

## DTC P0172:00 [SKYACTIV-G 2.0, SKYACTIV-G 2.5]

id0102h4934300

### Note

- To determine the malfunctioning part, proceed with the diagnostics from "Function Inspection Using M-MDS".

### Details On DTCs

DESCRIPTION	Fuel trim system too rich	
DETECTION CONDITION	Determination conditions	<ul style="list-style-type: none"><li>• Any one of the following conditions is met:<ul style="list-style-type: none"><li>— While the engine is idling or the vehicle is driven, the fuel feedback correction amount (SHRTFT1) is the threshold (<b>-25 %</b>) or less, and the fuel learning correction amount (LONGFT1) is the threshold (<b>-15 %</b>) or less for <b>10 s or more</b>.</li><li>— While the engine is idling or the vehicle is driven, the fuel feedback correction amount reaches the lower limit (<b>-25 % or less</b>) for <b>20 s or more</b>.</li></ul></li></ul>
	Preconditions	<ul style="list-style-type: none"><li>• Engine coolant temperature: <b>0—45 °C {32—113 °F}, 60 °C {140 °F} or more</b> *1</li></ul> <p>*1: Value can be verified by displaying PIDs using M-MDS</p>
	Malfunction determination period	<ul style="list-style-type: none"><li>• <b>10 s or 20 s</b> period</li></ul>
	Drive cycle	<ul style="list-style-type: none"><li>• 2</li></ul>
	Self test type	<ul style="list-style-type: none"><li>• CMDTC self test</li></ul>
	Sensor used	<ul style="list-style-type: none"><li>• A/F sensor</li></ul>
FAIL-SAFE FUNCTION	<ul style="list-style-type: none"><li>• Not applicable</li></ul>	
VEHICLE STATUS WHEN DTCs ARE OUTPUT	<ul style="list-style-type: none"><li>• Illuminates check engine light.</li><li>• Rough idling, poor acceleration, stalling</li></ul>	

