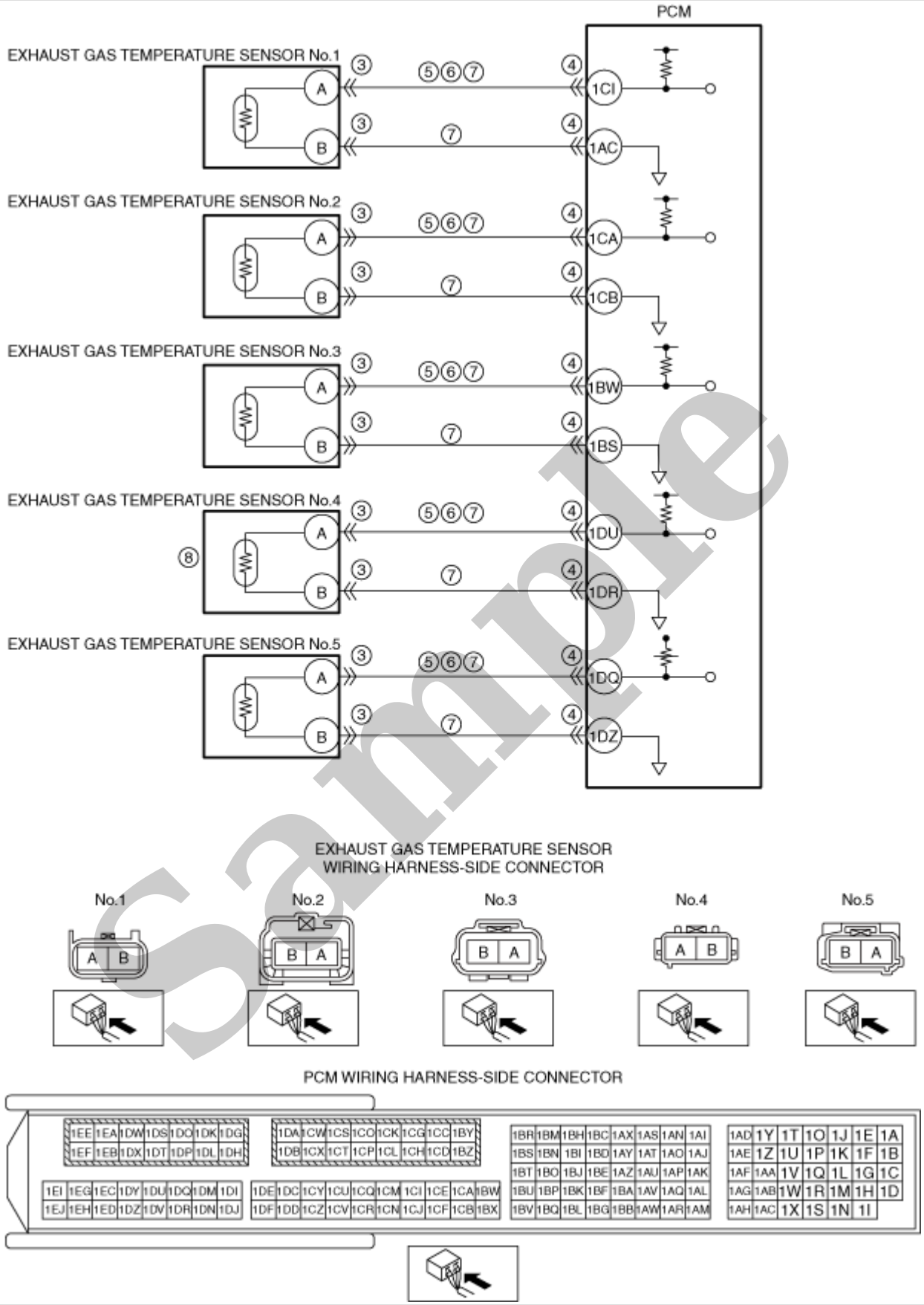
STEP	INSPECTION	RESULTS	ACTION
1	**PURPOSE: VERIFY RELATED REPAIR INFORMATION AVAILABILITY** • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to the available repair information. • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	**PURPOSE: IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA** • Is the DTC P2457:00 on FREEZE FRAME DATA?	Yes	Go to the next step.
		No	Go to the troubleshooting procedure for DTC on FREEZE FRAME DATA. (See DTC TABLE [PCM (SKYACTIV-D 2.2)].)
3	**PURPOSE: 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.

