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1991 MAZDA 121/ Revue (Mk.2) OEM Service and Repair Workshop Manual

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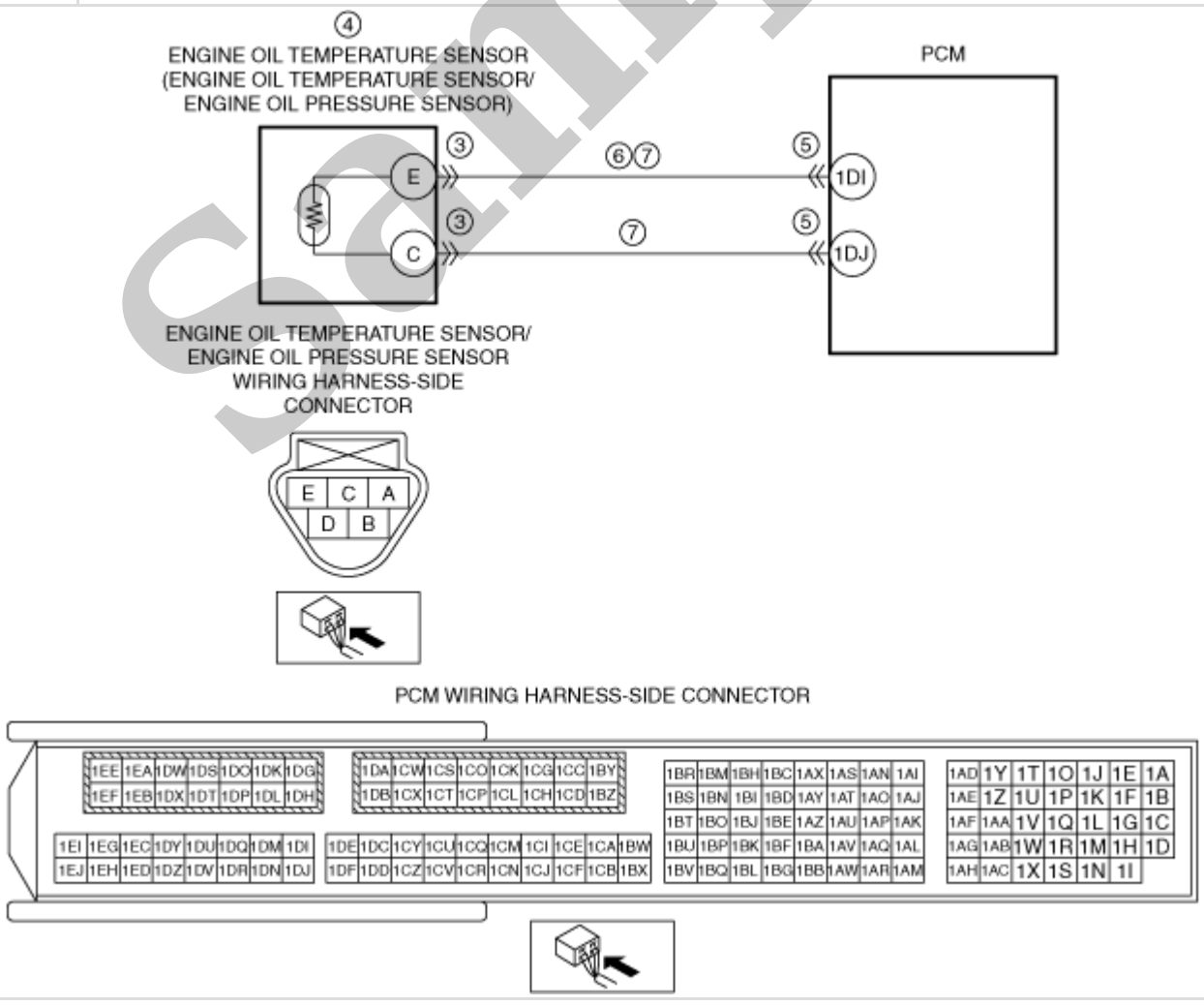
DTC P0197:00 [PCM (SKYACTIV-D 2.2)]

