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**NO.6 ENGINE DOES NOT RESTART [SKYACTIV-D 2.2]**

id1103a2001100

<b>6</b>	<b>ENGINE DOES NOT RESTART</b>
<b>DESCRIPTION</b>	<ul style="list-style-type: none"><li>• The i-stop warning light (amber) illuminates and engine does not restart while the i-stop function is operating.</li><li>• Engine does not restart when attempting to resume driving vehicle after stopping, and i-stop warning light (amber) is illuminated.</li><li>• Engine does not restart even though restart conditions are met.</li></ul>

6	ENGINE DOES NOT RESTART
POSSIBLE CAUSE	<p><b>Note</b></p> <ul style="list-style-type: none"> <li>• For MT vehicles, if the shift lever is in gear during i-stop, the engine does not restart under conditions other than clutch depression for safety reasons (i-stop indicator light (green) flashes).</li> <li>• For MT vehicles, if the clutch pedal is depressed/released three times repeatedly during engine restart, the engine stalls (i-stop warning light (amber) is illuminated) and the engine does not start by operations other than the key operation.</li> </ul> <p><b>False detection of engine restart restriction conditions during engine stop</b></p> <ul style="list-style-type: none"> <li>• False detection of vehicle in unsafe condition while i-stop function is operating <ul style="list-style-type: none"> <li>— False detection of open bonnet (engine stalls and i-stop warning light (amber) illuminates) <ul style="list-style-type: none"> <li>• Bonnet latch switch malfunction</li> <li>• Open circuit in wiring harness between bonnet latch switch terminal A and rear body control module (RBCM) terminal 3L</li> </ul> </li> <li>— False detection of open driver's door (when driver's seat belt is unfastened, engine stalls and i-stop warning light (amber) illuminates) <ul style="list-style-type: none"> <li>• Front door latch switch (driver's side) malfunction</li> <li>• Open circuit in wiring harness between front door latch switch (driver's side) and rear body control module (RBCM)</li> </ul> </li> <li>— False detection of unfastened driver seat belt (when driver's door is opened, engine stalls and i-stop warning light (amber) illuminates) <ul style="list-style-type: none"> <li>• Driver-side buckle switch malfunction</li> <li>• Short to ground in wiring harness between driver-side buckle switch terminal 4A and SAS control module terminal 2U</li> </ul> </li> </ul> </li> </ul> <p><b>Engine does not crank when engine is restarted (i-stop warning light (amber) illuminates)</b></p> <ul style="list-style-type: none"> <li>• Engine starting system malfunction</li> </ul> <p><b>Cannot recognize signal for conditions permitting engine restart</b></p> <ul style="list-style-type: none"> <li>• False detection of i-stop operation not switched OFF even though switched OFF <ul style="list-style-type: none"> <li>— i-stop OFF switch malfunction</li> </ul> </li> <li>• False detection of brake pedal non-operation even though operated (ATX) <ul style="list-style-type: none"> <li>— Brake fluid pressure sensor (built-into DSC HU/CM) malfunction</li> </ul> </li> <li>• False detection of clutch pedal non-operation even though operated (MTX) <ul style="list-style-type: none"> <li>— Clutch stroke sensor malfunction</li> </ul> </li> <li>• Falsely detects that climate control unit detects driver-side air mix door position at MAX HOT or MAX COLD (with full-auto air conditioner) <ul style="list-style-type: none"> <li>— Driver-side air mix actuator malfunction</li> <li>— Driver-side air mix actuator position sensor malfunction</li> <li>— Driver-side air mix door link stuck</li> </ul> </li> <li>• False detection of assured power brake unit vacuum (assist force) even though vacuum decreases <ul style="list-style-type: none"> <li>— Power brake unit vacuum sensor malfunction</li> <li>— Short or open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> <li>• Power brake unit vacuum sensor terminal C—PCM terminal 2BB</li> <li>• Power brake unit vacuum sensor terminal B—PCM terminal 2BC</li> <li>• Power brake unit vacuum sensor terminal A—PCM terminal 2BD</li> </ul> </li> </ul> </li> <li>• Cannot recognize steering wheel angle and speed even though steering wheel is turned. (ATX, D or M position) <ul style="list-style-type: none"> <li>— Steering angle sensor malfunction</li> <li>— Short or open circuit in wiring harness between steering angle sensor and start stop unit terminals 1U, 1T, 1W or 1S</li> </ul> </li> </ul> <p><b>Engine system malfunction (engine does not start even though cranking for 3 s or more when engine is restarted) (i-stop warning light (amber) illuminates)</b></p> <ul style="list-style-type: none"> <li>• PCM DTC is stored.</li> <li>• Erratic signal to PCM <ul style="list-style-type: none"> <li>— ECT sensor or related circuit malfunction</li> <li>— IAT sensor No.1 or related circuit malfunction</li> <li>— BARO sensor (integrated in PCM) or related circuit malfunction</li> </ul> </li> <li>• Jet pump malfunction (4WD)</li> <li>• Mechanical (engine) malfunction <ul style="list-style-type: none"> <li>— Low engine compression</li> <li>— Improper valve timing</li> <li>— Large mechanical resistance</li> </ul> </li> <li>• Poor fuel quality</li> </ul>

