NO.4 i-stop FUNCTION DOES NOT OPERATE [SKYACTIV-G 2.0, SKYACTIV-G 2.5]

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4	i-stop FUNCTION DOES NOT OPERATE
DESCRIPTION	• i-stop function does not operate when vehicle is stopped.
POSSIBLE CAUSE	**False detection of conditions other than i-stop function operation.** • Falsely detects that driver does not intend to stop. — False detection of brake pedal not depressed (ATX) • Brake switch No.1 malfunction • Open circuit in wiring harness between brake switch terminal D and PCM terminal 2G • Brake fluid pressure sensor (built-into DSC HU/CM) malfunction (i-stop indicator light (green) flashes) • Falsely detection of external vehicle temperature out of operation range **(−10 to 50 °C {14 to 122 °F})** — Ambient temperature sensor malfunction (sensor specific malfunction) — Short or open circuit in wiring harness between ambient temperature sensor terminal A and PCM terminal 2I — Open circuit in wiring harness between ambient temperature sensor terminal B and PCM terminal 2AJ • Climate control unit falsely detects that internal vehicle temperature is high. (with full-auto air conditioner) — Cabin temperature sensor malfunction (sensor specific or motor malfunction) — Short or open circuit in wiring harness between cabin temperature sensor terminal A and climate control unit terminal 1J — Open circuit in wiring harness between cabin temperature sensor terminal B and climate control unit terminal 1X • Falsely detects that climate control unit detects driver-side air mix door position at MAX HOT or MAX COLD (with full-auto air conditioner) — Driver-side air mix actuator malfunction — Driver-side air mix actuator position sensor malfunction — Driver-side air mix door or linkage stuck • Climate control unit falsely detects that i-stop function is operating in manual defroster mode. — Climate control unit (panel switch) malfunction • False detection of vehicle not being parked — False detection of steering wheel rotation and rotation speed • Steering angle sensor initialization malfunction • 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

4	i-stop FUNCTION DOES NOT OPERATE
POSSIBLE CAUSE	• False detection of vehicle in unsafe condition — False detection of open bonnet • Bonnet latch switch malfunction (stuck open) • Open circuit in wiring harness between bonnet latch switch terminal A and rear body control module (RBCM) terminal 3L — False detection of open door and liftgate • Door latch switch malfunction • Liftgate latch switch malfunction • Open circuit in wiring harness between door latch switch and rear body control module (RBCM) • Short to ground in wiring harness between liftgate latch switch and rear body control module (RBCM) — False detection of unfastened driver seat belt • Driver-side buckle switch malfunction • Short to ground in wiring harness between driver-side buckle switch terminal 4A and SAS control module terminal 2U — False detection of inclination angle (false detection of **7 % or more**) (ATX) • Low-G (XY) sensor (built-into SAS control module) malfunction (In this case, the SAS control module records DTCs C0061:29 and C0062:29.) • Low-G (XY) sensor (built-into SAS control module) initialization malfunction — DC-DC converter system error (exceeds capacity of DC-DC converter output due to open or short circuit in wiring harness and after-market electrical part) — False detection of low power brake unit load • Power brake unit vacuum sensor malfunction • Short or open circuit in wiring harness between power brake unit vacuum sensor terminal C and PCM terminal 2BG • Short or open circuit in wiring harness between power brake unit vacuum sensor terminal B and PCM terminal 2Q • Short or open circuit in wiring harness between power brake unit vacuum sensor terminal A and PCM terminal 2AH • Power brake unit malfunction (air tightness malfunction) • Malfunction in vacuum hose to power brake unit (damage, bad check valve) **Falsely detects possible inability of engine to restart** • False detection of low (**55 °C {131 °F} or less**) or high (**110 °C {230 °F} or more**) engine coolant temperature — ECT sensor malfunction (sensor specific malfunction) • False detection of high intake air temperature (**100 °C {212 °F} or more**) — IAT sensor No.1 malfunction (sensor specific malfunction) • False detection of low (**less than 0 °C {32 °F}**) or high (**70 °C {158 °F} or more**) battery fluid temperature • False detection of low (**20 °C {68 °F} or less**) or high (**120 °C {248 °F} or more**) ATF temperature (ATX) **Determines possible inability of engine to restart** • Battery voltage decrease — Battery malfunction — Generator malfunction — Generator malfunction (part, system, control malfunction) — Large amount of vehicle power consumption/Large amount of back-up current • Determination of jump-start possibility — Engine start using key with bonnet opened

