Your Ultimate Source for OEM Repair Manuals

FactoryManuals.net is a great resource for anyone who wants to save money on repairs by doing their own work. The manuals provide detailed instructions and diagrams that make it easy to understand how to fix a vehicle.

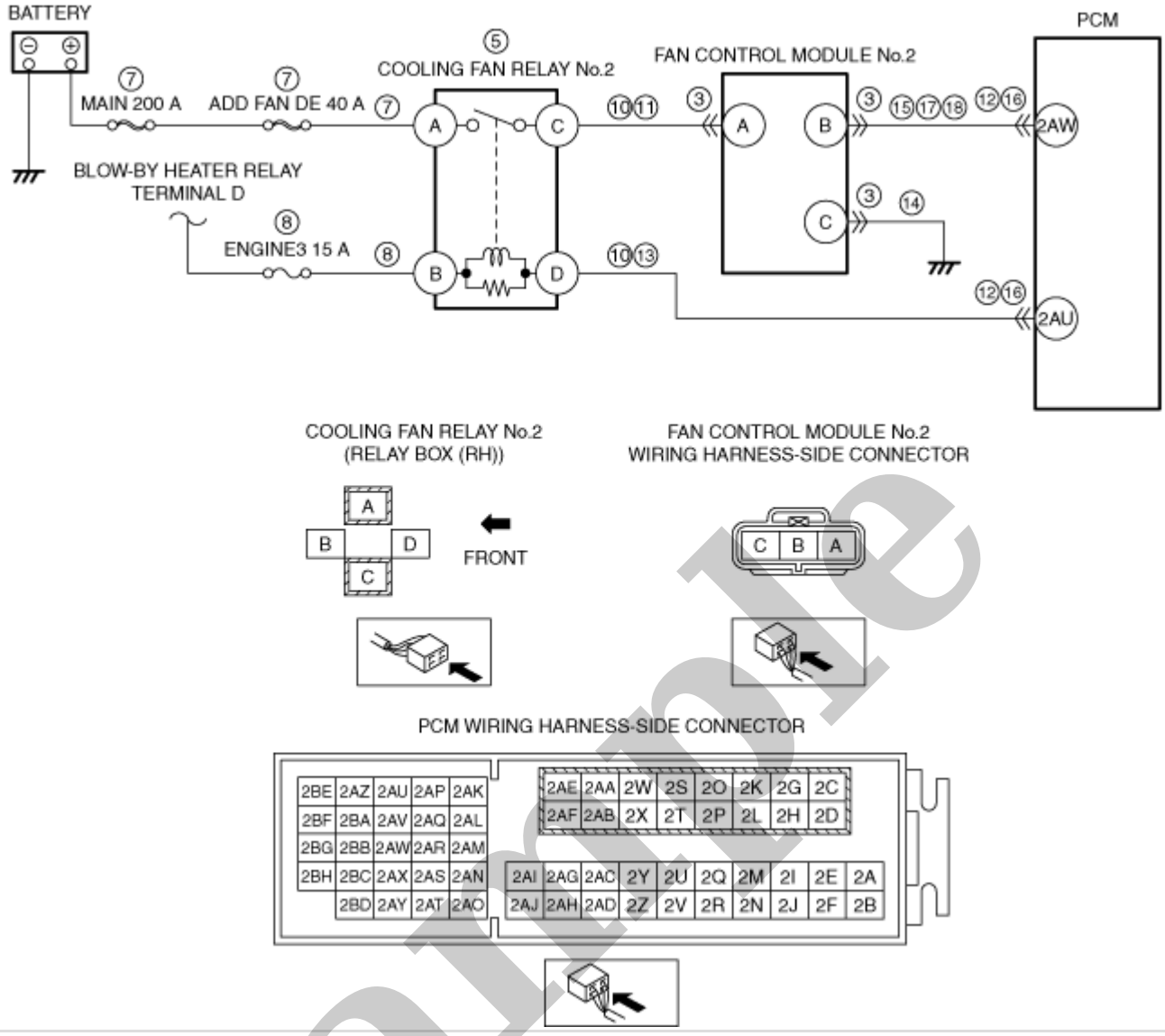
1990 MAZDA RX-7 (FC) OEM Service and Repair Workshop Manual

Go to manual page

STEP	INSPECTION		ACTION
7	**INSPECT COOLING FAN RELAY No.1 POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT** • Cooling fan relay No.1 is removed. • Verify that the fan control module No.1 connector is disconnected. • Measure the voltage at the cooling fan relay No.1 terminal A (wiring harness-side). • Is the voltage B+?	Yes	Go to the next step.
		No	Inspect the MAIN 200 A fuse and FAN DE 40 A fuse. • If the fuse is blown: — Refer to the wiring diagram and verify whether or not there is a common connector between MAIN 200 A fuse and cooling fan relay No.1 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 malfunctioning fuse. • If the fuse is damaged: — Replace the malfunctioning fuse. • If all fuses are normal: — Refer to the wiring diagram and verify whether or not there is a common connector between battery positive terminal and cooling fan relay No.1 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 20.

