NO.6 ENGINE DOES NOT RESTART [SKYACTIV-G 2.0]

id1103a1001100

6	ENGINE DOES NOT RESTART
DESCRIPTION	• The i-stop warning light (amber) illuminates and engine does not restart while the i-stop function is operating. • Engine does not restart when attempting to resume driving vehicle after stopping, and i-stop warning light (amber) is illuminated. • Engine does not restart even though restart conditions are met.
POSSIBLE CAUSE	**False detection of engine restart restriction conditions during engine stop** • False detection of vehicle in unsafe condition while i-stop function is operating — False detection of open bonnet (engine stalls and i-stop warning light (amber) illuminates) • Bonnet latch switch malfunction • Open circuit in wiring harness between bonnet latch switch terminal A and rear body control module (RBCM) terminal 3L — False detection of open driver's door (when driver's seat belt is unfastened, engine stalls and i-stop warning light (amber) illuminates) • Front door latch switch (driver's side) malfunction • Open circuit in wiring harness between front door latch switch (driver's side) and rear body control module (RBCM) — False detection of unfastened driver seat belt (when driver's door is opened, engine stalls and i-stop warning light (amber) illuminates) • Driver-side buckle switch malfunction • Short to ground in wiring harness between driver-side buckle switch terminal 4A and SAS control module terminal 2U **Engine does not crank when engine is restarted (i-stop warning light (amber) illuminates)** • Engine starting system malfunction **Cannot recognize signal for conditions permitting engine restart** • False detection of i-stop operation not switched OFF even though switched OFF — i-stop OFF switch malfunction • False detection of brake pedal non-operation even though operated — Brake fluid pressure sensor (built-into DSC HU/CM) malfunction • Falsely detects that climate control unit detects driver-side air mix door position at MAX HOT or MAX COLD (vehicles with full-auto air conditioner) — Driver-side air mix actuator malfunction — Driver-side air mix actuator position sensor malfunction — Driver-side air mix door link stuck • False detection of assured power brake unit vacuum (assist force) even though vacuum decreases — Power brake unit vacuum sensor malfunction — Short or open circuit in wiring harness between the following terminals: • Power brake unit vacuum sensor terminal C—PCM terminal 2BG • Power brake unit vacuum sensor terminal B—PCM terminal 2Q • Power brake unit vacuum sensor terminal A—PCM terminal 2AH • Cannot recognize steering wheel angle and speed even though steering wheel is turned. (ATX, D or M position) — Steering angle sensor malfunction — Short or open circuit in wiring harness between steering angle sensor and start stop unit terminals 1U, 1T, 1W or 1S **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)** • Piston-stop position malfunction while i-stop function is operating — CKP sensor malfunction — Throttle value operation malfunction (drive-by-wire control malfunction) — Intake-air system related malfunction (air suction, vacuum hose breakage) — Purge control malfunction • Mechanical (engine) malfunction — Valve timing malfunction — Improper operation of electric variable valve timing control system (PCM DTC is stored.) — Improper operation of hydraulic variable valve timing control system

Diagnostic Procedure

STEP	INSPECTION	RESULTS	ACTION
1	**VERIFY DTC** • 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-G 2.0].) (See ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FW6A-EL, FW6AX-EL].) (See DTC INSPECTION [FRONT BODY CONTROL MODULE (FBCM)].) (See DTC INSPECTION [REAR BODY CONTROL MODULE (RBCM)].) (See DTC DISPLAY [FULL-AUTO AIR CONDITIONER].) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SKYACTIV-G 2.0].) (See ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FW6A-EL, FW6AX-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	**VERIFY i-stop WARNING LIGHT (AMBER) CONDITION** • Does the i-stop warning light (amber) illuminate?	Yes	Go to Step 12.
		No	Go to the next step.
3	**DETERMINE IF MALFUNCTION CAUSE IS i-stop OFF SWITCH SIGNAL OR OTHER** • Switch the ignition to off. • Disconnect the instrument cluster connector. • Inspect for continuity between instrument cluster terminal V and body ground when the i-stop OFF switch is pressed. • Is there continuity?	Yes	Go to Step 5.
		No	Go to the next step.
4	**INSPECT i-stop OFF SWITCH** • Inspect the i-stop OFF switch. (See i-stop OFF SWITCH INSPECTION [SKYACTIV-G 2.0].) • Is there any malfunction?	Yes	Replace the cluster switch. (See SWITCH PANEL REMOVAL/INSTALLATION.)
		No	Inspect the wiring harness between the following terminals for open circuit: • Cluster switch terminal B—Instrument cluster terminal V • Cluster switch terminal C—Instrument cluster terminal T — If there is any malfunction: • Repair or replace the suspected wiring harness.
5	**DETERMINE IF MALFUNCTION CAUSE IS STEERING ANGLE SENSOR SIGNAL OR OTHER** • Start the engine and it at idle. • Access the EPS control module PID STR_ANG using the M-MDS. (See ELECTRIC POWER STEERING (EPS) ON-BOARD DIAGNOSIS.) • Is the PID value normal?	Yes	Go to Step 7.
		No	Go to the next step.
6	**INSPECT STEERING ANGLE SENSOR** • Inspect the steering angle sensor. (See STEERING ANGLE SENSOR INSPECTION.) • Is there any malfunction?	Yes	Replace the steering angle sensor. (See STEERING ANGLE SENSOR REMOVAL/INSTALLATION.)
		No	Inspect the wiring harness between the following terminals for a short or open circuit: • Steering angle sensor terminal A—Start stop unit terminal 1U • Steering angle sensor terminal B—Start stop unit terminal 1T • Steering angle sensor terminal C—Start stop unit terminal 1W • Steering angle sensor terminal D—Start stop unit terminal 1S — If there is any malfunction: • Repair or replace the suspected wiring harness.