SM2896066

id0102j521200

DTC P0197:00	Engine oil temperature sensor circuit low input
DETECTION CONDITION	• The PCM monitors the input signal from the engine oil temperature sensor. If the voltage from the engine oil temperature sensor is below 0.28 V for 5 s, the PCM determines that the engine oil temperature sensor circuit has a malfunction. MONITORING CONDITIONS — Battery voltage: 8 V or more 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	• Not applicable
POSSIBLE CAUSE	• Engine oil temperature sensor/engine oil pressure sensor connector or terminals malfunction • Engine oil temperature sensor malfunction • PCM connector or terminals malfunction • Short to ground in wiring harness between engine oil temperature sensor/engine oil pressure sensor terminal E and PCM terminal 1DI • Engine oil temperature sensor signal circuit and ground circuit are shorted to each other • PCM malfunction



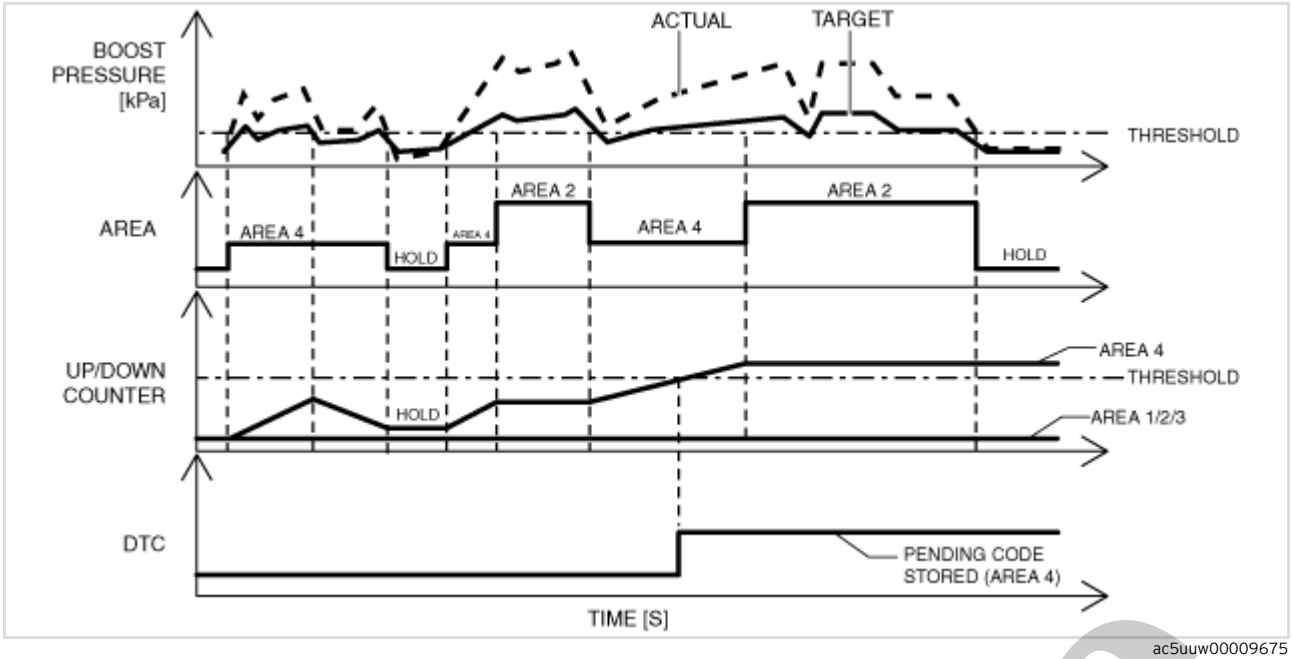
DTC P0198:00 [PCM (SKYACTIV-D 2.2)]

SM2896067

id0102j521210

DTC P0198:00	Engine oil temperature sensor circuit high input
DETECTION CONDITION	• The PCM monitors the input signal from the engine oil temperature sensor. If the PCM detects that the engine oil temperature sensor voltage at the PCM terminal 1DI is above 4.94 V for 5 s, the PCM determines that the engine oil temperature sensor circuit has a malfunction. MONITORING CONDITIONS — Battery voltage: 8 V or more 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	• Not applicable
POSSIBLE CAUSE	• Engine oil temperature sensor/engine oil pressure sensor connector or terminals malfunction • PCM connector or terminals malfunction • Short to power supply in wiring harness between engine oil temperature sensor/engine oil pressure sensor terminal E and PCM terminal 1DI • Open circuit in wiring harness between the following terminals: — Engine oil temperature sensor/engine oil pressure sensor terminal E—PCM terminal 1DI — Engine oil temperature sensor/engine oil pressure sensor terminal C—PCM terminal 1DJ • Engine oil temperature sensor malfunction • PCM malfunction