STEP	INSPECTION		ACTION
14	**INSPECT FAN CONTROL MODULE No.1 GROUND CIRCUIT FOR OPEN CIRCUIT** • Verify that the fan control module No.1 connector is disconnected. • Switch the ignition off. • Inspect for continuity between fan control module No.1 terminal C (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 fan control module No.1 terminal C 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 fan control module No.1 and body ground — Loose or lifting ground point • Repair or replace the malfunctioning part. Go to Step 20.
15	**INSPECT FAN CONTROL MODULE No.1 SIGNAL CIRCUIT FOR SHORT TO GROUND** • Verify that the fan control module No.1 connector is disconnected. • Inspect for continuity between fan control module No.1 terminal B (wiring harness-side) and body ground. • Is there continuity?	Yes	If the short to ground circuit could be detected in the wiring harness: • Refer to the wiring diagram and verify whether or not there is a common connector between fan control module No.1 terminal B and PCM terminal 2BG. **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. If the short to ground circuit could not be detected in the wiring harness: • Replace the PCM (short to ground in the PCM internal circuit). (See PCM REMOVAL/INSTALLATION [SKYACTIV-D 2.2].) Go to Step 20.
		No	Go to the next step.
16	**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 20.
		No	Go to the next step.
17	**INSPECT FAN CONTROL MODULE No.1 SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY** • Verify that the fan control module No.1 and PCM connectors are disconnected. • Switch the ignition ON (engine off). • Measure the voltage at the fan control module No.1 terminal B (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 fan control module No.1 terminal B and PCM terminal 2BG. **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 20.

DTC P0481:00	Fan control module No.2 control circuit problem



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 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		ACTION
8	INSPECT COOLING FAN RELAY No.2 POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT • Cooling fan relay No.2 is removed. • Verify that the fan control module No.2 connector is disconnected. • Switch the ignition ON (engine off). • Measure the voltage at the cooling fan relay No.2 terminal B (wiring harness-side). • Is the voltage B+?	Yes	Go to the next step.
		No	Inspect the ENGINE3 15 A fuse. • If the fuse is blown: — Refer to the wiring diagram and verify whether or not there is a common connector between ENGINE3 15 A fuse and cooling fan relay No.2 terminal B. 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 malfunctioning fuse. • If the fuse is damaged: — Replace the malfunctioning fuse. • If the fuse is normal: — Refer to the wiring diagram and verify whether or not there is a common connector between blow-by heater relay terminal D and cooling fan relay No.2 terminal B. 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 20.
9	INSPECT FAN CONTROL MODULE No.2 POWER SUPPLY CIRCUIT FOR SHORT TO GROUND • Cooling fan relay No.2 is removed. • Verify that the fan control module No.2 connector is disconnected. • Inspect for continuity between cooling fan relay No.2 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 cooling fan relay No.2 terminal C and fan control module No.2 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. Go to Step 20.
		No	Go to the next step.

STEP	INSPECTION		ACTION
18	**INSPECT FAN CONTROL MODULE No.2 SIGNAL CIRCUIT FOR OPEN CIRCUIT** • Verify that the fan control module No.2 and PCM connectors are disconnected. • Switch the ignition off. • Inspect for continuity between fan control module No.2 terminal B (wiring harness-side) and PCM terminal 2AW (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 fan control module No.2 terminal B and PCM terminal 2AW. **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 20.
19	**INSPECT FAN CONTROL MODULE No.2** • Inspect the fan control module No.2. (See FAN CONTROL MODULE INSPECTION [SKYACTIV-D 2.2].) • Is there any malfunction?	Yes	Replace the fan control module No.2, then go to the next step. (See COOLING FAN MOTOR REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
		No	Go to the next step.
20	**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.
21	**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.

devices away from it.

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.
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	VERIFY RELATED PENDING CODE AND/OR DTC • Switch the ignition off, then ON (engine off). • Display the DTCs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-D 2.2)].) • Has any DTC other than U1201:00 been stored?	Yes	Go to the applicable PENDING CODE or DTC inspection. (See DTC TABLE [PCM (SKYACTIV-D 2.2)].)
		No	Go to the next step.
4	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 10.
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION • Switch the ignition off. • 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 10.
		No	Go to the next step.