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.
3	**INSPECT EXHAUST GAS TEMPERATURE SENSOR No.4 CONNECTOR CONDITION** • Switch the ignition off. • Disconnect the exhaust gas temperature sensor No.4 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 8.
		No	Go to the next step.
4	**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 8.
		No	Go to the next step.
5	**INSPECT EXHAUST GAS TEMPERATURE SENSOR No.4 SIGNAL CIRCUIT FOR SHORT TO GROUND** • Verify that the exhaust gas temperature sensor No.4 and PCM connectors are disconnected. • Inspect for continuity between exhaust gas temperature sensor No.4 terminal A (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 exhaust gas temperature sensor No.4 terminal A and PCM termina 1DU. **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 8.
		No	Go to the next step.

DTC P246F:00	Exhaust gas temperature sensor No.4 circuit range/performance problem
DETECTION CONDITION	• The PCM detects the following condition A, B, or C. **Condition A:** • When the PCM detects that the difference in temperature of all of the following exceeds 44.4 °C {112 °F}: — Difference between temperatures detected by exhaust gas temperature sensors No.1 and No.4 — Difference between temperatures detected by exhaust gas temperature sensors No.2 and No.4 — Difference between temperatures detected by exhaust gas temperature sensors No.3 and No.4 — Difference between temperatures detected by exhaust gas temperature sensors No.5 and No.4 **MONITORING CONDITIONS** • When all of the following conditions are met: — Soak time: 360 min or more — Battery voltage: 8 V or more — Ignition switched ON (engine off or on) — Vehicle is not equipped with engine block heater (determined based on changed in engine coolant temperature) — The following DTCs are not detected: • ECT sensor No.1: P0116:00, P0117:00, P0118:00, P011A:00 • Exhaust gas temperature sensor No.1: P0545:00, P0546:00 • Exhaust gas temperature sensor No.2: P2032:00, P2033:00 • Exhaust gas temperature sensor No.3: P242C:00, P242D:00 • Exhaust gas temperature sensor No.4: P2470:00, P2471:00 • Exhaust gas temperature sensor No.5: P2481:00, P2482:00 **Condition B:** • Maximum exhaust gas temperature detected by exhaust gas temperature sensor No.4 is less than 130 °C {266 °F} for a continuous 0.1 s. **MONITORING CONDITIONS** • When all of the following conditions are met: — Soak time: 360 min or more — Less than 192 s after any one of the following conditions is met • Engine stalls after engine start • Fuel cut with engine speed of 700 rpm or more — Accumulated fuel injection amount for diesel particulate filter regeneration control: 0 mm^3/st — Automatic diesel particulate filter regeneration control: Stopped — Accumulated fuel injection amount from ignition switched ON: 10 mm^3/st–9600000 mm^3/st — Time from engine start: Less than 60 minutes — Intake air temperature: -10 °C {14 °F} or more — Battery voltage: 8 V or more — Vehicle is not equipped with engine block heater (determined based on changed in engine coolant temperature) — Exhaust gas temperature detected by exhaust gas temperature sensor No.5 increases to above 150 °C {302 °F} from 150 °C {302 °F} or less. — The following DTCs are not detected: • Exhaust gas temperature sensor No.3: P242C:00, P242D:00 • Exhaust gas temperature sensor No.4: P2470:00, P2471:00 • Exhaust gas temperature sensor No.5: P2481:00, P2482:00 • ECT sensor No.1: P0116:00, P0117:00, P0118:00, P011A:00 • IAT sensor No.1: P0111:00, P0112:00, P0113:00

DTC P246F:00	Exhaust gas temperature sensor No.4 circuit range/performance problem



Diagnostic Procedure