NO.23 A/C DOES NOT WORK SUFFICIENTLY [SKYACTIV-G 2.0]

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23	A/C DOES NOT WORK SUFFICIENTLY
DESCRIPTION	• A/C compressor magnetic clutch does not engage when A/C switch is turned on.
POSSIBLE CAUSE	• PCM, instrument cluster or climate control unit DTC is stored • Refrigerant pressure sensor malfunction • Improper refrigerant charging amount • Seized A/C compressor • Evaporator temperature sensor malfunction • Open or short circuit in wiring harness between the following terminals: — Evaporator temperature sensor terminal B—Climate control unit terminal H (vehicles with manual air conditioner) — Evaporator temperature sensor terminal A—Climate control unit terminal F (vehicles with manual air conditioner) — Evaporator temperature sensor terminal B—Climate control unit terminal 1F (vehicles with full-auto air conditioner) — Evaporator temperature sensor terminal A—Climate control unit terminal 1X (vehicles with full-auto air conditioner) • Instrument cluster malfunction (Does not receive A/C request signal from climate control unit or transmit it to PCM) • Climate control unit malfunction (A/C switch malfunction or climate control unit does not determine A/C request or transmit A/C request signal) • Open circuit in wiring harness between magnetic clutch and body ground • A/C relay stuck open • Open circuit in wiring harness between the following terminals: — Front body control module (FBCM) terminal 1C—A/C relay terminal A — Battery positive terminal—A/C relay terminal C — A/C relay terminal D—Magnetic clutch terminal A — A/C relay terminal E—PCM terminal 2AF

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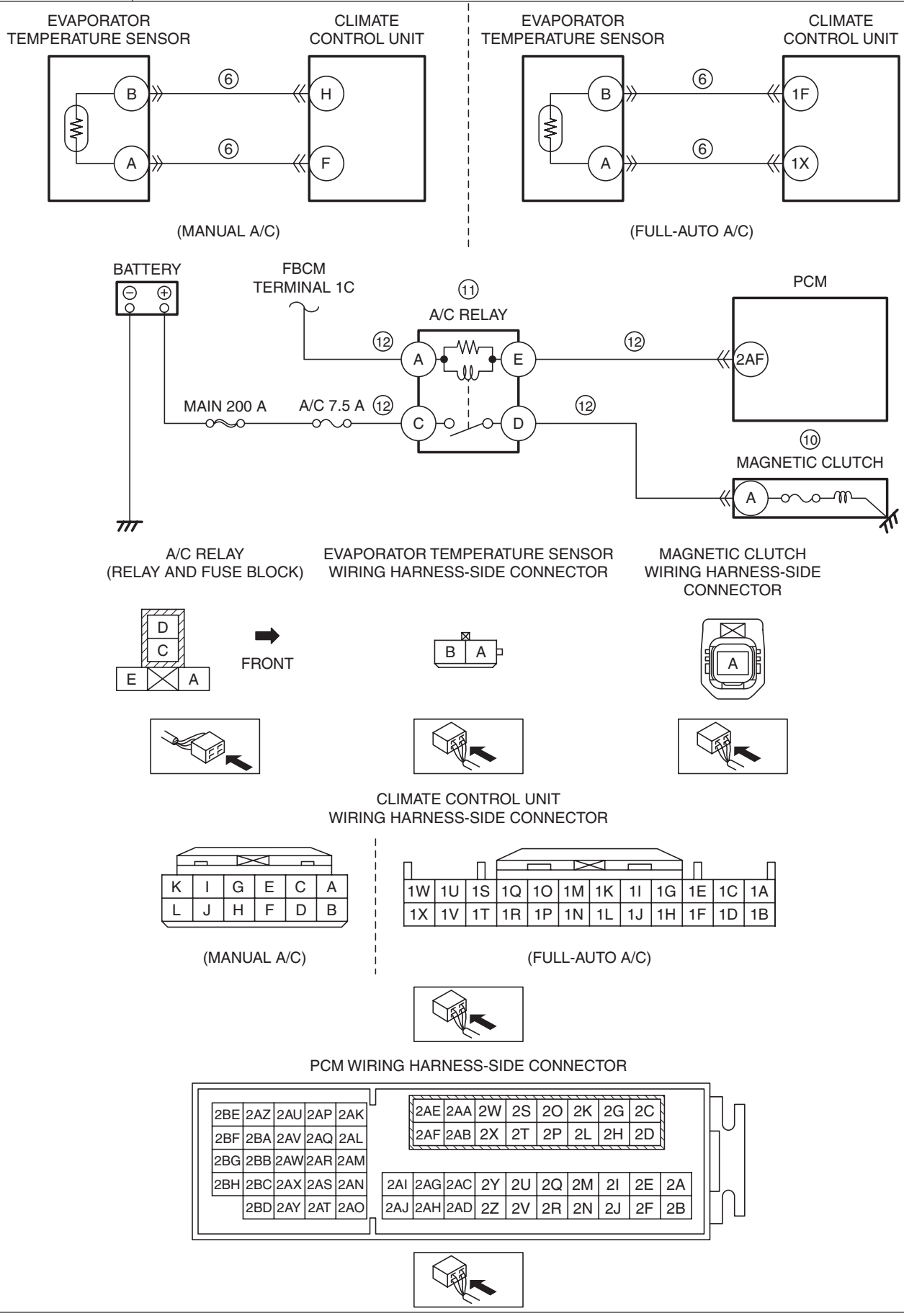

