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1979 MAZDA RX-7 (SA/FB) OEM Service and Repair Workshop Manual

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STEP	INSPECTION	RESULTS	ACTION
6	**INSPECT ENGINE OIL SOLENOID VALVE CONTROL CIRCUIT FOR SHORT TO GROUND** • Verify that the engine oil solenoid valve and PCM connectors are disconnected. • Inspect for continuity between engine oil solenoid valve terminal B (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 solenoid valve terminal B and PCM terminal 1CH. **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 9.
		No	Go to the next step.
7	**INSPECT ENGINE OIL SOLENOID VALVE CONTROL CIRCUIT FOR OPEN CIRCUIT** • Verify that the engine oil solenoid valve and PCM connectors are disconnected. • Inspect for continuity between engine oil solenoid valve terminal B (wiring harness-side) and PCM terminal 1CH (wiring harness-side). • 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 engine oil solenoid valve terminal B and PCM terminal 1CH. **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.
8	**INSPECT ENGINE OIL SOLENOID VALVE** • Inspect the engine oil solenoid valve. (See ENGINE OIL SOLENOID VALVE INSPECTION [SKYACTIV-D 2.2].) • Is there any malfunction?	Yes	Replace the engine oil solenoid valve, then go to the next step. (See ENGINE OIL SOLENOID VALVE REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
		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-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.
10	**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.

STEP	INSPECTION	RESULTS	ACTION
7	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.
8	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.

STEP	INSPECTION		ACTION
7	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 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.
8	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 P2118:00 [PCM (SKYACTIV-D 2.2)]

SM2896083

id0102j521450

DTC P2118:00	Intake shutter valve control duty signal error
DETECTION CONDITION	• When any of the following conditions are met: — The intake air shutter valve control duty value is 90 % for a continuous 2.2 s. • Intake air shutter valve is operating — Difference between actual opening angle and target opening angle of intake air shutter valve is larger than 4.2 ° for a continuous 2 s • Battery voltage: 8 V or more • Intake air shutter valve is operating • Target opening angle of intake air shutter valve: 75 ° or less — Difference between actual opening angle and target opening angle of intake air shutter valve is smaller than -4.2 ° for a continuous 2 s • Battery voltage: 8 V or more • Intake air shutter valve is operating • Target opening angle of intake air shutter valve: 10 ° 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	• Inhibits the automatic diesel particulate filter regeneration control/compulsory diesel particulate filter regeneration control. • Inhibits the DENOx/DESOx control. • Fully opens the intake shutter valve opening angle. • Inhibits the EGR control. • PCM restricts engine-transaxle integration control.
POSSIBLE CAUSE	• Intake shutter valve connector or terminals malfunction • Open circuit in wiring harness between the following terminals: — Intake shutter valve terminal A and PCM terminal 1AS — Intake shutter valve terminal B and PCM terminal 1AX • Intake shutter valve sticking, operation malfunction • Intake shutter valve freezing • Intake shutter valve foreign matter penetration • PCM connector or terminals malfunction • Intake shutter valve malfunction • Intake shutter valve position sensor malfunction • PCM malfunction

STEP	INSPECTION		ACTION
9	VERIFY DTC TROUBLESHOOTING COMPLETED • Always reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [PCM (SKYACTIV-D 2.2)].) • Start the engine and idle it. • Wait until the ECT PID value is above 80 °C {176 °F}. • Wait for 1 min (idle). • 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.
10	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 P10C2:00 [PCM (SKYACTIV-D 2.2)]

