NO.5 i-stop FUNCTION OPERATES UNDER NO ENGINE-STOP CONDITIONS [SKYACTIV-D 2.2]

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5	i-stop FUNCTION OPERATES UNDER NO ENGINE-STOP CONDITIONS
DESCRIPTION	• i-stop function operates even though system is turned off by pressing i-stop OFF switch. • i-stop function operates even though vehicle conditions are for non-operation. • i-stop function operates frequently while parking vehicle.

5	**i-stop FUNCTION OPERATES UNDER NO ENGINE-STOP CONDITIONS**
POSSIBLE CAUSE	**i-stop warning light (amber) false illumination** • i-stop warning light (amber) illumination circuit malfunction in instrument cluster • CAN communication line malfunction between PCM and instrument cluster **False detection of i-stop function operation conditions** • False detection of brake pedal depressed — Brake switch No.1 malfunction — Short to power supply in wiring harness between brake switch terminal D and PCM terminal 2AA — Brake fluid pressure sensor (built-into DSC HU/CM) malfunction • False detection of ATF temperature within operable range (**20 to 120 °C {68 to 248 °F}**) (ATX) — TFT sensor malfunction • False detection of external vehicle temperature within operable 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 2AX — Open circuit in wiring harness between ambient temperature sensor terminal B and PCM terminal 2AY • Climate control unit falsely detects that internal vehicle temperature is within operation range. (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 that driver-side air mix door is not in MAX HOT or MAX COLD position even though driver-side air mix door is in MAX HOT or MAX COLD position (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 • False detection of vehicle not being parked — False detection of steering wheel 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 • Falsely detects that vehicle is under safety condition — False detection of closed bonnet • Bonnet latch switch malfunction (stuck closed) • Short to ground in wiring harness between bonnet latch switch terminal A and rear body control module (RBCM) terminal 3L — False detection of closed door, liftgate • Door latch switch malfunction • Liftgate latch switch malfunction • Short to ground in wiring harness between door latch switch and rear body control module (RBCM) • Open circuit in wiring harness between liftgate latch switch and rear body control module (RBCM) — False detection of fastened driver seat belt • Driver-side buckle switch malfunction • Open circuit 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 less**) • 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 — 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 2BB • Short or open circuit in wiring harness between power brake unit vacuum sensor terminal B and PCM terminal 2BC • Short or open circuit in wiring harness between power brake unit vacuum sensor terminal A and PCM terminal 2BD

Diagnostic Procedure

STEP	INSPECTION	RESULTS	ACTION
1	**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-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 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-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 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.
2*	**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	Go to Step 4.
		No	Go to the next step.
3	**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	Inspect the following: • Short or open circuit in wiring harness between ambient temperature sensor terminal A and PCM terminal 2AX • Open circuit in wiring harness between ambient temperature sensor terminal B and PCM terminal 2AY — If there is any malfunction: • Repair or replace the suspected wiring harness.
4*	**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 6.
		No	Go to the next step.

STEP	INSPECTION	RESULTS	ACTION
5	**INSPECT DOOR LATCH SWITCH AND LIFTGATE LATCH SWITCH** • Inspect the PID-related switch in which the malfunction occurred in Step 4. (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 in which the malfunction occurred in Step 4: • Short to ground in wiring harness between door latch switch and rear body control module (RBCM) • Open circuit 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.
6*	**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 10. With full-auto air conditioner: • Go to Step 8.
		No	Go to the next step.
7	**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 open circuit.
8	**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 10.
		No	Go to the next step.
9	**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.
10*	**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 12.
		No	Go to the next step.

STEP	INSPECTION	RESULTS	ACTION
11	**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 short to ground.
12	**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	Go to Step 14.
		No	Go to the next step.
13	**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 20. (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 20. (See STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION.)
		No	Replace the EPS control module, then go to Step 20. (See STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION.)
14	**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-D 2.2].) • Does the BOO PID value change according to the brake pedal operation? (See PCM INSPECTION [SKYACTIV-D 2.2].)	Yes	Go to Step 16.
		No	Go to the next step.
15	**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 2AA. • If there is any malfunction: — Repair or replace the suspected wiring harness.

STEP	INSPECTION	RESULTS	ACTION
16	**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. • Switch the ignition off. • 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-D 2.2].) • Does the monitor value decrease every time the brake pedal is depressed?	Yes	With manual air conditioner: • Go to Step 20. With full-auto air conditioner: • Go to Step 18.
		No	Go to the next step.
17	**INSPECT POWER BRAKE UNIT VACUUM SENSOR** • Inspect the power brake unit vacuum sensor. (See POWER BRAKE UNIT VACUUM SENSOR INSPECTION [SKYACTIV-D 2.2].) • Is there any malfunction?	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: • Power brake unit vacuum sensor terminal C—PCM terminal 2BB • Power brake unit vacuum sensor terminal B—PCM terminal 2BC • Power brake unit vacuum sensor terminal A—PCM terminal 2BD — 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-D 2.2].)
18	**DETERMINE IF MALFUNCTION CAUSE IS DRIVER-SIDE AIR MIX ACTUATOR SIGNAL OR OTHER** • Measure the voltage at the following terminal (wiring harness-side) when the driver-side temperature setting is MAX HOT and MAX COLD. — Climate control unit terminal 1N (L.H.D.) — Climate control unit terminal 1P (R.H.D.) • 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-D 2.2].) Go to Step 20.
		No	Go to the next step.
19	**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.
20	Verify the test results. • If normal, return to the diagnostic index to service any additional symptoms. (See SYMPTOM DIAGNOSTIC INDEX [SKYACTIV-D 2.2].) • 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-D 2.2].)		