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1992 MAZDA 323 (BF) Station Wagon OEM Service and Repair Workshop Manual

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STEP	INSPECTION	RESULTS	ACTION
4	**INSPECT DOSING CONTROL UNIT POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT** • Verify that the selected catalytic relay No.1 is removed. • Switch the ignition ON (engine off). **Note** **• Another DTC may be stored by the dosing control unit detecting an open circuit.** • Measure the voltage at the following terminals (wiring harness-side): — Selected catalytic relay No.1 terminal A — Selected catalytic relay No.1 terminal D • Is the voltage 0 V?	Yes	Inspect the MAIN 200 A fuse and SCR1 20 A fuse. • If the fuse is blown: — Refer to the wiring diagram and verify whether or not there is a common connector between the following terminals: • MAIN 200 A fuse–Selected catalytic relay No.1 terminal A • MAIN 200 A fuse–Selected catalytic relay No.1 terminal D **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 the following terminals: • Battery positive terminal–Selected catalytic relay No.1 terminal A • Battery positive terminal–Selected catalytic relay No.1 terminal D **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 8.
		No	Go to the next step.

DTC P20FF:00 [DOSING CONTROL UNIT (SKYACTIV-D 2.2)]

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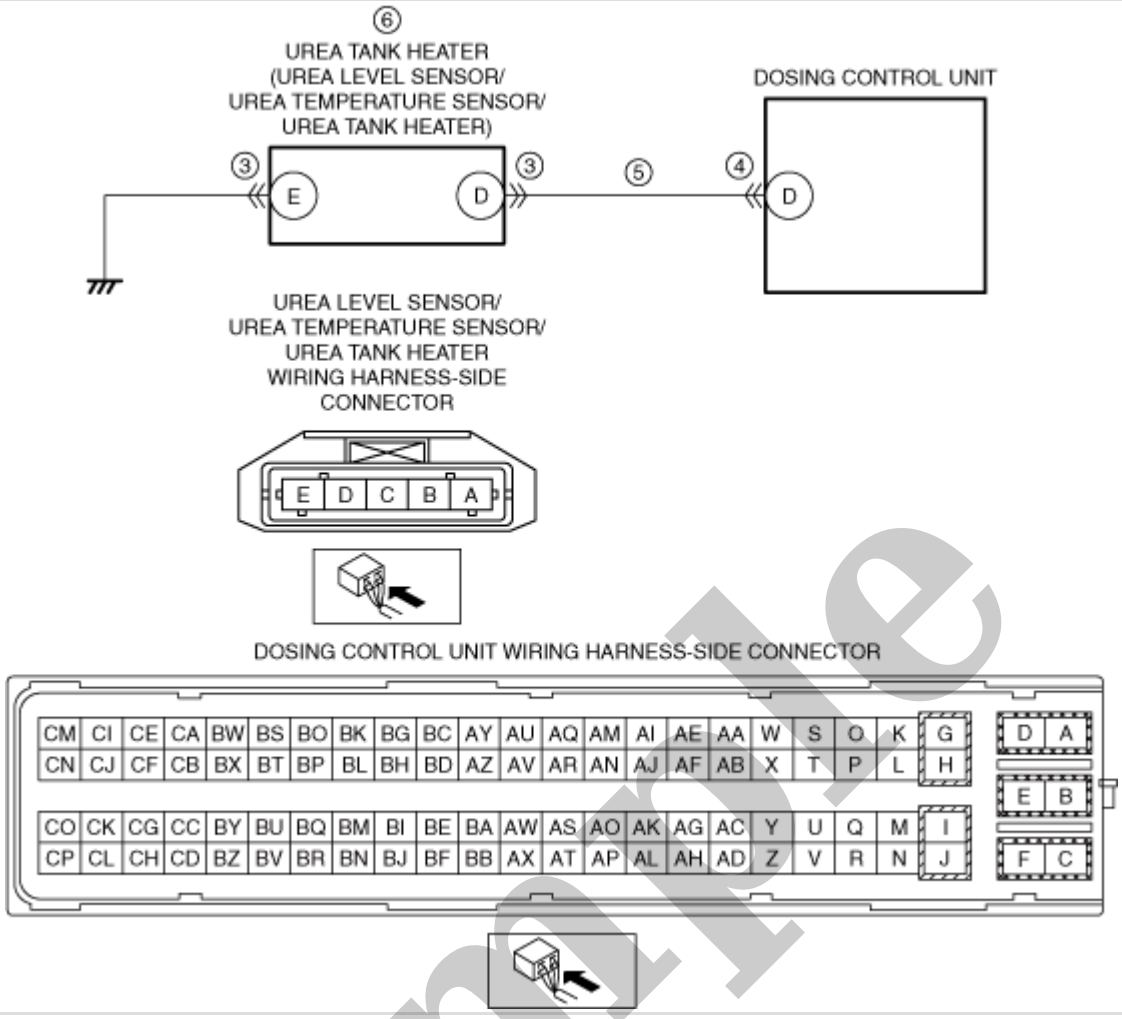
DTC P20FF:00	Dosing control unit malfunction
DETECTION CONDITION	• With the following conditions met, there is a malfunction inside the dosing control unit (read/write error, communication error, internal supply voltage malfunction). MONITORING CONDITIONS • Ignition switched ON (engine off or on) Note • DTC P1640:00 is also stored in the PCM. Diagnostic support note • This is a continuous monitor (CCM). • The check engine light illuminates if the dosing control unit detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA/Snapshot data is available. • DTC is stored in the dosing control unit memory.
FAIL-SAFE FUNCTION	• Not applicable
POSSIBLE CAUSE	• Dosing control unit malfunction
SYSTEM WIRING DIAGRAM	• Not applicable