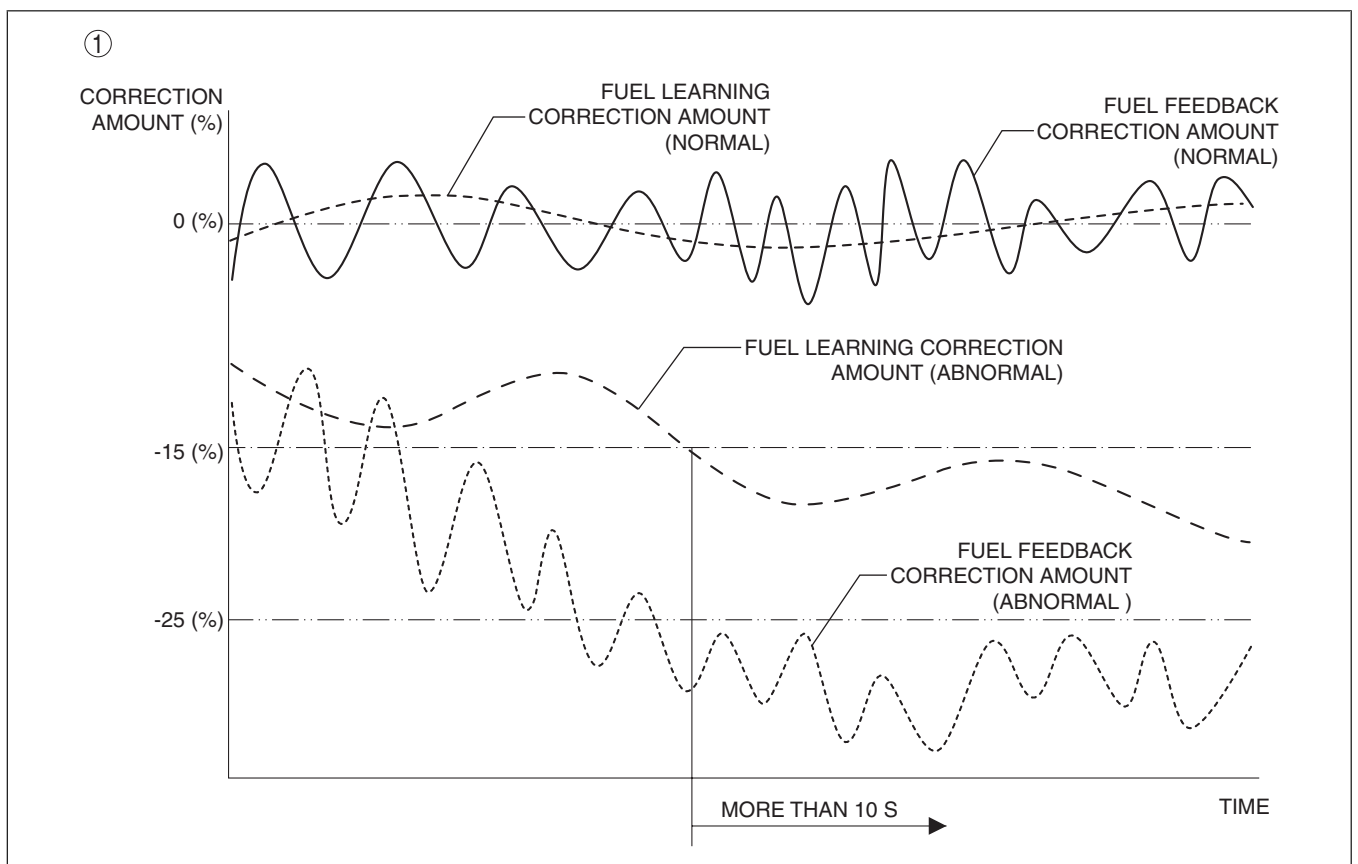
DESCRIPTION	Fuel trim system too rich
POSSIBLE CAUSE	<ul style="list-style-type: none"> <li>• Erratic signal to PCM <ul style="list-style-type: none"> <li>— ECT sensor No.1 signal malfunction</li> <li>— MAF sensor signal malfunction</li> <li>— MAP sensor signal malfunction</li> <li>— IAT sensor No.2 signal malfunction</li> <li>— Related connector or terminals malfunction</li> <li>— Related wiring harness malfunction</li> </ul> </li> <li>• High-pressure side fuel delivery system malfunction <ul style="list-style-type: none"> <li>— Fuel pressure sensor malfunction</li> <li>— Relief valve (built-into high pressure fuel pump) malfunction</li> <li>— Spill valve control solenoid valve control circuit malfunction (damage to driver in PCM caused by short circuit to ground system)</li> <li>— Spill valve control solenoid valve (built-into high pressure fuel pump) malfunction</li> <li>— High pressure fuel pump malfunction</li> </ul> </li> <li>• Low-pressure side fuel delivery system malfunction <ul style="list-style-type: none"> <li>— Fuel filter clogged (built-into fuel pump unit)</li> <li>— Low pressure side fuel line restriction (between fuel pump unit and high pressure fuel pump)</li> <li>— Fuel pump unit malfunction</li> <li>— Pressure regulator (built-into fuel pump unit) malfunction</li> <li>— Fuel pump control module malfunction</li> </ul> </li> <li>• Fuel injector malfunction <ul style="list-style-type: none"> <li>— Improper operation of fuel injector</li> <li>— Fuel injector related wiring harness malfunction</li> </ul> </li> <li>• Improper operation of purge control system <ul style="list-style-type: none"> <li>— Purge solenoid valve malfunction</li> <li>— Purge solenoid hoses improper connection</li> </ul> </li> <li>• MAF sensor malfunction</li> <li>• MAP sensor malfunction</li> <li>• Improper operation of electric variable valve timing control system <ul style="list-style-type: none"> <li>— Electric variable valve timing driver malfunction</li> <li>— Electric variable valve timing motor malfunction</li> <li>— Electric variable valve timing actuator malfunction</li> </ul> </li> <li>• Improper operation of hydraulic variable valve timing control system</li> <li>• A/F sensor malfunction <ul style="list-style-type: none"> <li>— A/F sensor loose</li> </ul> </li> <li>• PCM malfunction</li> </ul>