Diagnostic Procedure

STEP	INSPECTION	RESULTS	ACTION
1	**VERIFY i-stop INDICATOR LIGHT (GREEN) CONDITION WHEN MALFUNCTION OCCURS** **Note** • If any of the following conditions is met, then go to the next step. — MTX — European (L.H.D. U.K.) specs. • Is the i-stop indicator light (green) flashing?	Yes	Perform the symptom troubleshooting “NO.3 i-stop INDICATOR LIGHT (GREEN) FLASHES”. (See NO.3 i-stop INDICATOR LIGHT (GREEN) FLASHES [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
		No	Go to the next step.

STEP	INSPECTION	RESULTS	ACTION
2	**DETERMINE IF MALFUNCTION CAUSE IS BATTERY VOLTAGE DECREASE OR OTHER** • Start the engine and warm it up completely. • Idle the engine. • Access the BATT_SOC PID using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) • Is the BATT_SOC PID value **above 75 %**?	Yes	Go to the next step.
		No	Recharge the battery (6-hour normal recharge at **10 A** recharge current). (See BATTERY RECHARGING [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
3	**INSPECT INSUFFICIENT ADVANCED KEY BATTERY POWER FOR MALFUNCTION** **Note** • The following test should be performed on the advanced keyless entry system. If not equipped, go to Step 3. • Verify the condition of the KEY indicator light (green) in the instrument cluster while the advanced key is in the cabin. • Is the KEY indicator light (green) flashing?	Yes	Replace the advanced key battery.
		No	Go to the next step.
4	**INSPECT EFFECT OF NON-GENUINE ELECTRICAL ACCESSORY FOR CAUSE OF MALFUNCTION** • Remove any non-genuine electrical accessory. • Verify the malfunction symptom. • Does the i-stop function operate when the vehicle is stopped?	Yes	The system is normal. • Explain to the customer that the i-stop function does not operate due to the effect of the non-genuine electrical accessory installed.
		No	Go to the next step.
5	**VERIFY DTC** • Retrieve the PCM, TCM, front body control module (FBCM), rear body control module (RBCM), DSC HU/CM, SAS control module, instrument cluster and climate control unit DTCs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) (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 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) (See DTC INSPECTION.) (See DTC INSPECTION [INSTRUMENT CLUSTER].) (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, SKYACTIV-G 2.5].) (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 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) (See DTC TABLE.) (See DTC TABLE [INSTRUMENT CLUSTER].) (See DTC TABLE [FULL-AUTO AIR CONDITIONER].)
		No	Go to the next step.
6	**INSPECT BATTERY** • Inspect the battery. (See BATTERY INSPECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) • Is there any malfunction?	Yes	Replace the battery. (See BATTERY REMOVAL/INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
		No	Go to the next step.
7	**INSPECT GENERATOR** • Inspect the generator. (See GENERATOR INSPECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) • Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection results.
		No	Go to the next step.

