NO.8 INEFFECTIVE OPERATION OF A/C DURING ENGINE STOP (i-stop system) [SKYACTIV-G 2.0, SKYACTIV-G 2.5]

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8	INEFFECTIVE OPERATION OF A/C DURING ENGINE STOP (i-stop SYSTEM)
DESCRIPTION	• A/C airflow temperature gradually increases or decreases while i-stop function is operating.
POSSIBLE CAUSE	**A/C system malfunction** • Climate control unit falsely recognizes MAX HOT or MAX COLD of air mix door on driver-side — Driver-side air mix actuator malfunction — Driver-side air mix actuator position sensor malfunction — Driver-side air mix door link stuck • Airflow temperature cannot be determined correctly. — Heater core temperature sensor (heater airflow temperature sensor) malfunction • Cabin temperature of target vehicle cannot be calculated. — Cabin temperature sensor malfunction — Solar radiation sensor malfunction — Ambient temperature sensor malfunction

Diagnostic Procedure

STEP	INSPECTION	RESULTS	ACTION
1	**DETERMINE IF MALFUNCTION CAUSE IS i-stop SYSTEM OR A/C SYSTEM** • Verify the malfunction symptom. • Does the malfunction occur only while the i-stop function is operating (engine stopped)?	Yes	Go to the next step.
		No	Go to the applicable A/C malfunction diagnostic procedure. (See TROUBLESHOOTING INDEX [FULL-AUTO AIR CONDITIONER].)
2	**VERIFY DTC** • Retrieve the PCM, 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 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 DTC TABLE [INSTRUMENT CLUSTER].) (See DTC TABLE [FULL-AUTO AIR CONDITIONER].)
		No	Go to the next step.
3	**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	With manual air conditioner: • Go to Step 13. With full-auto air conditioner: • Go to Step 5.
		No	Go to the next step.
4	**INSPECT AMBIENT TEMPERATURE SENSOR** • Inspect the ambient temperature sensor. (See AMBIENT TEMPERATURE SENSOR INSPECTION [MANUAL AIR CONDITIONER].) (See AMBIENT TEMPERATURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].) • Is there any malfunction?	Yes	Replace the ambient temperature sensor. (See AMBIENT TEMPERATURE SENSOR INSPECTION [MANUAL AIR CONDITIONER].) (See AMBIENT TEMPERATURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].)
		No	Inspect the wiring harness between the following terminals: • Ambient temperature sensor terminal A—PCM terminal 2I • Ambient temperature sensor terminal B—PCM terminal 2AJ — If there is any malfunction: • Repair or replace the suspected wiring harness.
5	**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 7.
		No	Go to the next step.

STEP	INSPECTION	RESULTS	ACTION
6	**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.
7	**DETERMINE IF MALFUNCTION CAUSE IS SOLAR RADIATION SENSOR SIGNAL OR OTHER** • Access the climate control unit PID SLR_R_SEN_L and SLR_R_SEN_R using the M-MDS. (See PID/DATA MONITOR DISPLAY [FULL-AUTO AIR CONDITIONER].) • Does the SLR_R_SEN_L and SLR_R_SEN_R PID value display according to the solar radiation condition?	Yes	Go to Step 9.
		No	Go to the next step.
8	**INSPECT SOLAR RADIATION SENSOR** • Inspect the solar radiation sensor. (See SOLAR RADIATION SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].) • Is there any malfunction?	Yes	Replace the solar radiation sensor. (See SOLAR RADIATION SENSOR REMOVAL/ INSTALLATION [FULL-AUTO AIR CONDITIONER].)
		No	Inspect the wiring harness between the following terminals: • Solar radiation sensor terminal B—Climate control unit terminal 1T • Solar radiation sensor terminal C—Climate control unit terminal 1V — If there is any malfunction: • Repair or replace the suspected wiring harness.
9	**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 11.
		No	Go to the next step.
10	**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.
11	**DETERMINE IF MALFUNCTION CAUSE IS HEATER CORE TEMPERATURE SENSOR SIGNAL OR OTHER** • Measure the voltage at the climate control unit terminal 1L (wiring harness-side) while the engine is stopped via i-stop control. • Do the elapsed time and voltage values change?	Yes	The system is normal. • Effect is due to a possible change in the vehicle environment while the engine is stopped (change in solar radiation).
		No	Go to the next step.

STEP	INSPECTION	RESULTS	ACTION
12	**INSPECT HEATER CORE TEMPERATURE SENSOR** • Inspect the heater core temperature sensor. (See HEATER CORE TEMPERATURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].) • Is there any malfunction?	Yes	Replace the heater core temperature sensor. (See HEATER CORE TEMPERATURE SENSOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].)
		No	Repair or replace the wiring harness between heater core temperature sensor terminal B and climate control unit terminal 1L.
13	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].)		