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.

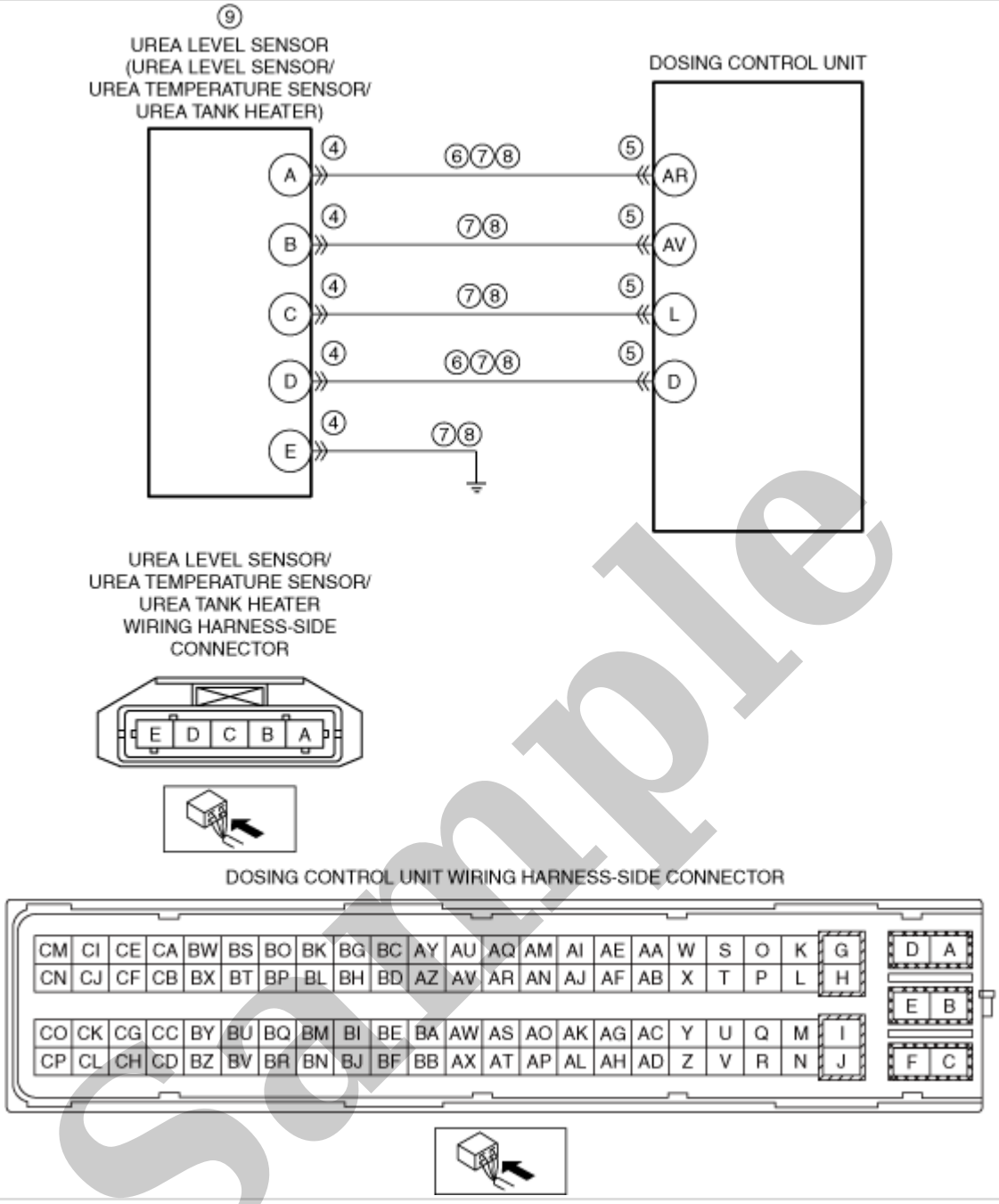
DTC P214F:00	Urea tank heater control malfunction