## Diagnostic Procedure

STEP	INSPECTION	RESULTS	ACTION
1	<b>VERIFY DTC</b> <ul style="list-style-type: none"> <li>Retrieve the PCM, TCM, front body control module (FBCM), rear body control module (RBCM) and climate control unit DTCs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-D 2.2].) (See ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [GW6A-EL, GW6AX-EL].) (See DTC INSPECTION [FRONT BODY CONTROL MODULE (FBCM)].) (See DTC INSPECTION [REAR BODY CONTROL MODULE (RBCM)].) (See DTC DISPLAY [FULL-AUTO AIR CONDITIONER].)</li> <li>Are any DTCs present?</li> </ul>	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SKYACTIV-D 2.2].) (See ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [GW6A-EL, GW6AX-EL].) (See DTC TABLE [FRONT BODY CONTROL MODULE (FBCM)].) (See DTC TABLE [REAR BODY CONTROL MODULE (RBCM)].) (See DTC TABLE [FULL-AUTO AIR CONDITIONER].)
		No	Go to the next step.
2	<b>VERIFY i-stop WARNING LIGHT (AMBER) CONDITION</b> <ul style="list-style-type: none"> <li>Does the i-stop warning light (amber) illuminate?</li> </ul>	Yes	Go to Step 13.
		No	Go to the next step.
3	<b>DETERMINE IF MALFUNCTION CAUSE IS i-stop OFF SWITCH SIGNAL OR OTHER</b> <ul style="list-style-type: none"> <li>Switch the ignition off.</li> <li>Disconnect the instrument cluster connector.</li> <li>Inspect for continuity between instrument cluster terminal V and body ground when the i-stop OFF switch is pressed.</li> <li>Is there continuity?</li> </ul>	Yes	ATX: • Go to Step 5. MTX: • Go to Step 8.
		No	Go to the next step.
4	<b>INSPECT i-stop OFF SWITCH</b> <ul style="list-style-type: none"> <li>Inspect the i-stop OFF switch. (See i-stop OFF SWITCH INSPECTION [SKYACTIV-D 2.2].)</li> <li>Is there any malfunction?</li> </ul>	Yes	Replace the cluster switch. (See SWITCH PANEL REMOVAL/INSTALLATION.)
		No	Inspect the wiring harness between the following terminals for open circuit: <ul style="list-style-type: none"> <li>Cluster switch terminal B—Instrument cluster terminal V</li> <li>Cluster switch terminal C—Instrument cluster terminal T</li> </ul> — If there is any malfunction: <ul style="list-style-type: none"> <li>Repair or replace the suspected wiring harness.</li> </ul>
5	<b>DETERMINE IF MALFUNCTION IS CAUSED BY STEERING ANGLE (ESTIMATED ABSOLUTE ANGLE) SIGNAL ERROR</b> <ul style="list-style-type: none"> <li>Start the engine and idle it.</li> <li>Using the M-MDS, display EPS control module PID STR_ANG. (See ELECTRIC POWER STEERING (EPS) ON-BOARD DIAGNOSIS.)</li> <li>Are the monitoring values normal?</li> </ul>	Yes	Go to Step 7.
		No	Go to the next step.