### System Wiring Diagram

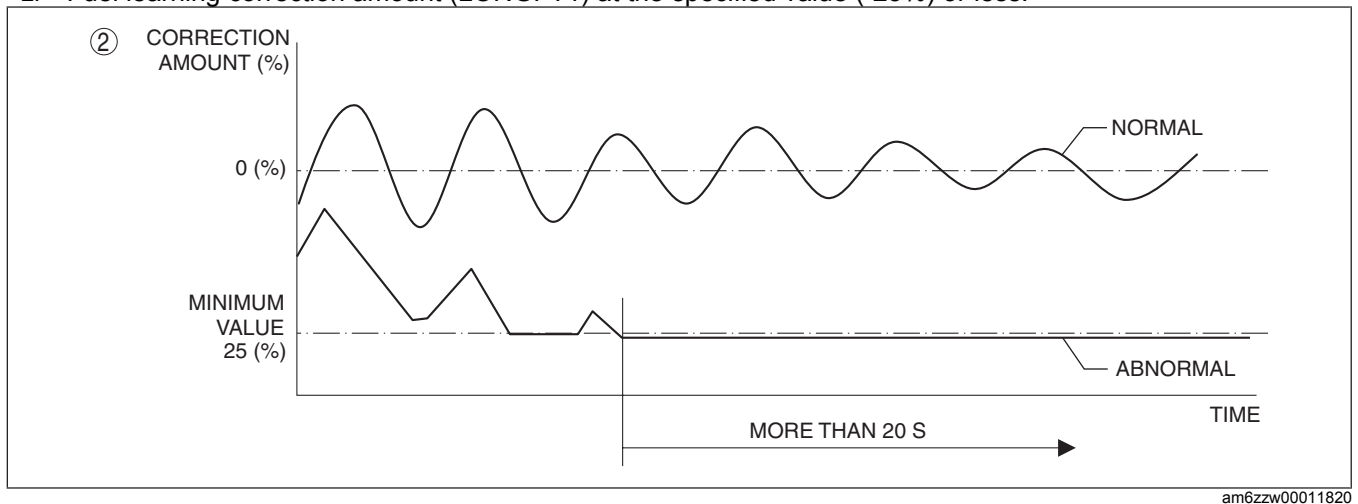
- Not applicable

### Function Explanation (DTC Detection Outline)

- The PCM detects the oxygen concentration in the exhaust gas from the A/F sensor signal and performs fuel injection amount feedback to maintain the optimum air/fuel ratio. If a condition in which the feedback correction amount is small (fuel injection amount being decreased) continues for the specified time, a feedback correction amount malfunction is determined, and a DTC is stored. The feedback correction amount has a "Fuel feedback correction amount" for the air/fuel ratio and a "Fuel learning correction amount" for fuel injector deterioration over time.
  - "Fuel feedback correction amount (SHRTFT1)" and "Fuel learning correction amount (LONGFT1)" can be verified from the M-MDS PID item.
1. The sum of the fuel feedback correction amount (SHRTFT1) and the fuel learning correction amount (LONGFT1) is the specified value (**-25 %**) or less, and **10 s or more** have elapsed with the fuel learning correction amount (LONGFT1) at the specified value (**-15 %**) or less.



2. Fuel learning correction amount (LONGFT1) at the specified value (-25%) or less.



### Repeatability Verification Procedure

1. Warm up the engine to allow the engine coolant temperature to reach **80 °C {176 °F} or more**.
2. Start the engine and leave it idling for **1 min**.

#### Note

- Match the engine coolant temperature in the recorded FREEZE FRAME DATA (Mode 2)/snapshot data, the vehicle speed, and engine speed values to the best extent possible while driving the vehicle.

3. Try to reproduce the malfunction by driving the vehicle for **5 min** based on the values in the FREEZE FRAME DATA (Mode 2)/snapshot data.