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.

DTC P21C5:00	Urea level sensor: Detection performance malfunction



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.

STEP	INSPECTION	RESULTS	ACTION
10	**VERIFY IF MALFUNCTION CAUSE IS DIESEL EXHAUST FLUID (DEF) OVERFILLING** • Verify the diesel exhaust fluid (DEF) amount. (See DIESEL EXHAUST FLUID (DEF) REPLACEMENT [SKYACTIV-D 2.2]) • Is the diesel exhaust fluid (DEF) amount appropriate?	Yes	Adjust the diesel exhaust fluid (DEF) to the appropriate amount. (See DIESEL EXHAUST FLUID (DEF) REPLACEMENT [SKYACTIV-D 2.2].)
		No	Go to the next step.
11	**VERIFY DTC TROUBLESHOOTING COMPLETED** • Always reconnect all disconnected connectors. • Clear the DTC from the dosing control unit memory using the M-MDS. (See CLEARING DTC [DOSING CONTROL UNIT (SKYACTIV-D 2.2)].) **Warning** **• While performing this step, always operate the vehicle in a safe and lawful manner.** **• 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.** • Perform the followings: 1. Perform the "COMPULSORY DIESEL PARTICULATE FILTER REGENERATION". (See COMPULSORY DIESEL PARTICULATE FILTER REGENERATION [SKYACTIV-D 2.2].) 2. After accelerating to 100 km/h {62.1 mph}, stop the vehicle at the deceleration speed exceeding 9 km/h {6 mph} for 1 s. 3. Stop the vehicle for 20 s. 4. Repeat Steps 2 and 3 four times or more. • Retrieve the dosing control unit DTCs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [DOSING CONTROL UNIT (SKYACTIV-D 2.2)].) • Is the same Pending DTC present?	Yes	Repeat the inspection from Step 1. • If the malfunction recurs, replace the dosing control unit. (See DOSING CONTROL UNIT REMOVAL/INSTALLATION [SKYACTIV-D 2.2].) Go to the next step.
		No	Go to the next step.
12	**VERIFY IF OTHER DTCs DISPLAYED** • Are any other DTCs displayed?	Yes	Repair or replace the malfunctioning part according to the applicable DTC troubleshooting. (See DTC TABLE [DOSING CONTROL UNIT (SKYACTIV-D 2.2)].)
		No	DTC troubleshooting completed.

STEP	INSPECTION	RESULTS	ACTION
7	VERIFY IF OTHER DTCs DISPLAYED • Are any other DTCs displayed?	Yes	Repair or replace the malfunctioning part according to the applicable DTC troubleshooting. (See DTC TABLE [DOSING CONTROL UNIT (SKYACTIV-D 2.2)].)
		No	DTC troubleshooting completed.