STEP	INSPECTION	RESULTS	ACTION
6	<b>INSPECT EPS CONTROL MODULE FOR MALFUNCTION</b> <ul style="list-style-type: none"> <li>Inspect the EPS control module. (See EPS CONTROL MODULE INSPECTION.)</li> <li>Is the EPS control module normal?</li> </ul>	Yes	Perform the following procedure: <ol style="list-style-type: none"> <li>Switch the ignition off, and after <b>2 min or more</b> have elapsed, switch the ignition ON.</li> <li>Start the engine and drive the vehicle <b>10 m {33 ft} or more</b> in a straight line at a speed of <b>10 km/h {6.2 mph} or more</b>.</li> <li>Stop the vehicle with the wheels in the straight-ahead position.</li> <li>Using the M-MDS, display EPS control module PID STR_ANG.               <ul style="list-style-type: none"> <li>If the STR_ANG value is normal, go to Step 27. (Because the steering angle (estimated absolute angle) has returned to normal)</li> <li>If the STR_ANG value is not normal, replace the EPS control module, then go to Step 27. (See STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION.)</li> </ul> </li> </ol>
		No	Replace the EPS control module, then go to Step 27. (See STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION.)
7	<b>INSPECT BRAKE FLUID PRESSURE SENSOR</b> <ul style="list-style-type: none"> <li>Inspect the brake fluid pressure sensor. (See BRAKE FLUID PRESSURE SENSOR INSPECTION.)</li> <li>Is there any malfunction?</li> </ul>	Yes	Replace the DSC HU/CM. (See DSC HU/CM REMOVAL/INSTALLATION.)
		No	Go to Step 9.
8	<b>INSPECT CLUTCH STROKE SENSOR</b> <ul style="list-style-type: none"> <li>Inspect the clutch stroke sensor. (See CLUTCH STROKE SENSOR INSPECTION [SKYACTIV-D 2.2].)</li> <li>Is there any malfunction?</li> </ul>	Yes	Replace the clutch master cylinder. (See CLUTCH MASTER CYLINDER REMOVAL/INSTALLATION [D66M-R, D66MX-R].)
		No	Go to the next step.
9	<b>DETERMINE IF MALFUNCTION CAUSE IS DRIVER-SIDE AIR MIX ACTUATOR SIGNAL OR OTHER</b> <ul style="list-style-type: none"> <li>Measure the voltage at the following terminal (wiring harness-side) when the driver-side temperature setting is MAX HOT and MAX COLD.               <ul style="list-style-type: none"> <li>Climate control unit terminal 1N (L.H.D.)</li> <li>Climate control unit terminal 1P (R.H.D.)</li> </ul> </li> <li>Is the voltage normal? (See CLIMATE CONTROL UNIT INSPECTION [FULL-AUTO AIR CONDITIONER].)</li> </ul>	Yes	Go to Step 11.
		No	Go to the next step.
10	<b>INSPECT DRIVER-SIDE AIR MIX ACTUATOR</b> <ul style="list-style-type: none"> <li>Inspect the driver-side air mix actuator. (See AIR MIX ACTUATOR INSPECTION [FULL-AUTO AIR CONDITIONER].)</li> <li>Is there any malfunction?</li> </ul>	Yes	Replace the driver-side air mix actuator. (See AIR MIX ACTUATOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].)
		No	Inspect the air mix actuator and linkage for sticking. (See A/C UNIT DISASSEMBLY/ASSEMBLY.) <ul style="list-style-type: none"> <li>If there is any malfunction:               <ul style="list-style-type: none"> <li>Repair or replace the malfunctioning part according to the inspection results.</li> </ul> </li> </ul>