STEP	INSPECTION	RESULTS	ACTION
7	**INSPECT BRAKE FLUID PRESSURE SENSOR** • Inspect the brake fluid pressure sensor. (See BRAKE FLUID PRESSURE SENSOR INSPECTION.) • Is there any malfunction?	Yes	Replace the DSC HU/CM. (See DSC HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.
8	**DETERMINE IF MALFUNCTION CAUSE IS DRIVER-SIDE AIR MIX ACTUATOR SIGNAL OR OTHER** • Measure the voltage at the climate control unit terminal 1N (wiring harness-side) when the driver-side temperature setting is MAX HOT and MAX COLD. • Is the voltage normal? (See CLIMATE CONTROL UNIT INSPECTION [FULL-AUTO AIR CONDITIONER].)	Yes	Go to Step 10.
		No	Go to the next step.
9	**INSPECT DRIVER-SIDE AIR MIX ACTUATOR** • Inspect the driver-side air mix actuator. (See AIR MIX ACTUATOR INSPECTION [FULL-AUTO AIR CONDITIONER].) • Is there any malfunction?	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.) • If there is any malfunction: — Repair or replace the malfunctioning part according to the inspection results.
10	**DETERMINE IF MALFUNCTION CAUSE IS POWER BRAKE UNIT VACUUM SENSOR SIGNAL OR OTHER** • Turn off the i-stop system with i-stop OFF switch. • Start the engine and run it is idling. • Stop the engine. • Switch the ignition ON (engine off). • Access the PCM PID BBP using the M-MDS while the brake pedal has been depressed several times. (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-G 2.0].) • Does the monitor value decrease every time the brake pedal is depressed?	Yes	Repeat the inspection from Step 1. • If the malfunction is not resolved, replace the PCM. (See PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.0].) Go to Step 23.
		No	Go to the next step.
11	**INSPECT POWER BRAKE UNIT VACUUM SENSOR** • Inspect the power brake unit vacuum sensor. (See POWER BRAKE UNIT INSPECTION.) • Is there any malfunction?	Yes	Replace the power brake unit vacuum sensor. (See POWER BRAKE UNIT VACUUM SENSOR INSPECTION [SKYACTIV-G 2.0].)
		No	Inspect the wiring harness between the following terminals for a short or open circuit: • Power brake unit vacuum sensor terminal C—PCM terminal 2BG • Power brake unit vacuum sensor terminal B—PCM terminal 2Q • Power brake unit vacuum sensor terminal A—PCM terminal 2AH — If there is any malfunction: • Repair or replace the suspected wiring harness. — If there is no malfunction: • Replace the PCM. (See PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.0].)
12	**VERIFY IF ENGINE STALLS AFTER CRANKING DURING ENGINE RESTART** • Does the engine restart by i-stop engine start?	Yes	Go to Step 19.
		No	Go to the next step.