SM2896159

id0102j538520

DTC P10C2:00	Fuel pressure sensor No.1 (built-into fuel injector No.1) circuit low input
DETECTION CONDITION	• If the PCM detects the fuel pressure sensor No.1 (built-into fuel injector No.1) voltage at the PCM terminal 1AG is 0.55 V or less for 0.7 s with the following condition met, the PCM determines that the fuel pressure sensor No.1 (built-into fuel injector No.1) circuit voltage is low. MONITORING CONDITIONS — Battery voltage: 8 V or more — Cylinder identification (initialization) for fuel injector installation is not performed directly after ignition is switched ON 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	• Inhibits the DENOx/DESOx control.
POSSIBLE CAUSE	• Fuel injector No.1 connectors or terminals malfunction • PCM connector or terminals malfunction • Open circuit in wiring harness between fuel injector No.1 terminal C and PCM terminal 1M • Short to ground in wiring harness between the following terminals: — Fuel injector No.1 terminal C—PCM terminal 1M — Fuel injector No.1 terminal B—PCM terminal 1AG • Fuel pressure sensor No.1 (built-into fuel injector No.1) circuits are shorted to each other • Fuel pressure sensor No.1 (built-into fuel injector No.1) malfunction • PCM malfunction

STEP	INSPECTION	RESULTS	ACTION
7	**INSPECT FUEL PRESSURE SENSOR No.1 CIRCUITS FOR SHORT TO EACH OTHER** • Verify that the fuel injector No.1 and PCM connectors are disconnected. • Inspect for continuity fuel injector No.1 terminals D, B and A (wiring harness-side). • Is there continuity?	Yes	Refer to the wiring diagram and verify whether or not there is a common connector between the following terminals: • Fuel injector No.1 terminal D—PCM terminal 1T • Fuel injector No.1 terminal B—PCM terminal 1AG • Fuel injector No.1 terminal A—PCM terminal 1R **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 each other. • Repair or replace the malfunctioning part. **If there is no common connector:** • Repair or replace the wiring harness which has a short to each other. Go to Step 9.
		No	Go to the next step.
8	**INSPECT FUEL PRESSURE SENSOR No.1** • Inspect the fuel pressure sensor No.1. (See FUEL PRESSURE SENSOR INSPECTION [SKYACTIV-D 2.2].) • Is there any malfunction?	Yes	Replace the fuel injector No.1, then go to the next step. (See FUEL INJECTOR REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
		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-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.
10	**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.

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 FUEL INJECTOR No.1 CONNECTOR CONDITION** • Switch the ignition off. • Disconnect the fuel injector No.1 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 9.
		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 9.
		No	Go to the next step.
5	**INSPECT FUEL PRESSURE SENSOR No.1 GROUND CIRCUIT FOR OPEN CIRCUIT** • Verify that the fuel injector No.1 and PCM connectors are disconnected. • Inspect for continuity between the following temials (wiring harness-side): — Fuel injector No.1 terminal B–PCM terminal 1AG — Fuel injector No.1 terminal A–PCM terminal 1R • 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: • Fuel injector No.1 terminal B–PCM terminal 1AG • Fuel injector No.1 terminal A–PCM terminal 1R **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.

DTC P10C5:00 [PCM (SKYACTIV-D 2.2)]

SM2896162

id0102j538550

DTC P10C5:00	Fuel pressure sensor No.2 (built-into fuel injector No.2) circuit low input
DETECTION CONDITION	• If the PCM detects the fuel pressure sensor No.2 (built-into fuel injector No.2) voltage at the PCM terminal 1BL is 0.55 V or less for 0.7 s with the following condition met, the PCM determines that the fuel pressure sensor No.2 (built-into fuel injector No.2) circuit voltage is low. MONITORING CONDITIONS — Battery voltage: 8 V or more — Cylinder identification (initialization) for fuel injector installation is not performed directly after ignition is switched ON 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	• Limits the engine torque or the upper limit of the engine speed. • Inhibits the automatic diesel particulate filter regeneration control and compulsory diesel particulate filter regeneration control. • Inhibits the DENOx/DESOx control. • Inhibits the EGR control. • PCM restricts engine-transaxle integration control.
POSSIBLE CAUSE	• Fuel injector No.2 connectors or terminals malfunction • PCM connector or terminals malfunction • Open circuit in wiring harness between fuel injector No.2 terminal C and PCM terminal 1BX • Short to ground in wiring harness between the following terminals: — Fuel injector No.2 terminal C—PCM terminal 1BX — Fuel injector No.2 terminal B—PCM terminal 1BL • Fuel pressure sensor No.2 (built-into fuel injector No.2) circuits are shorted to each other • Fuel pressure sensor No.2 (built-into fuel injector No.2) malfunction • PCM malfunction