STEP	INSPECTION	RESULTS	ACTION
11	<b>DETERMINE IF MALFUNCTION CAUSE IS POWER BRAKE UNIT VACUUM SENSOR SIGNAL OR OTHER</b> <ul style="list-style-type: none"> <li>• Turn off the i-stop system with i-stop OFF switch.</li> <li>• Start the engine and run it is idling.</li> <li>• Stop the engine.</li> <li>• Switch the ignition ON (engine off).</li> <li>• Access the PCM PID BBP using the M-MDS while the brake pedal has been depressed several times. (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-D 2.2].)</li> <li>• Does the monitor value decrease every time the brake pedal is depressed?</li> </ul>	Yes	Repeat the inspection from Step 1. • If the malfunction is not resolved, replace the PCM. (See PCM REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
		No	Go to the next step.
12	<b>INSPECT POWER BRAKE UNIT VACUUM SENSOR</b> <ul style="list-style-type: none"> <li>• Inspect the power brake unit vacuum sensor. (See POWER BRAKE UNIT VACUUM SENSOR INSPECTION [SKYACTIV-D 2.2].)</li> <li>• Is there any malfunction?</li> </ul>	Yes	Replace the power brake unit vacuum sensor. (See POWER BRAKE UNIT VACUUM SENSOR REMOVAL/INSTALLATION.)
		No	Inspect the wiring harness between the following terminals for a short or open circuit: <ul style="list-style-type: none"> <li>• Power brake unit vacuum sensor terminal C—PCM terminal 2BB</li> <li>• Power brake unit vacuum sensor terminal B—PCM terminal 2BC</li> <li>• Power brake unit vacuum sensor terminal A—PCM terminal 2BD <ul style="list-style-type: none"> <li>— If there is any malfunction: <ul style="list-style-type: none"> <li>• Repair or replace the suspected wiring harness.</li> </ul> </li> <li>— If there is no malfunction: <ul style="list-style-type: none"> <li>• Replace the PCM. (See PCM REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)</li> </ul> </li> </ul> </li> </ul>
13	<b>VERIFY IF ENGINE STALLS AFTER CRANKING DURING ENGINE RESTART</b> <ul style="list-style-type: none"> <li>• Does the engine restart by i-stop engine start?</li> </ul>	Yes	Go to Step 20.
		No	Go to the next step.
14	<b>DETERMINE IF MALFUNCTION CAUSE IS FRONT DOOR LATCH SWITCH (DRIVER'S SIDE) SIGNAL OR OTHER</b> <ul style="list-style-type: none"> <li>• Switch the ignition ON (engine off).</li> <li>• Access the rear body control module (RBCM) PID DOOR_D using the M-MDS. (See PID/DATA MONITOR INSPECTION [REAR BODY CONTROL MODULE (RBCM)].)</li> <li>• Are the DOOR_D PID values congruent with the opening and closing of the driver's door? (See PID/DATA MONITOR TABLE [REAR BODY CONTROL MODULE (RBCM)].)</li> </ul>	Yes	Go to Step 16.
		No	Go to the next step.
15	<b>INSPECT FRONT DOOR LATCH SWITCH (DRIVER'S SIDE)</b> <ul style="list-style-type: none"> <li>• Inspect the front door latch switch (driver's side). (See FRONT DOOR LATCH SWITCH INSPECTION.)</li> <li>• Is there any malfunction?</li> </ul>	Yes	Replace the front door latch and lock actuator (driver's side). (See FRONT DOOR LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION.)
		No	Repair or replace the wiring harness between front door latch switch (driver's side) and rear body control module (RBCM) for a possible open circuit.
16	<b>DETERMINE IF MALFUNCTION CAUSE IS DRIVER-SIDE BUCKLE SWITCH SIGNAL OR OTHER</b> <ul style="list-style-type: none"> <li>• Switch the ignition ON (engine off).</li> <li>• Access the SAS control module PID SEAT_B_D using the M-MDS. (See PID/DATA MONITOR INSPECTION.)</li> <li>• Is the SEAT_B_D PID value congruent with the seat belt condition? (See PID/DATA MONITOR TABLE.)</li> </ul>	Yes	Go to Step 18.
		No	Go to the next step.

STEP	INSPECTION	RESULTS	ACTION
17	<b>INSPECT DRIVER-SIDE BUCKLE SWITCH</b> <ul style="list-style-type: none"> <li>Inspect the driver-side buckle switch. (See BUCKLE SWITCH INSPECTION.)</li> <li>Is there any malfunction?</li> </ul>	Yes	Replace the driver-side buckle switch. (See FRONT BUCKLE REMOVAL/INSTALLATION.)
		No	Repair or replace the wiring harness between driver-side buckle switch terminal 4A and SAS control module terminal 2U for a possible short to ground.
18	<b>DETERMINE IF MALFUNCTION CAUSE IS BONNET LATCH SWITCH SIGNAL OR OTHER</b> <ul style="list-style-type: none"> <li>Switch the ignition ON (engine off).</li> <li>Access the rear body control module (RBCM) PID HOOD using the M-MDS. (See PID/DATA MONITOR INSPECTION [REAR BODY CONTROL MODULE (RBCM)].)</li> <li>Is the HOOD PID value normal? (See PID/DATA MONITOR TABLE [REAR BODY CONTROL MODULE (RBCM)].)</li> </ul>	Yes	Repeat the inspection from Step 1. • If the malfunction is not resolved, replace the PCM. (See PCM REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
		No	Go to the next step.
19	<b>INSPECT BONNET LATCH SWITCH</b> <ul style="list-style-type: none"> <li>Inspect the bonnet latch switch. (See BONNET LATCH SWITCH INSPECTION.)</li> <li>Is there any malfunction?</li> </ul>	Yes	Replace the bonnet latch switch. (See BONNET LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
		No	Repair or replace the wiring harness between bonnet latch switch terminal A and rear body control module (RBCM) terminal 3L for a possible open circuit.
20	<b>VERIFY CURRENT INPUT SIGNAL STATUS</b>  <b>Caution</b> <ul style="list-style-type: none"> <li>While performing this step, always operate the vehicle in a safe and lawful manner.</li> <li>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.</li> </ul> <ul style="list-style-type: none"> <li>Access the following PIDs using the M-MDS: (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-D 2.2].) <ul style="list-style-type: none"> <li>ECT</li> <li>IAT</li> <li>BARO</li> </ul> </li> <li>Do the PIDs indicate the correct values under the malfunction condition? (See PCM INSPECTION [SKYACTIV-D 2.2].)</li> </ul>	Yes	Inspect the related sensor and circuit. • If there is any malfunction: <ul style="list-style-type: none"> <li>Repair or replace the malfunctioning part according to the inspection results.</li> </ul> • If there is no malfunction: <ul style="list-style-type: none"> <li>Go to the next step.</li> </ul>
		No	2WD: • Go to Step 22. 4WD: • Go to the next step.
21	<b>INSPECT JET PUMP</b> <ul style="list-style-type: none"> <li>Inspect the jet pump. (See JET PUMP INSPECTION [SKYACTIV-D 2.2].)</li> <li>Is the jet pump normal?</li> </ul>	Yes	Go to the next step.
		No	Replace the fuel gauge sender unit (main). (See FUEL GAUGE SENDER UNIT REMOVAL/INSTALLATION [4WD].)
22	<b>INSPECT ENGINE COMPRESSION</b> <ul style="list-style-type: none"> <li>Inspect the engine compression. (See COMPRESSION INSPECTION [SKYACTIV-D 2.2].)</li> <li>Are compression pressures within specification?</li> </ul> <b>Specification:</b> <ul style="list-style-type: none"> <li>Compression <ul style="list-style-type: none"> <li>Standard: <b>2255 kPa {22.99 kgf/cm<sup>2</sup>, 327.1 psi} (180 rpm)</b></li> <li>Minimum: <b>1804 kPa {18.40 kgf/cm<sup>2</sup>, 261.6 psi} (180 rpm)</b></li> <li>Maximum difference between cylinders: <b>147 kPa {1.50 kgf/cm<sup>2</sup>, 21.3 psi} (180 rpm)</b></li> </ul> </li> </ul>	Yes	Go to Step 24.
		No	Go to the next step.