Diagnostic Procedure

STEP	INSPECTION	RESULTS	ACTION
1	**VERIFY PCM, INSTRUMENT CLUSTER AND CLIMATE CONTROL UNIT DTC** • Retrieve the PCM, instrument cluster and climate control unit DTCs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-G 2.0].) (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].) (See DTC TABLE [INSTRUMENT CLUSTER].) (See DTC TABLE [FULL-AUTO AIR CONDITIONER].)
		No	Go to the next step.
2	**DETERMINE IF MALFUNCTION CAUSE IS A/C RELAY CONTROL SIGNAL OR A/C REQUEST SIGNAL** • Access the PCM PID ACCS using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-G 2.0].) • Start the engine and idle it. • Turn the ACCS PID to ON from OFF using the M-MDS simulation function. • Is the magnetic clutch engaged?	Yes	Go to the next step.
		No	Go to Step 9.
3	**DETERMINE IF MALFUNCTION CAUSE IS REFRIGERANT PRESSURE SENSOR OR OTHER** • Access the PCM PID AC_REQ using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-G 2.0].) • Monitor the AC_REQ PID while turning on and off the air conditioner with switch on the control panel. • Is the AC_REQ PID value normal? (See PCM INSPECTION [SKYACTIV-G 2.0].)	Yes	Go to the next step.
		No	Go to Step 5.
4	**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 there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection results.
		No	Inspect the following: • Refrigerant charging amount • A/C compressor seized Repair or replace the malfunctioning part according to the inspection results if necessary.
5	**DETERMINE IF MALFUNCTION CAUSE IS EVAPORATOR TEMPERATURE SENSOR OR OTHER** • Measure the voltage at the climate control unit terminal H (wiring harness-side). (vehicles with manual air conditioner) • Measure the voltage at the climate control unit terminal 1F (wiring harness-side). (vehicles with full-auto air conditioner) • Is the voltage normal? (See CLIMATE CONTROL UNIT INSPECTION [MANUAL AIR CONDITIONER].) (See CLIMATE CONTROL UNIT INSPECTION [FULL-AUTO AIR CONDITIONER].)	Yes	Vehicles with manual air conditioner: • Go to Step 7. Vehicles with full-auto air conditioner: • Go to Step 9.
		No	Go to the next step.