STEP	INSPECTION	RESULTS	ACTION
8	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-D 2.2)].) • Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [PCM (SKYACTIV-D 2.2)].) • Is the same 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.
9	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.



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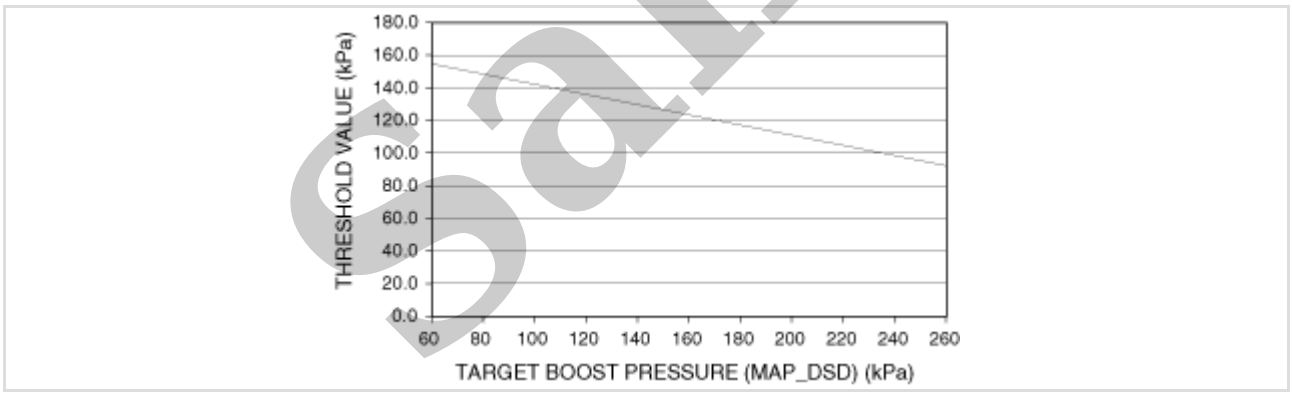
Repeatability Verification Procedure

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.

1. Access the PID/DATA monitor item INTK_MAPA, MAP_DSD and REGVP using the M-MDS.
2. Start engine and run it at idle.
3. Accelerate in 2nd gear from 40 km/h {25 mph} to 55 km/h {34 mph} taking 5 s or more.
4. Verify that the difference of the threshold value or more does not continue for 10 s or more between the MAP_DSD and INTK_MAPA while accelerating with less than 5 mm {0.1 in} of REGVP.



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PID Item/Simulation Item Used In Diagnosis

PID/DATA monitor item table

Item	Definition	Unit	Condition/Specification
INTK_MAPA	Manifold absolute pressure (No.2)	KPa {MPA}	• Displays the manifold absolute pressure (No.2).
MAP_DSD	Manifold absolute pressure (No.2) desired value	KPa {MPA}	• Displays the manifold absolute pressure (No.2) desired value.
REGVP	Regulating valve position sensor	mm {IN}	• Displays the regulating valve position sensor value.

STEP	INSPECTION		ACTION
8	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.

DTC P166D:00 [PCM (SKYACTIV-D 2.2)]

SM2896144

id0102j534680

DTC P166D:00	**Malfunction in PCM: Exhaust gas temperature sensor No.4 control transistor malfunction**
DETECTION CONDITION	• If any of the following conditions is met for 6 s under condition A or condition B: **Condition A:** — When the transistor in the exhaust gas temperature sensor No.4 operates, the transistor's downstream voltage is 2.10 V or less. **Condition B:** — When the transistor in the exhaust gas temperature sensor No.4 is not operating the transistor's downstream voltage is 4.87 V or more. **MONITORING CONDITIONS** • The DTC P2471:00 is not detected. **Diagnostic support note** • This is a continuous monitor (CCM). • The check engine light illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA/Snapshot data is available. • DTC is stored in the PCM memory.
FAIL-SAFE FUNCTION	• Not applicable
POSSIBLE CAUSE	• Exhaust gas temperature sensor No.4 malfunction • PCM malfunction
SYSTEM WIRING DIAGRAM	Not applicable

Diagnostic Procedure

STEP	INSPECTION	RESULTS	ACTION
1	**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	**IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA** • Is the DTC P166D: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)].)