STEP	INSPECTION	RESULTS	ACTION
23	<b>INSPECT FOR MALFUNCTION DUE TO DEVIATED VALVE TIMING</b> <ul style="list-style-type: none"> <li>Inspect the valve timing (timing chain installation condition). (See TIMING CHAIN REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)</li> <li>Is the valve timing normal?</li> </ul>	Yes	Go to the next step.
		No	Adjust the valve timing to the correct timing.
24	<b>DETERMINE IF MALFUNCTION IS DUE TO EXCESSIVE ENGINE SPEED RESISTANCE</b> <ul style="list-style-type: none"> <li>Rotate the crankshaft pulley lock bolt clockwise using a wrench. (See FRONT OIL SEAL REPLACEMENT [SKYACTIV-D 2.2].)</li> <li>Can the bolt be rotated?</li> </ul>	Yes	Go to Step 26.
		No	Go to the next step.
25	<b>INSPECT FOR MALFUNCTION DUE TO EXCESSIVE MECHANICAL RESISTANCE OF ENGINE ACCESSORIES</b> <ul style="list-style-type: none"> <li>Remove all drive belts from engine accessories. (See DRIVE BELT REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)</li> </ul> <p><b>Caution</b></p> <ul style="list-style-type: none"> <li><b>Do not run the engine with the drive belts of engine accessories removed. Otherwise the engine could be damaged from overheating.</b></li> <li>Start the engine.</li> <li>Is cranking possible? (Does engine start?)</li> </ul>	Yes	Repair or replace the malfunctioning part according to the inspection results. (Mechanical resistance in engine accessories.)
		No	Go to the next step.
26	<b>INSPECT FOR MALFUNCTION DUE TO POOR FUEL</b> <ul style="list-style-type: none"> <li>Replace the fuel. (See FUEL DRAINING PROCEDURE [SKYACTIV-D 2.2].)</li> <li>Does the symptom disappear?</li> </ul>	Yes	Advise the customer as to the change in the fuel used.
		No	Remove the accumulated matter in the cylinder head using the following procedure, then go to the next step. <ul style="list-style-type: none"> <li>Carbon remover</li> <li>Overhauling</li> </ul>
27	Verify the test results. <ul style="list-style-type: none"> <li>If normal, return to the diagnostic index to service any additional symptoms. (See SYMPTOM DIAGNOSTIC INDEX [SKYACTIV-D 2.2].)</li> <li>If a malfunction remains, inspect the related Service Information and perform the repair or diagnosis. <ul style="list-style-type: none"> <li>If the vehicle is repaired, troubleshooting is completed.</li> <li>If the vehicle is not repaired or additional diagnostic information is not available, replace the PCM. (See PCM REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)</li> </ul> </li> </ul>		