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2014 Mazda 6 Service and Repair Manual

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STEP	INSPECTION	RESULTS	ACTION
6	INSPECT EVAPORATOR TEMPERATURE SENSOR • Inspect the evaporator temperature sensor. (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 [FULL AUTO AIR CONDITIONER].)

STEP	INSPECTION	RESULTS	ACTION
11	INSPECT A/C RELAY CONTROL CIRCUIT FOR OPEN CIRCUIT • Verify that 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) (SKYACTIV-G 2.5). • Inspect for continuity between A/C relay terminal E (wiring harness-side) and PCM terminal 2BB (wiring harness-side) (SKYACTIV-G 2.5T). • Inspect for continuity between A/C relay terminal E (wiring harness-side) and PCM terminal 2BE (wiring harness-side) (SKYACTIV-D 2.2). • 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 Refer to the wiring diagram and verify whether or not there is a common connector 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 **If there is a common connector:** • Determine the malfunctioning part by inspecting the common connector and the terminal for corrosion, damage, or pin disconnection, and the common wiring harness for an open circuit. • Repair or replace the malfunctioning part. **If there is no common connector** • Repair or replace the wiring harness which has an open circuit.
		No	Refer to the wiring diagram and verify whether or not there is a common connector between A/C relay terminal E and PCM terminal 2AF (SKYACTIV-G 2.5) / 2BB (SKYACTIV-G 2.5T) / 2BE (SKYACTIV-D 2.2). **If there is a common connector:** • Determine the malfunctioning part by inspecting the common connector and the terminal for corrosion, damage, or pin disconnection, and the common wiring harness for an open circuit. • Repair or replace the malfunctioning part. **If there is no common connector** • Repair or replace the wiring harness which has an open circuit.

STEP	INSPECTION	RESULTS	ACTION
1	VERIFY PCM, INSTRUMENT CLUSTER, CLIMATE CONTROL UNIT AND FRONT BODY CONTROL MODULE (FBCM) DTC • Retrieve the PCM, instrument cluster, climate control unit and front body control module (FBCM) DTCs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION))].) (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5T)].) (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-D 2.2)].) (See DTC INSPECTION [INSTRUMENT CLUSTER].) (See DTC DISPLAY [CLIMATE CONTROL UNIT (FULL-AUTO AIR CONDITIONER)].) (See DTC INSPECTION [FRONT BODY CONTROL MODULE (FBCM)].) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [PCM (SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION))].) (See DTC TABLE [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) (See DTC TABLE [PCM (SKYACTIV-G 2.5T)].) (See DTC TABLE [PCM (SKYACTIV-D 2.2)].) (See DTC TABLE [INSTRUMENT CLUSTER].) (See DTC TABLE [CLIMATE CONTROL UNIT (FULL-AUTO AIR CONDITIONER)].) (See DTC TABLE [FRONT BODY CONTROL MODULE (FBCM)].)
		No	Go to the next step.
2	DETERMINE IF MALFUNCTION CAUSE IS MAGNETIC CLUTCH OR OTHER • Start the engine and idle it. • Turn the A/C switch on. • Remove the A/C relay. • Does the magnetic clutch disengage?	Yes	Go to Step 5.
		No	Go to the next step.
3	INSPECT IF MALFUNCTION CAUSE IS MAGNETIC CLUTCH POWER SUPPLY CIRCUIT OR MAGNETIC CLUTCH • Verify that A/C relay is removed. • Switch the ignition off. • Disconnect the magnetic clutch connector. • Start the engine and idle it. • Does the magnetic clutch disengage?	Yes	Inspect for a short to power supply between magnetic clutch terminal A and A/C relay terminal D. Repair or replace the wiring harness for a possible short to power supply if necessary.
		No	Go to the next step.

AMBIENT TEMPERATURE DISPLAYED IN INSTRUMENT CLUSTER IS EXTREMELY LOWER THAN ACTUAL TEMPERATURE [FULL-AUTO AIR CONDITIONER]

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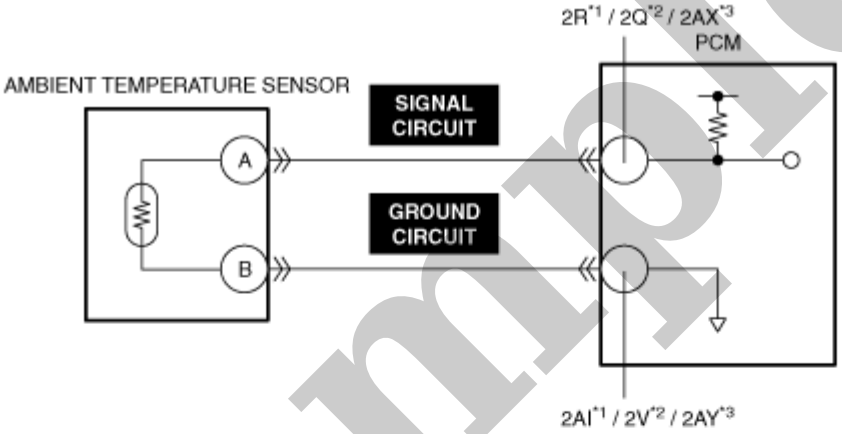
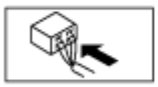
System malfunction location	Ambient temperature displayed in instrument cluster is extremely lower than actual temperature
Detection condition	• The ambient temperature displayed in the instrument cluster differs considerably from the actual temperature
Possible cause	• Ambient temperature sensor malfunction • Communication error is detected between ambient temperature sensor and PCM • PCM malfunction • Communication error is detected between PCM and instrument cluster • Instrument cluster malfunction

