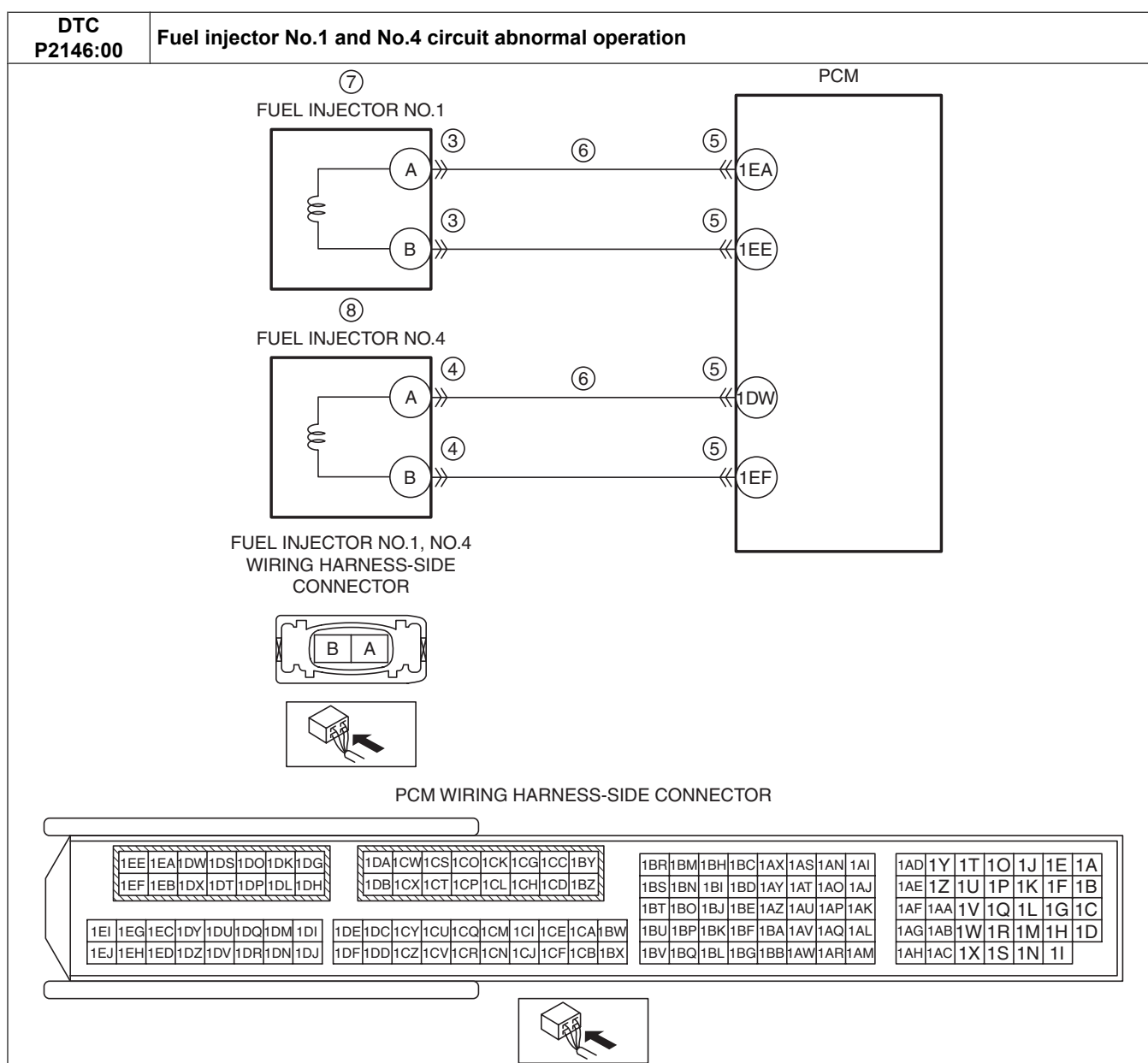


DTC P2146:00 [SKYACTIV-D 2.2]

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DTC P2146:00	Fuel injector No.1 and No.4 circuit abnormal operation
DETECTION CONDITION	<ul style="list-style-type: none">• When the following condition is met, the PCM detects the control current at fuel injectors No.1 and No.4 as less than the specified value 6 times: MONITORING CONDITIONS <ul style="list-style-type: none">— Battery voltage: more than 8 V Diagnostic support note <ul style="list-style-type: none">• This is an intermittent monitor (fuel system).• The check engine light illuminates if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2)/Snapshot data is available.• DTC is stored in the PCM memory.
FAIL-SAFE FUNCTION	<ul style="list-style-type: none">• PCM restricts engine torque.• Inhibits the EGR control.• Inhibits the diesel particulate filter regeneration control.• Inhibits engine-stop by operating the i-stop function.• PCM restricts engine-transaxle integration control.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Fuel injector No.1 connector or terminals malfunction• Fuel injector No.4 connector or terminals malfunction• PCM connector or terminals malfunction• Open circuit in wiring harness between the following terminals:<ul style="list-style-type: none">— Fuel injector No.1 terminal A—PCM terminal 1EA— Fuel injector No.4 terminal A—PCM terminal 1DW• Fuel injector No.1 malfunction• Fuel injector No.4 malfunction• PCM malfunction



Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED SERVICE INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Information availability. Is any related Service Information available? 	Yes	Perform repair or diagnosis according to the available Service Information.
		No	Go to the next step.
3	INSPECT FUEL INJECTOR NO.1 CONNECTOR CONDITION <ul style="list-style-type: none"> 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.

STEP	INSPECTION	ACTION	
4	INSPECT FUEL INJECTOR NO.4 CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the fuel injector 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 9.
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • 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.
6	INSPECT FUEL INJECTOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Verify that the fuel injector No.1 and fuel injector No.4 and PCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Fuel injector No.1 terminal A—PCM terminal 1EA — Fuel injector No.4 terminal A—PCM terminal 1DW • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 9.
7	INSPECT FUEL INJECTOR NO.1 <ul style="list-style-type: none"> • Inspect the fuel injector No.1. (See FUEL INJECTOR INSPECTION [SKYACTIV-D 2.2].) • Is there any malfunction? 	Yes	Replace the fuel injector No.1, then go to Step 9. (See FUEL INJECTOR REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
		No	Go to the next step.
8	INSPECT FUEL INJECTOR NO.4 <ul style="list-style-type: none"> • Inspect the fuel injector No.4. (See FUEL INJECTOR INSPECTION [SKYACTIV-D 2.2].) • Is there any malfunction? 	Yes	Replace the fuel injector No.4, 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 <ul style="list-style-type: none"> • Always reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [SKYACTIV-D 2.2].) • Perform the KOER self test. (See KOEO/KOER SELF TEST [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 <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [SKYACTIV-D 2.2].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SKYACTIV-D 2.2].)
		No	DTC troubleshooting completed.