STEP	INSPECTION	RESULTS	ACTION
6	**INSPECT EVAPORATOR TEMPERATURE SENSOR** • Inspect the evaporator temperature sensor. (See EVAPORATOR TEMPERATURE SENSOR INSPECTION [MANUAL AIR CONDITIONER].) (See EVAPORATOR TEMPERATURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].) • Is there any malfunction?	Yes	Replace the evaporator temperature sensor. (See EVAPORATOR TEMPERATURE SENSOR REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].) (See EVAPORATOR TEMPERATURE SENSOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].)
		No	Inspect for short or open circuit between the following terminals: • Evaporator temperature sensor terminal B—Climate control unit terminal H (vehicles with manual air conditioner) • Evaporator temperature sensor terminal A—Climate control unit terminal F (vehicles with manual air conditioner) • Evaporator temperature sensor terminal B—Climate control unit terminal 1F (vehicles with full-auto air conditioner) • Evaporator temperature sensor terminal A—Climate control unit terminal 1X (vehicles with full-auto air conditioner) Repair or replace the suspected wiring harness if necessary.
7	**DETERMINE IF MALFUNCTION CAUSE IS INSTRUMENT CLUSTER OR OTHER** • Verify the information display indication of A/C system while turning on and off the air conditioner with switch on the control panel. • Does the information display indicate properly?	Yes	Instrument cluster does not receive the A/C request signal from climate control unit or transmit it to PCM. • Replace the instrument cluster. (See INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.
8	**DETERMINE IF MALFUNCTION CAUSE IS A/C REQUEST SIGNAL RELATED WIRING HARNESS OR CLIMATE CONTROL UNIT** • Switch the ignition to off. • Inspect for open or short circuit between climate control unit terminal B (wiring harness-side) and instrument cluster terminal L (wiring harness-side). • Is there any malfunction?	Yes	Repair or replace the suspected wiring harness.
		No	A/C switch malfunction, or climate control unit can not determine the A/C request or transmit the A/C request signal. • Replace the climate control unit. (See CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].) (See CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].)
9	**DETERMINE IF MALFUNCTION CAUSE IS A/C CONTROL SIGNAL OR MAGNETIC CLUTCH** • Start the engine and idle it. • Access the PCM PID ACCS using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-G 2.0].) • Turn the ACCS PID to ON from OFF using the M-MDS simulation function. • Measure the voltage at the magnetic clutch terminal A (wiring harness-side). • Is the voltage **10.5 V or more**?	Yes	Go to the next step.
		No	Go to Step 11.
10	**INSPECT IF MALFUNCTION CAUSE IS MAGNETIC CLUTCH OR MAGNETIC CLUTCH GROUND CIRCUIT** • Switch the ignition to off. • Disconnect the magnetic clutch connector. • Inspect for continuity between magnetic clutch terminal A (part-side) and body ground. • Is there continuity?	Yes	Inspect the magnetic clutch. (See MAGNETIC CLUTCH INSPECTION [MANUAL AIR CONDITIONER].) (See MAGNETIC CLUTCH INSPECTION [FULL-AUTO AIR CONDITIONER].) Replace the magnetic clutch if necessary.
		No	Inspect the A/C compressor. (poor contact to ground) • If there is any malfunction: — Repair or replace the malfunctioning part according to the inspection results. • If there is no malfunction: — Replace the A/C compressor. (internal circuit open)

STEP	INSPECTION	RESULTS	ACTION
11	**INSPECT A/C RELAY** • Switch the ignition to off. • Remove the A/C relay. • Inspect the A/C relay. (See RELAY INSPECTION.) • Is there any malfunction?	Yes	Replace the A/C relay.
		No	Go to the next step.
12	**INSPECT A/C RELAY CONTROL CIRCUIT FOR OPEN CIRCUIT** • A/C relay is removed. • Disconnect the PCM connector. • Inspect for continuity between A/C relay terminal E (wiring harness-side) and PCM terminal 2AF (wiring harness-side). • Is there continuity?	Yes	Inspect for continuity between the following: • Front body control module (FBCM) terminal 1C—A/C relay terminal A • Battery positive terminal—A/C relay terminal C • A/C relay terminal D—Magnetic clutch terminal A Repair or replace the wiring harness for a possible open circuit.
		No	Repair or replace the wiring harness for a possible open circuit.
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].) • 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].)		