## PID Item/Simulation Item Used In Diagnosis

PID/DATA monitor item table

Item	Definition	Unit/Condition	Condition/Specification (Reference)
APP	Accelerator pedal position	%	<ul style="list-style-type: none"> <li>Accelerator pedal released: Approx. 0%</li> <li>Accelerator pedal depressed: Approx. 100%</li> </ul>
ECT	Engine coolant temperature	°C, °F	<ul style="list-style-type: none"> <li>Displays ECT</li> </ul>
		V	<ul style="list-style-type: none"> <li>ECT is 20 °C {68 °F}: Approx. 3.10 V</li> <li>ECT is 40 °C {104 °F}: Approx. 2.16 V</li> <li>ECT is 60 °C {140 °F}: Approx. 1.40 V</li> <li>ECT is 80 °C {176 °F}: Approx. 0.87 V</li> <li>ECT is 100 °C {212 °F}: Approx. 0.54 V</li> </ul>
EVAPCP	Purge solenoid valve duty value	%	<ul style="list-style-type: none"> <li>Idle (after warm up): Approx. 0%</li> <li>Racing (Engine speed 2,000 rpm): 4.3—35%</li> <li>Racing (Engine speed 4,000 rpm): Approx. 66%</li> </ul>
FP	Fuel pump relay	Off/On	<ul style="list-style-type: none"> <li>Switch ignition ON (engine off): Off</li> <li>Cranking: On</li> <li>Idle (after warm up): On</li> </ul>
FUEL_PRES	Fuel pressure sensor	KPa {MPa}, mBar {Bar}, psi, in H2O	<ul style="list-style-type: none"> <li>Displays fuel pressure</li> </ul>
		V	<ul style="list-style-type: none"> <li>Fuel pressure is 3.0 MPa {31 kgf/cm<sup>2</sup>, 435 psi}: Approx. 0.92 V</li> <li>Fuel pressure is 4.8 MPa {49 kgf/cm<sup>2</sup>, 696 psi}: Approx. 1.17 V</li> </ul>
HTR11	A/F sensor heater	Off/On	<ul style="list-style-type: none"> <li>Switch ignition ON (engine off): Off</li> <li>Idle (after warm up): On</li> </ul>
		%	<ul style="list-style-type: none"> <li>Switch ignition ON (engine off): 0%</li> <li>Idle (after warm up): Approx. 42%</li> </ul>
MAF	Mass airflow	g/Sec	<ul style="list-style-type: none"> <li>Displays MAF</li> </ul>
		V	<ul style="list-style-type: none"> <li>Switch ignition ON (engine off) (MAF: 0.59 g/s {0.078 lb/min}): Approx. 0.72 V</li> <li>Idle (after warm up) (MAF: 2.17 g/s {0.287 lb/min}): Approx. 0.86 V</li> <li>Racing (engine speed is 2,000 rpm) (MAF: 4.73 g/s {0.626 lb/min}): Approx. 1.07 V</li> </ul>
MAP	Manifold absolute pressure	KPa {MPa}, mBar {Bar}, psi, in H2O	<ul style="list-style-type: none"> <li>Displays MAP</li> </ul>
		V	<ul style="list-style-type: none"> <li>Switch ignition ON (engine off) (MAP: 101 kPa {1.03 kgf/cm<sup>2</sup>, 14.6 psi}): Approx. 4.07 V</li> <li>Idle (after warm up) (MAP: 33 kPa {0.34 kgf/cm<sup>2</sup>, 4.8 psi}): Approx. 1.34 V</li> <li>Racing (engine speed is 2,000 rpm) (MAP: 26 kPa {0.27 kgf/cm<sup>2</sup>, 3.8 psi}): Approx. 1.05 V</li> </ul>
O2S11	A/F sensor	μA	<ul style="list-style-type: none"> <li>Idle (after warm up): Approx. -39 μA</li> <li>Deceleration fuel cut (accelerator pedal released from engine speed of 4,000 rpm or more): Approx. 3.84 mA</li> </ul>
TP_REL	Relative throttle position	%	<ul style="list-style-type: none"> <li>Accelerator pedal released: Approx. 12%</li> <li>Accelerator pedal depressed: Approx. 82%</li> </ul>
VT_EX_DES	Desired exhaust valve timing	° (deg)	<ul style="list-style-type: none"> <li>Displays desired exhaust valve timing</li> </ul>
VT_IN_ACT	Actual intake valve timing	° (deg)	<ul style="list-style-type: none"> <li>Displays actual intake valve timing</li> </ul>
VT_IN_DES	Desired intake valve timing	° (deg)	<ul style="list-style-type: none"> <li>Displays desired intake valve timing</li> </ul>
VT_EX_ACT	Actual exhaust valve timing	° (deg)	<ul style="list-style-type: none"> <li>Displays actual exhaust valve timing</li> </ul>