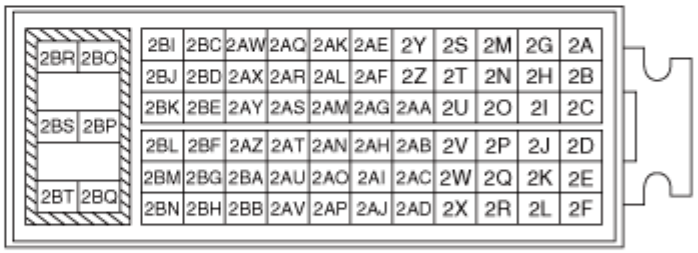


PCM
WIRING HARNESS-SIDE CONNECTOR

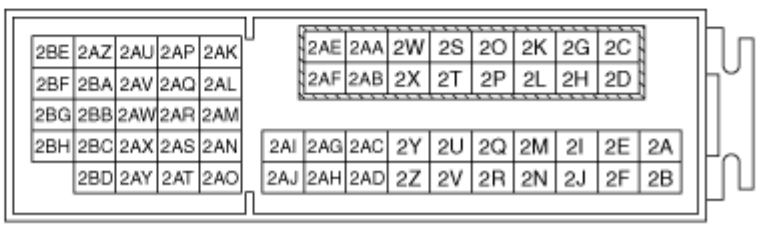
SKYACTIV-G 2.5

AMBIENT TEMPERATURE SENSOR WIRING HARNESS-SIDE CONNECTOR

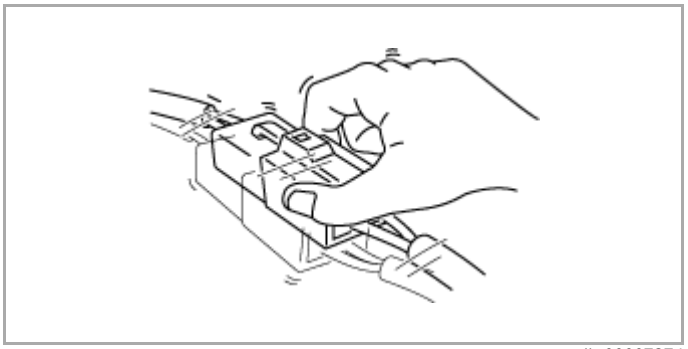




SKYACTIV-G 2.5T, SKYACTIV-D 2.2



Step	Inspection	Results	Action
13	**VERIFY IF INSTRUMENT CLUSTER IS READING ACTUAL AMBIENT TEMPERATURE** • Select the following PIDs. (See PID/DATA MONITOR INSPECTION.) — PCM • AMB_TEMP • Is the PID AMB_TEMP value the same as the ambient temperature displayed in the instrument cluster?	Yes	Perform the repair completion verification.
		No	Repair or replace the malfunctioning location following the applicable symptom troubleshooting procedure and perform the repair completion verification. (See INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
Repair completion verification	**VERIFY THAT VEHICLE IS REPAIRED** • Has the malfunction symptom been eliminated?	Yes	Complete the symptom troubleshooting. (Explain contents of repair to customer)
		No	Refer to the controller area network (CAN) malfunction diagnosis flow to inspect for a CAN communication error. (See CONTROLLER AREA NETWORK (CAN) MALFUNCTION DIAGNOSIS FLOW [TYPE-A (SKYACTIV-G 2.5)].) (See CONTROLLER AREA NETWORK (CAN) MALFUNCTION DIAGNOSIS FLOW [TYPE-A (SKYACTIV-G 2.5T, SKYACTIV-D 2.2)].) (See CONTROLLER AREA NETWORK (CAN) MALFUNCTION DIAGNOSIS FLOW [TYPE-B].) • If the CAN communication is normal, perform the diagnosis from Step 1.



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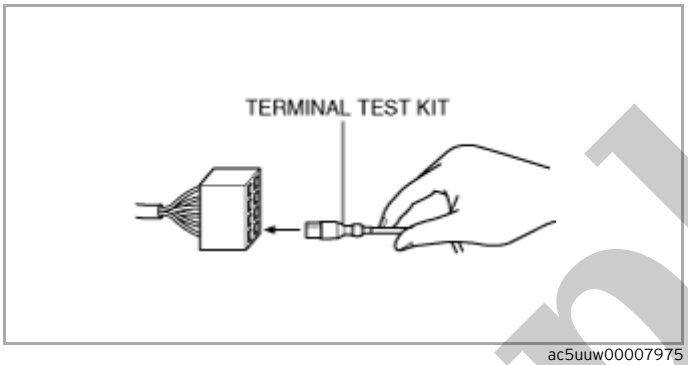
— Inspect the female terminals on the connector of the electric component which is suspected to be the cause of the malfunction for poor connection. (See ELECTRICAL SYSTEM.)

