NO.23 COOLING SYSTEM CONCERNS-RUNS COLD [SKYACTIV-D 2.2]

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23	COOLING SYSTEM CONCERNS-RUNS COLD
DESCRIPTION	• Engine does not reach normal operating temperature.
POSSIBLE CAUSE	• PCM DTC is stored. • Erratic signal to PCM — ECT sensor or related circuit malfunction • Fan control module No.1 malfunction • Fan control module No.2 malfunction • Cooling system malfunction — Thermostat malfunction

Diagnostic Procedure

STEP	INSPECTION	RESULTS	ACTION
1	**VERIFY PCM DTC** • Retrieve PCM DTCs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-D 2.2].) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SKYACTIV-D 2.2].)
		No	Go to the next step.
2	**VERIFY CURRENT INPUT SIGNAL STATUS** **Caution** **• While performing this step, always operate the vehicle in a safe and lawful manner.** **• When the M-MDS is used to observe monitor system status while driving, be sure to have another technician with you, or record the data in the M-MDS using the PID/DATA MONITOR AND RECORD capturing function and inspect later.** • Access the following PID using the M-MDS: (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-D 2.2].) — ECT • Does the PID indicate the correct value under the malfunction condition? (See PCM INSPECTION [SKYACTIV-D 2.2].)	Yes	Inspect the related sensor and circuit. • If there is any malfunction: — Repair or replace the malfunctioning part according to the inspection results, then go to Step 7. • If there is no malfunction: — Go to the next step.
		No	Go to the next step.
3	**INSPECT FAN CONTROL MODULE NO.1** • Inspect the fan control module No.1. (See FAN CONTROL MODULE INSPECTION [SKYACTIV-D 2.2].) • Is the fan control module No.1 normal?	Yes	Go to the next step.
		No	Replace the fan control module No.1, then go to Step 7. (See COOLING FAN MOTOR REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
4	**INSPECT FAN CONTROL MODULE NO.2** • Inspect the fan control module No.2. (See FAN CONTROL MODULE INSPECTION [SKYACTIV-D 2.2].) • Is the fan control module No.2 normal?	Yes	Go to the next step.
		No	Replace the fan control module No.2, then go to Step 7. (See COOLING FAN MOTOR REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
5	**DETERMINE IF MALFUNCTION CAUSE IS THERMOSTAT OR OTHER** • Verify the radiator hose tension. **Warning** **• To prevent burns, use a cloth with your hand to verify the tension of the radiator hose.** • After the engine warms up, does the engine coolant circulate to the radiator hose?	Yes	Go to Step 7.
		No	Go to the next step.

STEP	INSPECTION	RESULTS	ACTION
6	**INSPECT THERMOSTAT** • Inspect the thermostat. (See THERMOSTAT INSPECTION [SKYACTIV-D 2.2].) • Is the thermostat normal?	Yes	Go to the next step.
		No	Replace the thermostat, then go to the next step. (See THERMOSTAT REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
7	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].)		