## Simulation item table

Item	Applicable component	Unit/ Condition	Operation
INJ_1	Fuel injector No.1	ON/OFF	• Select OFF to forcibly stop fuel injector No.1.
INJ_2	Fuel injector No.2	ON/OFF	• Select OFF to forcibly stop fuel injector No.2.
INJ_3	Fuel injector No.3	ON/OFF	• Select OFF to forcibly stop fuel injector No.3.
INJ_4	Fuel injector No.4	ON/OFF	• Select OFF to forcibly stop fuel injector No.4.

## Function Inspection Using M-MDS

STEP	INSPECTION	RESULTS	ACTION
1	<b>PURPOSE: VERIFY RELATED SERVICE INFORMATION AVAILABILITY</b> • Verify related Service Information availability. • Is any related Service Information available?	Yes	Perform repair or diagnosis according to the available Service Information. • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	<b>PURPOSE: IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2)</b> • Is the DTC P0172:00 on FREEZE FRAME DATA (Mode 2)?	Yes	Go to the next step.
		No	Go to the troubleshooting procedure for DTC on FREEZE FRAME DATA (Mode 2). (See DTC TABLE [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
3	<b>PURPOSE: RECORD VEHICLE STATUS AT TIME OF DTC DETECTION TO UTILIZE WITH REPEATABILITY VERIFICATION</b> • 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.  <b>Note</b> • Recording can be facilitated using the screen capture function of the PC.
4	<b>PURPOSE: VERIFY IF INPUT SIGNAL TO PCM AFFECTS FUEL INJECTION</b> • Start the engine. • Access the following PIDs using the M-MDS: (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) — ECT — APP — TP_REL • Is there any signal that is far out of specification? (See PCM INSPECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)	Yes	Inspect the suspected sensor and related wiring harness. • If there is any malfunction: — Repair or replace the malfunctioning part. — Go to the troubleshooting procedure to perform the procedure from Step 13. • If there is no malfunction: — Go to the next step.
		No	Go to the next step.
5	<b>PURPOSE: VERIFY CONNECTOR CONNECTIONS</b> • Start the engine. • Access the following PIDs using the M-MDS: (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) — FUEL_PRES — FP — EVAPCP — MAF — MAP — VT_EX_ACT — VT_IN_ACT • When the following parts are shaken, does the PID value include a PID item which has changed? — Fuel pressure sensor — Fuel pump control module — Purge solenoid valve — MAF sensor — MAP sensor — OCV — Electric variable valve timing motor/driver — PCM	Yes	Repair or replace the applicable connector parts. Go to the troubleshooting procedure to perform the procedure from Step 13.
		No	Go to the next step.