DTC U1202:00 [PCM (SKYACTIV-D 2.2)]

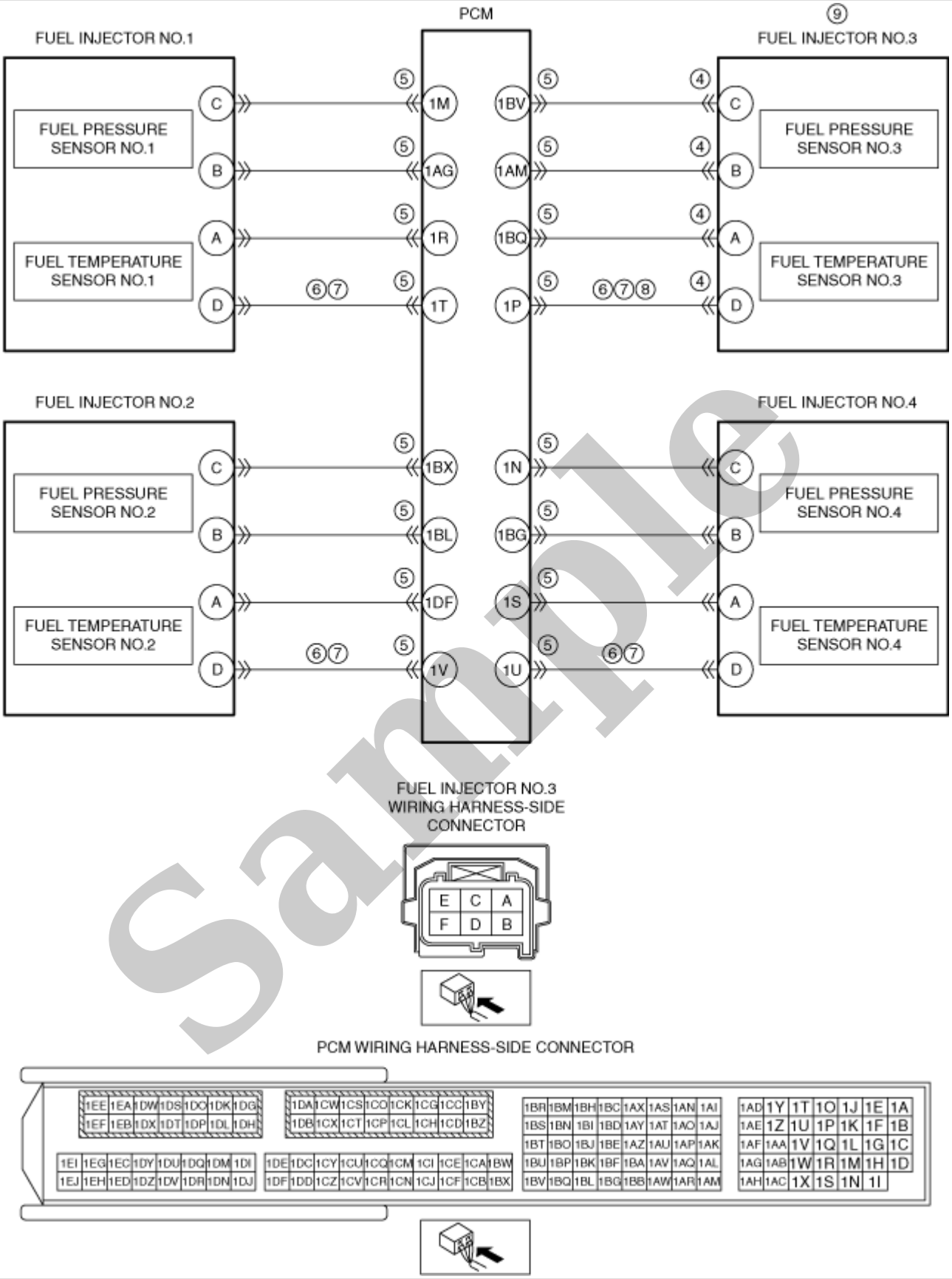
SM2896298

id0102j586690

DTC U1202:00	LIN communication system: fuel Injector No.2 information communication error with PCM
DETECTION CONDITION	When any of the following conditions is met: • With all the following conditions met, a communication error between fuel injector No.2 and the PCM occurs. — Battery positive voltage: 10.5−18.0 V — Fuel injector DTCs P10C2:00, P10C3:00, P10C5:00, P10C6:00, P10C8:00, P10C9:00, P10CB:00, and P10CC:00 are not detected • With all of the following conditions met, the PCM cannot identify fuel injector No.2 with the ignition switched ON (engine off or on). — Battery positive voltage: 10.5−18.0 V — Fuel injector DTCs P10C2:00, P10C3:00, P10C5:00, P10C6:00, P10C8:00, P10C9:00, P10CB:00, and P10CC:00 are 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	• Inhibits the DENOx/DESOx control. • Inhibits the EGR control.
POSSIBLE CAUSE	• Fuel injector No.2 connector or terminal malfunction • PCM connector or terminal malfunction • Short to power supply in wiring harness between the following terminals — Fuel injector No.1 terminal D and PCM terminal 1T — Fuel injector No.2 terminal D and PCM terminal 1V — Fuel injector No.3 terminal D and PCM terminal 1P — Fuel injector No.4 terminal D and PCM terminal 1U • Short to ground in wiring harness between the following terminals — Fuel injector No.1 terminal D and PCM terminal 1T — Fuel injector No.2 terminal D and PCM terminal 1V — Fuel injector No.3 terminal D and PCM terminal 1P — Fuel injector No.4 terminal D and PCM terminal 1U • Open circuit in wiring harness between fuel injector No.2 terminal D and PCM terminal 1V • Fuel injector No.2 malfunction • PCM malfunction

STEP	INSPECTION		ACTION
6	**INSPECT FUEL INJECTOR SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY** • Verify that the fuel injector No.1 connector and the PCM connector 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 following terminals (wiring harness-side): — Fuel injector No.1 terminal D — Fuel injector No.2 terminal D — Fuel injector No.3 terminal D — Fuel injector No.4 terminal D • 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: • Fuel injector No.1 terminal D and PCM terminal 1T • Fuel injector No.2 terminal D and PCM terminal 1V • Fuel injector No.3 terminal D and PCM terminal 1P • Fuel injector No.4 terminal D and PCM terminal 1U **If there is a common connector:** • Inspect the common connector and terminals for corrosion, damage, or disconnection and the common wiring harnesses for short to power supply to determine the malfunctioning location. • Repair or replace the malfunctioning location. **If there is no common connector:** • Repair or replace the wiring harness which is shorted to the power supply. Go to Step 10.