STEP	INSPECTION	RESULTS	ACTION
8	**DETERMINE IF MALFUNCTION CAUSE IS APP SENSOR SIGNAL OR OTHER** • Start the engine and drive the vehicle for **5 min**. • Idle the engine. • Access the following PCM and TCM PIDs using the M-MDS: (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) (See ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FW6A-EL, FW6AX-EL].) **PCM PIDs:** — BATT_TEMP (**0—70 °C {32—158 °F}**) — ECT (**55—110 °C {131—230 °F}**) — IAT (**less than 100 °C {212 °F}**) **TCM PID: (ATX)** — TFT **(20—120 °C {68—248 °F})** • Are the PID values out of the i-stop operation range?	Yes	Inspect the related-PID sensor which is out of range and the wiring harness. • If there is any malfunction: — Repair or replace the malfunctioning part according to the inspection results.
		No	Go to the next step.
9	**DETERMINE IF MALFUNCTION CAUSE IS AMBIENT TEMPERATURE SENSOR SIGNAL OR OTHER** • Switch the ignition ON (engine off). • Compare the ambient temperature sensor on the LCD with the actual ambient temperature. • Does the ambient temperature on the LCD correspond to the actual ambient temperature?	Yes	ATX: • Go to Step 12. MTX: • Go to Step 13.
		No	Go to the next step.
10	**INSPECT AMBIENT TEMPERATURE SENSOR** • Inspect the ambient temperature sensor. (See AMBIENT TEMPERATURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].) • Is there any malfunction?	Yes	Replace the ambient temperature sensor. (See AMBIENT TEMPERATURE SENSOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].)
		No	Go to the next step.
11	**INSPECT AMBIENT TEMPERATURE SENSOR CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT** • Inspect for an open or short circuit between the following terminals (wiring harness-side): — Ambient temperature sensor terminal A—PCM terminal 2I — Ambient temperature sensor terminal B—PCM terminal 2AJ • Is there any malfunction?	Yes	Repair or replace the suspected wiring harness.
		No	Replace the PCM. (See PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
12	**VERIFY IF MALFUNCTION CAUSE IS STEERING ANGLE SENSOR INITIALIZATION NOT PERFORMED** • Drive the vehicle and verify the steering learning. • Can learning be completed?	Yes	Malfunction caused by the steering angle sensor initialization malfunction. • Investigate when there is a malfunction in steering angle learning.
		No	Go to the next step.

STEP	INSPECTION	RESULTS	ACTION
13*	**DETERMINE IF MALFUNCTION CAUSE IS DOOR LATCH SWITCH AND LIFTGATE LATCH SWITCH SIGNAL OR OTHER** • Switch the ignition ON (engine off). • Access the following rear body control module (RBCM) PIDs using the M-MDS: (See PID/DATA MONITOR INSPECTION [REAR BODY CONTROL MODULE (RBCM)].) — TRUNK — DOOR_D — DOOR_ALL • Are the PID values congruent with the opening and closing of the doors and liftgate? (See PID/DATA MONITOR TABLE [REAR BODY CONTROL MODULE (RBCM)].)	Yes	Go to Step 15.
		No	Go to the next step.
14	**INSPECT DOOR LATCH SWITCH AND LIFTGATE LATCH SWITCH** • Inspect the PID-related switch in which the malfunction occurred in Step 13. (See LIFTGATE LATCH SWITCH INSPECTION.) (See FRONT DOOR LATCH SWITCH INSPECTION.) (See REAR DOOR LATCH SWITCH INSPECTION.) • Is there any malfunction?	Yes	Replace the applicable switch. (See LIFTGATE LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION.) (See FRONT DOOR LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION.) (See REAR DOOR LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION.)
		No	Inspect the following wiring harness in which the malfunction occurred in Step 13: • Open circuit in wiring harness between door latch switch and rear body control module (RBCM) • Short to ground in wiring harness between liftgate latch switch and rear body control module (RBCM) — If there is any malfunction: • Repair or replace the suspected wiring harness.
15	**DETERMINE IF MALFUNCTION CAUSE IS DRIVER-SIDE BUCKLE SWITCH SIGNAL OR OTHER** • Switch the ignition ON (engine off). • 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	With manual air conditioner: • Go to Step 19. With full-auto air conditioner: • 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 CABIN TEMPERATURE SENSOR SIGNAL OR OTHER** • Access the climate control unit PID INC_TMP_SEN using the M-MDS. (See PID/DATA MONITOR DISPLAY [FULL-AUTO AIR CONDITIONER].) • Does the INC_TMP_SEN PID value indicate the actual cabin temperature of the vehicle?	Yes	Go to Step 19.
		No	Go to the next step.

