NO.8 INEFFECTIVE OPERATION OF A/C DURING ENGINE STOP (i-stop system) [SKYACTIV-D 2.2]

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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 • Refrigerant pressure sensor malfunction • A/C relay 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-D 2.2].) (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 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 2AX • Ambient temperature sensor terminal B—PCM terminal 2AY — If there is any malfunction: • Repair or replace the suspected wiring harness.

STEP	INSPECTION	RESULTS	ACTION
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.
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 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	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.

STEP	INSPECTION	RESULTS	ACTION
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	Go to Step 13.
		No	Go to the next step.
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	**INSPECT A/C RELAY** • Switch the ignition off. • Remove the A/C relay. • Inspect the A/C relay. (See RELAY INSPECTION.) • Is the A/C relay normal?	Yes	Install the A/C relay, then go to the next step.
		No	Replace the A/C relay, then go to Step 15.
14	**INSPECT REFRIGERANT PRESSURE SENSOR** • Inspect the refrigerant pressure sensor. (See REFRIGERANT PRESSURE SENSOR INSPECTION [MANUAL AIR CONDITIONER].) (See REFRIGERANT PRESSURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].) • Is the refrigerant pressure sensor normal?	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	Replace the refrigerant pressure sensor, then go to the next step. (See REFRIGERANT PRESSURE SENSOR REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].) (See REFRIGERANT PRESSURE SENSOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].)
15	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].)		