STEP	INSPECTION	RESULTS	ACTION
6	<b>PURPOSE: VERIFY FUEL PRESSURE (HIGH-SIDE) MALFUNCTION</b> <ul style="list-style-type: none"> <li>Switch the ignition off.</li> <li>Reconnect all disconnected connectors.</li> <li>Start the engine and idle it.</li> <li>Access the FUEL_PRES PID using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)</li> <li>Is the FUEL_PRES PID value <b>approx. 3 MPa {31 kgf/cm<sup>2</sup>, 435 psi}</b>?</li> </ul>	Yes	Go to the next step.
		No	FUEL_PRES PID value is lower than <b>3 MPa {31 kgf/cm<sup>2</sup>, 435 psi}</b> : <ul style="list-style-type: none"> <li>Go to the troubleshooting procedure to perform the procedure from Step 1.</li> </ul> FUEL_PRES PID value is higher than <b>3 MPa {31 kgf/cm<sup>2</sup>, 435 psi}</b> : <ul style="list-style-type: none"> <li>Go to Step 8.</li> </ul>
7	<b>PURPOSE: VERIFY FUEL PRESSURE (LOW-SIDE) MALFUNCTION</b> <ul style="list-style-type: none"> <li>Switch the ignition off.</li> <li>Disconnect the high pressure fuel pump connector.</li> <li>Start the engine and idle it.</li> <li>Access the FUEL_PRES PID using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)</li> <li>Is the FUEL_PRES PID value <b>approx. 200 kPa {2.04 kgf/cm<sup>2</sup>, 29.0 psi}</b> or more?</li> </ul>	Yes	Go to the next step.
		No	Go to the troubleshooting procedure to perform the procedure from Step 1.
8	<b>PURPOSE: VERIFY IF MALFUNCTION CAUSED BY FUEL INJECTOR IMPROPER OPERATION</b> <ul style="list-style-type: none"> <li>Switch the ignition off.</li> <li>Reconnect all disconnected connectors.</li> <li>Start the engine and idle it.</li> <li>Access the following simulation items using the M-MDS: (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)               <ul style="list-style-type: none"> <li>— INJ_1</li> <li>— INJ_2</li> <li>— INJ_3</li> <li>— INJ_4</li> </ul> </li> <li>Turn each fuel injector from on to off using the simulation items.</li> <li>Does the vibration during idling worsen?</li> </ul>	Yes	Go to the next step.
		No	Go to the troubleshooting procedure to perform the procedure from Step 3.
9	<b>PURPOSE: VERIFY IF MALFUNCTION CAUSED BY PURGE SOLENOID VALVE IMPROPER OPERATION</b> <ul style="list-style-type: none"> <li>Start the engine and idle it.</li> <li>Access the EVAPCP PID using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)</li> <li>Is the EVAPCP PID value normal?</li> </ul>	Yes	Go to the next step.
		No	Go to the troubleshooting procedure to perform the procedure from Step 4.
10	<b>PURPOSE: VERIFY MAF SENSOR</b> <ul style="list-style-type: none"> <li>Start the engine and idle it.</li> <li>Access the MAF PID using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)</li> <li>Is the MAF PID value normal?</li> </ul>	Yes	Go to the next step.
		No	Go to the troubleshooting procedure to perform the procedure from Step 5.
11	<b>PURPOSE: VERIFY MAP SENSOR</b> <ul style="list-style-type: none"> <li>Start the engine and idle it.</li> <li>Access the MAP PID using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)</li> <li>Is the MAP PID value normal?</li> </ul>	Yes	Go to the next step.
		No	Go to the troubleshooting procedure to perform the procedure from Step 7.

STEP	INSPECTION	RESULTS	ACTION
12	<b>PURPOSE: VERIFY INTAKE VALVE TIMING</b> <ul style="list-style-type: none"> <li>Start the engine and idle it.</li> <li>Access the following PIDs using the M-MDS: (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) — VT_IN_ACT — VT_IN_DES</li> <li>Depress the accelerator pedal to increase the engine speed.</li> <li>Does the monitor value of the PID item VT_IN_ACT conform to the VT_IN_DES PID value?</li> </ul>	Yes	Go to the next step.
		No	Go to the troubleshooting procedure to perform the procedure from Step 8.
13	<b>PURPOSE: VERIFY EXHAUST VALVE TIMING</b> <ul style="list-style-type: none"> <li>Start the engine and idle it.</li> <li>Access the following PIDs using the M-MDS: (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) — VT_EX_ACT — VT_EX_DES</li> <li>Depress the accelerator pedal to increase the engine speed.</li> <li>Does the monitor value of the PID item VT_EX_ACT conform to the VT_EX_DES PID value?</li> </ul>	Yes	Go to the next step.
		No	Go to the troubleshooting procedure to perform the procedure from Step 11.
14	<b>PURPOSE: VERIFY A/F SENSOR</b> <ul style="list-style-type: none"> <li>Access the O2S11 PID using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)</li> <li>Is the O2S11 PID value normal?</li> </ul>	Yes	Go to the next step.
		No	Go to the troubleshooting procedure to perform the procedure from Step 12.
15	<b>PURPOSE: VERIFY DTC</b> <ul style="list-style-type: none"> <li>Retrieve the PCM DTCs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)</li> <li>Are any DTCs present?</li> </ul>	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) Go to the troubleshooting procedure to perform the procedure from Step 1.
		No	Go to the troubleshooting procedure to perform the procedure from Step 1.