STEP	INSPECTION	RESULTS	ACTION
18	**INSPECT CABIN TEMPERATURE SENSOR** • Inspect the cabin temperature sensor. (See CABIN TEMPERATURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].) • Is there any malfunction?	Yes	Replace the cabin temperature sensor. (See CABIN TEMPERATURE SENSOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].)
		No	Inspect the wiring harness between the following terminals for a short or open circuit: • Cabin temperature sensor terminal A—Climate control unit terminal 1J • Cabin temperature sensor terminal B—Climate control unit terminal 1X — If there is any malfunction: • Repair or replace the suspected wiring harness.
19*	**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 using the M-MDS. (See PID/DATA MONITOR INSPECTION [REAR BODY CONTROL MODULE (RBCM)].) • Is the HOOD PID value normal? (See PID/DATA MONITOR TABLE [REAR BODY CONTROL MODULE (RBCM)].)	Yes	Go to Step 21.
		No	Go to the next step.
20	**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.
21	**DETERMINE IF MALFUNCTION IS CAUSED BY STEERING ANGLE (ESTIMATED ABSOLUTE ANGLE) SIGNAL ERROR** • Start the engine and idle it. • Using the M-MDS, display EPS control module PID STR_ANG. (See .ELECTRIC POWER STEERING (EPS) ON-BOARD DIAGNOSIS) • Are the monitoring values normal?	Yes	ATX: • Go to Step 23. MTX: • Go to Step 25.
		No	Go to the next step.
22	**INSPECT EPS CONTROL MODULE FOR MALFUNCTION** • Inspect the EPS control module. (See EPS CONTROL MODULE INSPECTION.) • Is the EPS control module normal?	Yes	Perform the following procedure: 1. Switch the ignition off, and after **2 min or more** have elapsed, switch the ignition ON. 2. Start the engine and drive the vehicle **10 m {33 ft} or more** in a straight line at a speed of **10 km/h {6.2 mph} or more**. 3. Stop the vehicle with the wheels in the straight-ahead position. 4. Using the M-MDS, display EPS control module PID STR_ANG. • If the STR_ANG value is normal, go to Step 31. (Because the steering angle (estimated absolute angle) has returned to normal) • If the STR_ANG value is not normal, replace the EPS control module, then go to Step 31. (See STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION.)
		No	Replace the EPS control module, then go to Step 31. (See STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION.)

STEP	INSPECTION	RESULTS	ACTION
23	**DETERMINE IF MALFUNCTION CAUSED BY BRAKE OPERATION SIGNAL ERROR** • Switch the ignition ON (engine off). • Access the PCM PID BOO using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) • Does the BOO PID value change according to the brake pedal operation? (See PCM INSPECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)	Yes	Go to Step 25.
		No	Go to the next step.
24	**INSPECT BRAKE SWITCH** • Inspect the brake switch. (See BRAKE SWITCH INSPECTION.) • Is there any malfunction?	Yes	Replace the brake switch. (See BRAKE PEDAL REMOVAL/INSTALLATION [L.H.D.].) (See BRAKE PEDAL REMOVAL/INSTALLATION [R.H.D.].)
		No	Open circuit in wiring harness between brake switch terminal D and PCM terminal 2G. • If there is any malfunction: — Repair or replace the suspected wiring harness.
25	**DETERMINE IF MALFUNCTION CAUSE IS POWER BRAKE UNIT VACUUM SENSOR SIGNAL OR OTHER** • Start the engine and run it is idling. • Access the PCM PID BBP using the M-MDS with the brake pedal held depressed while the i-stop function is operating. (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) • Does the BBP PID value remain **less than −43 kPa {−0.44 kgf/cm^2, −6.2 psi}**?	Yes	With manual air conditioner: • Go to Step 31. With full-auto air conditioner: • Go to Step 29.
		No	Go to the next step.
26	**INSPECT POWER BRAKE UNIT VACUUM SENSOR FOR AIR TIGHTNESS MALFUNCTION** • Perform the vacuum function inspection for the power brake unit and the vacuum loss inspection. (See POWER BRAKE UNIT INSPECTION.) • Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection results.
		No	Go to the next step.
27	**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 REMOVAL/INSTALLATION.)
		No	Go to the next step.
28	**INSPECT POWER BRAKE UNIT VACUUM SENSOR CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT** • Inspect for an open or short circuit between the following terminals (wiring harness-side): — 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 • Is there any malfunction?	Yes	Repair or replace the suspected wiring harness.
		No	Replace the PCM. (See PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)

STEP	INSPECTION	RESULTS	ACTION
29	**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	Repeat the inspection from Step 1. • If the malfunction is not resolved, replace the PCM. (See PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) Go to Step 31.
		No	Go to the next step.
30	**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.
31	Verify the test results. • If normal, return to the diagnostic index to service any additional symptoms. (See SYMPTOM DIAGNOSTIC INDEX [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) • 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, SKYACTIV-G 2.5].)		