STEP	INSPECTION	RESULTS	ACTION
13	**DETERMINE IF MALFUNCTION CAUSE IS FRONT DOOR LATCH SWITCH (DRIVER'S SIDE) SIGNAL OR OTHER** • Switch the ignition ON (engine off or on). • Access the rear body control module (RBCM) PID DOOR_D using the M-MDS. (See PID/DATA MONITOR INSPECTION [REAR BODY CONTROL MODULE (RBCM)].) • 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)].)	Yes	Go to Step 15.
		No	Go to the next step.
14	**INSPECT FRONT DOOR LATCH SWITCH (DRIVER'S SIDE)** • Inspect the front door latch switch (driver's side). (See FRONT DOOR LATCH SWITCH INSPECTION.) • Is there any malfunction?	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.
15	**DETERMINE IF MALFUNCTION CAUSE IS DRIVER-SIDE BUCKLE SWITCH SIGNAL OR OTHER** • Switch the ignition ON (engine off or on). • Access the SAS control module PID SEAT_B_D using the M-MDS. (See PID/DATA MONITOR INSPECTION.) • Is the SEAT_B_D PID value congruent with the seat belt condition? (See PID/DATA MONITOR TABLE.)	Yes	Go to Step 17.
		No	Go to the next step.
16	**INSPECT DRIVER-SIDE BUCKLE SWITCH** • Inspect the driver-side buckle switch. (See BUCKLE SWITCH INSPECTION.) • Is there any malfunction?	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.
17	**DETERMINE IF MALFUNCTION CAUSE IS BONNET LATCH SWITCH SIGNAL OR OTHER** • Switch the ignition ON (engine off). • Access the rear body control module (RBCM) PID HOOD_SW using the M-MDS. (See PID/DATA MONITOR INSPECTION [REAR BODY CONTROL MODULE (RBCM)].) • Is the HOOD_SW PID value normal? (See PID/DATA MONITOR TABLE [REAR BODY CONTROL MODULE (RBCM)].)	Yes	Repeat the inspection from Step 1. • If the malfunction is not resolved, replace the PCM. (See PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.0].) Go to Step 23.
		No	Go to the next step.
18	**INSPECT BONNET LATCH SWITCH** • Inspect the bonnet latch switch. (See BONNET LATCH SWITCH INSPECTION.) • Is there any malfunction?	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.
19	**DETERMINE IF MALFUNCTION IS CAUSED BY ROUGH IDLING OR A PISTON-STOP POSITION CONTROL MALFUNCTION** • Start the engine and warm it up completely. • Verify the idling condition. • Is the engine idling rough?	Yes	Inspect the following: • Air suction into intake-air system • Vacuum hose leakage • Purge system • Electric variable valve timing system • Hydraulic variable valve timing system — If there is any malfunction: • Repair or replace the malfunctioning part according to the inspection results.
		No	Go to the next step.

STEP	INSPECTION	RESULTS	ACTION
20	**INSPECT CKP SENSOR SIGNAL WAVE** • Start the engine and idle it. • Verify the PCM terminal 1AD output signal wave pattern using an oscilloscope. (See PCM INSPECTION [SKYACTIV-G 2.0].) • Is the output wave pattern normal?	Yes	Go to Step 22.
		No	Go to the next step.
21	**INSPECT CKP SENSOR PULSE WHEEL** • Visually inspect the CKP sensor pulse wheel. • Are there any cracks or bending in the pulse wheel?	Yes	Replace the crankshaft pulley. (See CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [SKYACTIV-G 2.0].)
		No	Inspect the wiring harness between the following terminals: • CKP sensor terminal A—PCM terminal 1BN • CKP sensor terminal C—PCM terminal 1AD • CKP sensor terminal B—PCM terminal 1AH — If there is any malfunction: • Repair or replace the suspected wiring harness. — If there is no malfunction: • Replace the CKP sensor. (See CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [SKYACTIV-G 2.0].)
22	**INSPECT DRIVE-BY-WIRE CONTROL SYSTEM OPERATION** • Perform the Drive-by-wire Control System Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [SKYACTIV-G 2.0].) • Is the drive-by-wire control system normal?	Yes	Repeat the inspection from Step 1. • If the malfunction is not resolved, replace the PCM. (See PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.0].) Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
23	Verify the test results. • If normal, return to the diagnostic index to service any additional symptoms. (See SYMPTOM DIAGNOSTIC INDEX [SKYACTIV-G 2.0].) • If a malfunction remains, inspect the related Service Information and perform the repair or diagnosis. — If the vehicle is repaired, troubleshooting is completed. — If the vehicle is not repaired or additional diagnostic information is not available, replace the PCM. (See PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.0].)		