## Troubleshooting Diagnostic Procedure

### Intention of troubleshooting procedure

- Step 1—3
  - Perform a fuel injector control system inspection.
- Step 4
  - Perform an emission system parts inspection.
- Step 5—7
  - Perform an intake air system parts inspection.
- Step 8—11
  - Perform a valve timing inspection.
- Step 12
  - Perform an exhaust system parts inspection.
- Step 13—14
  - Verify that the primary malfunction is resolved and there are no other malfunctions.

STEP	INSPECTION	RESULTS	ACTION
1	<b>PURPOSE: DETERMINE INTEGRITY OF FUEL PUMP CONTROL MODULE</b> <ul style="list-style-type: none"> <li>Inspect the fuel pump control module. (See FUEL PUMP CONTROL MODULE INSPECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)</li> <li>Is there any malfunction?</li> </ul>	Yes	Replace the fuel pump control module, then go to Step 13. (See FUEL PUMP CONTROL MODULE REMOVAL/ INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
		No	Go to the next step.

STEP	INSPECTION	RESULTS	ACTION
2	<b>PURPOSE: DETERMINE INTEGRITY OF FUEL PUMP UNIT</b> <ul style="list-style-type: none"> <li>Inspect the fuel pump unit. (See FUEL PUMP UNIT INSPECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)</li> <li>Is there any malfunction?</li> </ul>	Yes	Replace the fuel pump unit, then go to Step 13. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
		No	Go to the next step.
3	<b>PURPOSE: DETERMINE INTEGRITY OF FUEL INJECTOR</b> <ul style="list-style-type: none"> <li>Inspect the fuel injector. (See FUEL INJECTOR INSPECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)</li> <li>Is there any malfunction?</li> </ul>	Yes	Replace the fuel injector, then go to Step 13. (See FUEL INJECTOR REMOVAL/INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
		No	Go to the next step.
4	<b>PURPOSE: DETERMINE INTEGRITY OF PURGE SOLENOID VALVE</b> <ul style="list-style-type: none"> <li>Inspect the purge solenoid valve. (See PURGE SOLENOID VALVE INSPECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)</li> <li>Is there any malfunction?</li> </ul>	Yes	Replace the purge solenoid valve, then go to Step 13. (See PURGE SOLENOID VALVE REMOVAL/INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
		No	Go to the next step.
5	<b>PURPOSE: DETERMINE INTEGRITY OF MAF SENSOR</b> <ul style="list-style-type: none"> <li>Inspect the MAF sensor. (See MASS AIR FLOW (MAF) SENSOR INSPECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)</li> <li>Is there any malfunction?</li> </ul>	Yes	Replace the MAF sensor/IAT sensor No.1, then go to Step 13. (See MASS AIR FLOW (MAF) SENSOR/INTAKE AIR TEMPERATURE (IAT) SENSOR NO.1 REMOVAL/INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
		No	Go to the next step.
6	<b>PURPOSE: AIR CLEANER ELEMENT</b> <ul style="list-style-type: none"> <li>Remove the air cleaner element with the engine is running. (See AIR CLEANER ELEMENT REMOVAL/INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)</li> <li>Does the engine speed increase?</li> </ul>	Yes	Inspect the air cleaner element. (See AIR CLEANER ELEMENT INSPECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) • If there is any malfunction: <ul style="list-style-type: none"> <li>Clean or replace the air cleaner element, then go to Step 13. (See AIR CLEANER ELEMENT REMOVAL/INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)</li> </ul> • If there is no malfunction: <ul style="list-style-type: none"> <li>Go to the next step.</li> </ul>
		No	Go to the next step.
7	<b>PURPOSE: DETERMINE INTEGRITY OF MAP SENSOR</b> <ul style="list-style-type: none"> <li>Reconnect all disconnected connectors.</li> <li>Inspect the MAP sensor. (See MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR INSPECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)</li> <li>Is there any malfunction?</li> </ul>	Yes	Replace the MAP sensor/IAT sensor No.2, then go to Step 13. (See MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR/INTAKE AIR TEMPERATURE (IAT) SENSOR NO.2 REMOVAL/INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
		No	Go to the next step.
8	<b>PURPOSE: DETERMINE INTEGRITY OF ELECTRIC VARIABLE VALVE TIMING DRIVER</b> <ul style="list-style-type: none"> <li>Inspect the electric variable valve timing driver. (See ELECTRIC VARIABLE VALVE TIMING MOTOR/DRIVER INSPECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)</li> <li>Is there any malfunction?</li> </ul>	Yes	Replace the electric variable valve timing motor/driver, then go to Step 13. (See ELECTRIC VARIABLE VALVE TIMING MOTOR/DRIVER REMOVAL/INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
		No	Go to the next step.
9	<b>PURPOSE: DETERMINE INTEGRITY OF ELECTRIC VARIABLE VALVE TIMING MOTOR</b> <ul style="list-style-type: none"> <li>Inspect the electric variable valve timing motor. (See ELECTRIC VARIABLE VALVE TIMING MOTOR/DRIVER INSPECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)</li> <li>Is there any malfunction?</li> </ul>	Yes	Replace the electric variable valve timing motor/driver, then go to Step 13. (See ELECTRIC VARIABLE VALVE TIMING MOTOR/DRIVER REMOVAL/INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
		No	Go to the next step.