STEP	INSPECTION	RESULTS	ACTION
3	**INSPECT UREA LEVEL SENSOR/UREA TEMPERATURE SENSOR/UREA TANK HEATER CONNECTOR CONDITION** • Switch the ignition off. • Disconnect the urea level sensor/urea temperature sensor/urea tank heater 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 DOSING CONTROL UNIT CONNECTOR CONDITION** • Disconnect the dosing control unit 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 UREA TANK HEATER CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY** • Verify that the urea level sensor/urea temperature sensor/urea tank heater and dosing control unit connectors are disconnected. • Switch the ignition ON (engine off). • Measure the voltage at the urea level sensor/urea temperature sensor/urea tank heater terminal D (wiring harness-side). • Is the voltage 0 V?	Yes	Refer to the wiring diagram and verify whether or not there is a common connector between urea level sensor/urea temperature sensor/urea tank heater terminal D and dosing control unit terminal D. **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 8.
		No	Go to the next step.
6	**INSPECT UREA TANK HEATER GROUND CIRCUIT FOR OPEN CIRCUIT** • Switch the ignition off. • Verify that the urea level sensor/urea temperature sensor/urea tank heater connector is disconnected. • Inspect for continuity between the following terminals (wiring harness-side): — Urea tank heater terminal D—Dosing control unit terminal D — Urea tank heater terminal E—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 the following terminals: • Urea tank heater terminal D—Dosing control unit terminal D • Urea tank heater terminal E—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:** • Repair or replace the wiring harness which has a open circuit. Go to Step 8.
7	**INSPECT UREA TANK HEATER** • Inspect the urea tank heater. (See UREA TANK HEATER INSPECTION [SKYACTIV-D 2.2].) • Is there any malfunction?	Yes	Replace the DEF pump, then go to the next step. (See UREA TANK REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
		No	Go to the next step.