7	**INSPECT FUEL INJECTOR CIRCUIT FOR SHORT TO GROUND** • Verify that the fuel injector No.1 connector and the PCM connector are disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: — Fuel injector No.1 terminal D — Fuel injector No.2 terminal D — Fuel injector No.3 terminal D — Fuel injector No.4 terminal D • 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 and PCM terminal 1T • Fuel injector No.2 terminal D and PCM terminal 1V • Fuel injector No.3 terminal D and PCM terminal 1P • Fuel injector No.4 terminal D and PCM terminal 1U **If there is a common connector:** • Inspect the common connector and terminals for corrosion, damage, or disconnection and the common wiring harnesses for short to ground to determine the malfunctioning location. • Repair or replace the malfunctioning location. **If there is no common connector:** • Repair or replace the wiring harness which is shorted to ground. Go to Step 10.
		No	Go to the next step.
8	**INSPECT FUEL INJECTOR NO.2 CIRCUIT FOR OPEN CIRCUIT** • Verify that the fuel injector No.2 connector and the PCM connector are disconnected. • Inspect the wiring harness for continuity between fuel injector No.2 terminal D and PCM terminal 1V (vehicle wiring harness side). • Is there continuity?	Yes	Go to the next step.
		No	Refer to the wiring diagram and verify if there is a common connector between fuel injector No.2 terminal D and PCM terminal 1V. **If there is a common connector:** • Inspect the common connector and terminals for corrosion, damage, or disconnection and the common wiring harnesses for an open circuit to determine the malfunctioning location. • Repair or replace the malfunctioning location. **If there is no common connector:** • Repair or replace the wiring harness which has an open circuit. Go to Step 9.
9	**INSPECT FUEL INJECTOR NO.2** • Inspect fuel injector No.2. (See FUEL INJECTOR INSPECTION [SKYACTIV-D 2.2].) • Is fuel injector No.2 normal?	Yes	Go to the next step.
		No	Replace fuel injector No.2, then go to the next step. (See FUEL INJECTOR REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)

DTC U1203:00	LIN communication system: fuel Injector No.3 information communication error with PCM



Caution

• If a hand or tool touches a fuel injector terminal or fuel injector connector terminal, the fuel injector might be damaged. To prevent damage to a fuel injector, do not touch the terminals.
• If high-voltage generating parts or components and electronic devices come near a fuel injector, the fuel injector could be damaged. To prevent damage to a fuel injector, always keep high-voltage generating parts or components and electronic