STEP	INSPECTION	RESULTS	ACTION
10	<b>PURPOSE: DETERMINE INTEGRITY OF ELECTRIC VARIABLE VALVE TIMING ACTUATOR</b> <ul style="list-style-type: none"> <li>Inspect the electric variable valve timing actuator. (See ELECTRIC VARIABLE VALVE TIMING ACTUATOR INSPECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)</li> <li>Is there any malfunction?</li> </ul>	Yes	Replace the electric variable valve timing actuator, then go to Step 13. (See ELECTRIC VARIABLE VALVE TIMING ACTUATOR, HYDRAULIC VARIABLE VALVE TIMING ACTUATOR REMOVAL/INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
		No	Go to the next step.
11	<b>PURPOSE: DETERMINE INTEGRITY OF OCV</b> <ul style="list-style-type: none"> <li>Inspect the OCV. (See OIL CONTROL VALVE (OCV) INSPECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)</li> <li>Is there any malfunction?</li> </ul>	Yes	Replace the OCV, then go to Step 13. (See OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
		No	Go to the next step.
12	<b>PURPOSE: DETERMINE INTEGRITY OF A/F SENSOR</b> <ul style="list-style-type: none"> <li>Inspect the A/F sensor. (See AIR FUEL RATIO (A/F) SENSOR INSPECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)</li> <li>Is there any malfunction?</li> </ul>	Yes	Replace the A/F sensor, then go to the next step. (See AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
		No	Go to the next step.
13	<b>PURPOSE: VERIFICATION OF VEHICLE REPAIR COMPLETION</b> <ul style="list-style-type: none"> <li>Always reconnect all disconnected connectors.</li> <li>Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)</li> <li>Implement the repeatability verification procedure. (See Repeatability Verification Procedure.)</li> <li>Perform the Pending Trouble Code Access Procedure. (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)</li> <li>Is the PENDING CODE for this DTC present?</li> </ul>	Yes	Repeat the inspection from Step 1. <ul style="list-style-type: none"> <li>If the malfunction recurs, replace the PCM. (See PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)</li> </ul> Go to the next step.
		No	Go to the next step.
14	<b>PURPOSE: VERIFY IF THERE IS ANY OTHER MALFUNCTION</b> <ul style="list-style-type: none"> <li>Is any other DTC or pending code stored?</li> </ul>	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
		No	DTC troubleshooting completed.