STEP	INSPECTION	RESULTS	ACTION
3	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.
4	INSPECT EXHAUST GAS TEMPERATURE SENSOR No.5 • Inspect the exhaust gas temperature sensor No.5. (See EXHAUST GAS TEMPERATURE SENSOR INSPECTION [SKYACTIV-D 2.2].) • Is there any malfunction?	Yes	Replace the exhaust gas temperature sensor No.5, then go to the next step. (See EXHAUST GAS TEMPERATURE SENSOR REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
		No	Go to the next step.
5	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-D 2.2)].) • Switch the ignition ON (engine off). • Access the EGT_B1S5 PID using the M-MDS. • Verify that the PID EGT_B1S5 monitoring value is 150 °C {302 °F} (temperature in which transistor always turns off) or less and wait for 10 s or more. • Start the engine. • Drive the vehicle until the PID EGT_B1S5 monitoring value reaches 250 °C {482 °F} or more (temperature in which transistor always turns on) to warm up the engine. • 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	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
		No	Go to the next step.
6	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.

DTC P012F:00 [PCM (SKYACTIV-D 2.2)]

SM2896147

id0102j536350

DTC P012F:00	Engine oil temperature sensor circuit range/performance problem
DETECTION CONDITION	• When the following conditions are met, the difference between the engine oil temperature and ECT sensor No.1 is more than 7.6 °C {46 °F} or less than -9.8 °C {14 °F}. MONITORING CONDITIONS • Period vehicle being left: 6 h or more • Battery voltage: 8 V or more • Switch the ignition ON. • Block heater is not being used • The following DTCs are not detected: — Engine oil temperature sensor: P0197:00, P0198:00 — ECT sensor No.1: P0116:00, P0117:00, P0118:00, P011A:00 Diagnostic support note • This is a continuous monitor (CCM). • The check engine light illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA/Snapshot data is available. • DTC is stored in the PCM memory.
FAIL-SAFE FUNCTION	• Not applicable
POSSIBLE CAUSE	• Open or short circuit in wiring harness between the following terminals: — ECT sensor No.1—PCM — Engine oil temperature sensor/engine oil pressure sensor—PCM • ECT sensor No.1 connector or terminals malfunction • Engine oil temperature sensor/engine oil pressure sensor connector or terminals malfunction • PCM connector or terminals malfunction • Engine oil temperature sensor malfunction • ECT sensor No.1 malfunction • PCM malfunction
SYSTEM WIRING DIAGRAM	Not applicable

Diagnostic Procedure

STEP	INSPECTION		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.

DTC P0500:00 [PCM (SKYACTIV-D 2.2)]

SM2896223

id0102j570480

DTC P0500:00	VSS circuit problem
DETECTION CONDITION	• With the following conditions met, the vehicle speed is determined to be less than 3.7 km/h {2.3 mph} for a continuous 14 s. MONITORING CONDITIONS • When all of the following conditions are met: — Selector lever: Position other than P, N position — Fuel injection amount: above 20 mm^3/st — Engine speed: 2,000 rpm or more — Brake switch: off — The following DTC is not detected: • CAN: U0121:00 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	• PCM restricts engine torque. • Inhibits the automatic diesel particulate filter regeneration control and compulsory diesel particulate filter regeneration control. • Inhibits the DENOx/DESOx control. • Inhibits the EGR control.
POSSIBLE CAUSE	• CAN communication line malfunction between PCM and DSC HU/CM • DSC HU/CM connector or terminals malfunction • DSC HU/CM malfunction • ABS wheel-speed sensor malfunction • PCM malfunction
SYSTEM WIRING DIAGRAM	Not applicable

Diagnostic Procedure

STEP	INSPECTION		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.