PID Item/Simulation Item Used In Diagnosis

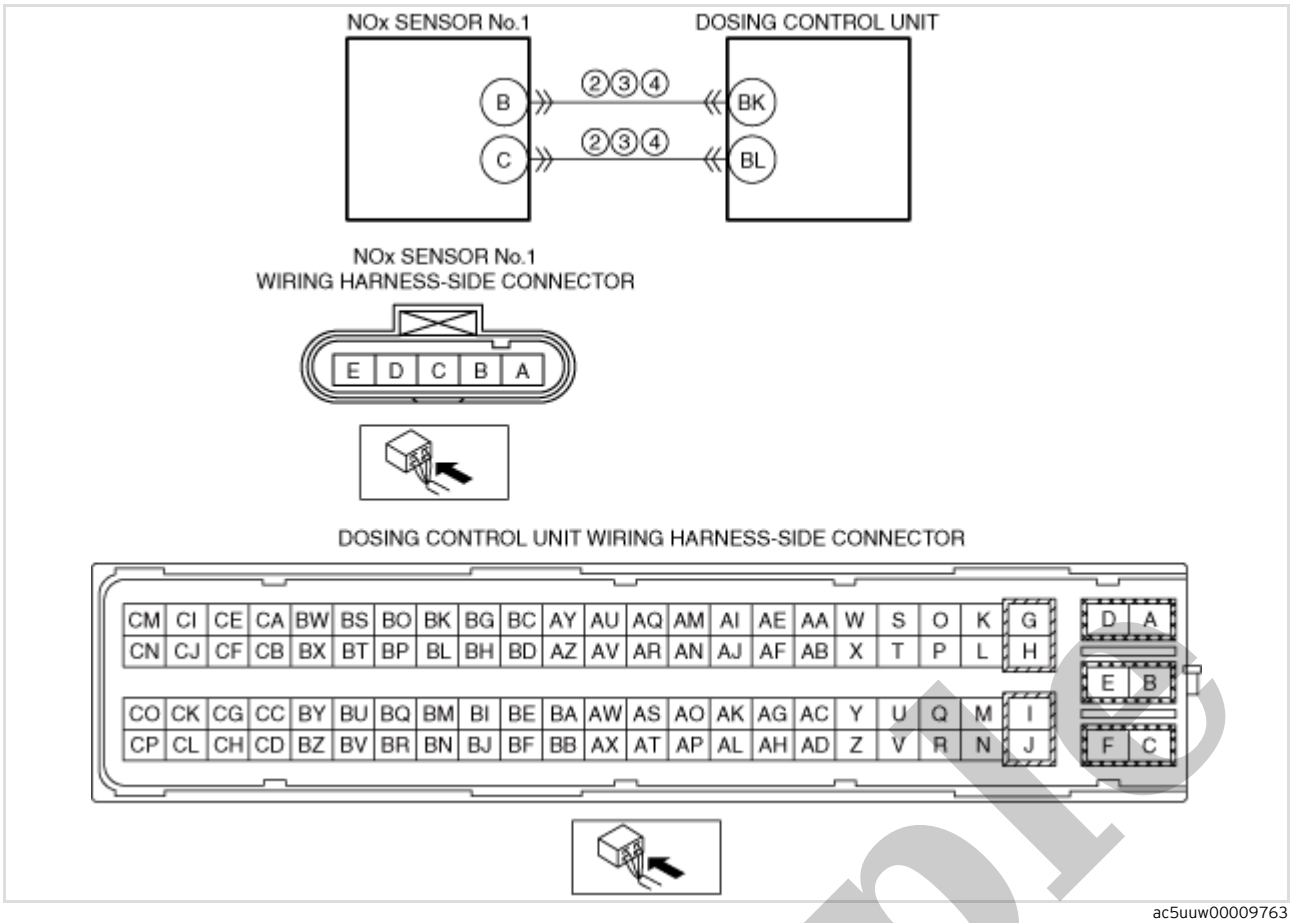
PID/DATA monitor item table

–: Not applicable

Item	Definition	Unit	Condition/Specification
NOX_C_B1S1	NOx sensor No.1	– (ppm)	• Displays the exhaust gas NOx concentration before SCR converter

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: RECORD FREEZE FRAME DATA/SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS 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 and DIAGNOSTIC MONITORING TEST RESULTS (NOx sensor No.1) on the repair order.	–	Go to the next step.
3	PURPOSE: VERIFY IF DIAGNOSTIC RESULT IS AFFECTED BY OTHER RELATED DTCs OCCURRING • Switch the ignition off, then ON (engine off). • Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. • Is the PENDING CODE/DTC P2200:00 or U029D:00 also present?	Yes	Go to the applicable DTC inspection. (See DTC P2200:00 [DOSING CONTROL UNIT (SKYACTIV-D 2.2)].) (See DTC U029D:00 [DOSING CONTROL UNIT (SKYACTIV-D 2.2)].) Repair or replace the applicable wiring harness or connector parts. Go to the troubleshooting procedure to perform the procedure from Step 2.
		No	Go to the next step.
4	PURPOSE: VERIFY IF THERE IS PID ITEM CAUSING DRASTIC CHANGES OF ACCELERATION FLUCTUATION BY INPUT SIGNAL TO PCM OR DOSING CONTROL UNIT • Access the following PIDs using the M-MDS: (See ON-BOARD DIAGNOSTIC TEST [DOSING CONTROL UNIT (SKYACTIV-D 2.2)].) — NOX_C_B1S1 • Is there any signal that is far out of specification?	Yes	Go to the next step.
		No	Go to Troubleshooting Diagnostic Procedure to perform the procedure from step 1.



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Function Explanation (DTC Detection Outline)

• NOx sensor No.1 performs diagnosis independently and if it detects an open or short circuit, it sends a malfunction signal to the dosing control unit. When the malfunction signal is received from NOx sensor No.1, the dosing control unit stores a DTC.

Repeatability Verification Procedure

1.Perform the "COMPULSORY DIESEL PARTICULATE FILTER REGENERATION". (See COMPULSORY DIESEL PARTICULATE FILTER REGENERATION [SKYACTIV-D 2.2].)

2.Idle the engine for 1 min.

PID Item/Simulation Item Used In Diagnosis

PID/DATA monitor item table

–: Not applicable

Item	Definition	Unit	Condition/Specification
NOX_C_B1S1	NOx sensor No.1	– (ppm)	• Displays the exhaust gas NOx concentration before SCR converter

Function Inspection Using M-MDS