Note

• Tool used (Reference): terminal test kit (49US-15-KIT)



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MAZDA CONNECT (Type-B)

Note

• Refer to the [TROUBLESHOOTING PROCEDURE] for the detailed troubleshooting procedure. (See TROUBLESHOOTING PROCEDURE.)

Step	Inspection		Action
2	**INSPECT TO SEE WHETHER MALFUNCTION IS IN BLOWER UNIT OR ELSEWHERE** • Connect the negative battery terminal. (See NEGATIVE BATTERY TERMINAL DISCONNECTION/CONNECTION.) • Switch the ignition ON (engine off or on). • Turn the airflow volume control switch on. • Recirculate air inside the vehicle. • Does the blower motor rotate?	Yes	Go to the next step.
		No	Go to Step 4.
3	**INSPECT BLOWER UNIT INTAKE VENT** • Is blower unit intake vent restricted?	Yes	Remove obstruction, then go to Step 18.
		No	Inspect if there are any obstruction in the A/C unit passage, then go to Step 18.
4*	**INSPECT TO SEE WHETHER MALFUNCTION IS IN BLOWER RELAY SYSTEM OR ELSEWHERE** • Turn the airflow volume control switch on. • Measure the voltage at the following terminal (wiring harness side). — Blower fan controller terminal F (blower motor operation signal) • Is voltage B+?	Yes	Go to Step 8.
		No	Go to the next step.
5*	**INSPECT TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (LACK OF CONTINUITY BETWEEN FUSE BLOCK AND BLOWER RELAY) OR ELSEWHERE** • Measure the voltage at the following terminals (wiring harness side). — Blower relay terminal A (B+ signal) — Blower relay terminal B (B+ signal) • Is the voltage B+?	Yes	Go to the next step.
		No	Refer to the wiring diagram and verify whether or not there is a common connector between blower relay terminal and HEATER 40 A fuse. **If there is a common connector:** • Determine the malfunctioning part by inspecting the common connector and the terminal for corrosion, damage, or pin disconnection, and the common wiring harness. • Repair or replace the malfunctioning part. **If there is no common connector:** • Repair or replace the wiring harness. Go to Step 18.
6*	**INSPECT TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (LACK OF CONTINUITY BETWEEN BLOWER RELAY AND GROUND) OR ELSEWHERE** • Measure the voltage at the following terminal (wiring harness side). — Blower relay terminal D (ground) • Is the voltage approx. 0 V?	Yes	Go to the next step.
		No	Refer to the wiring diagram and verify whether or not there is a common connector between blower relay terminal and front body control module (FBCM) terminal. **If there is a common connector:** • Determine the malfunctioning part by inspecting the common connector and the terminal for corrosion, damage, or pin disconnection, and the common wiring harness. • Repair or replace the malfunctioning part. **If there is no common connector:** • Repair or replace the wiring harness. Go to Step 18.
7*	**INSPECT TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (LACK OF CONTINUITY BETWEEN BLOWER RELAY AND BLOWER FAN CONTROLLER) OR BLOWER RELAY** • Measure the voltage at the following terminal (wiring harness side). — Blower relay terminal C (blower motor operation signal) • Is the voltage B+?	Yes	Repair the wiring harness for lack of continuity between the blower relay and blower fan controller, then go to Step 18.
		No	Replace the blower relay, then go to Step 18. (See RELAY LOCATION.)

Step	Inspection		Action
16*	**INSPECT TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (SHORT TO POWER SUPPLY BETWEEN BLOWER FAN CONTROLLER AND BODY GROUND) OR ELSEWHERE** • Connect the negative battery terminal. (See NEGATIVE BATTERY TERMINAL DISCONNECTION/CONNECTION.) • Switch the ignition on (engine off or on). • Measure the voltage at the following terminal (wiring harness side). — Bower fan controller terminal A • Is the voltage approx. 0 V?	Yes	Go to the next step.
		No	Refer to the wiring diagram and verify whether or not there is a common connector between blower fan controller terminal and blower motor **If there is a common connector:** • Determine the malfunctioning part by inspecting the common connector and the terminal for corrosion, damage, or pin disconnection, and the common wiring harness. • Repair or replace the malfunctioning part. **If there is no common connector:** • Repair or replace the wiring harness. Go to Step 18.
17	**INSPECT BLOWER UNIT** • Switch the ignition off. • Disconnect the negative battery terminal. (See NEGATIVE BATTERY TERMINAL DISCONNECTION/CONNECTION.) • Inspect the fan in blower unit. (See BLOWER UNIT DISASSEMBLY/ASSEMBLY.) — Is the fan free of interference with the blower unit case? — Is the fan free of foreign matter and obstructions? • Is the fan normal?	Yes	Replace the blower fan controller, then go to the next step. (See BLOWER FAN CONTROLLER REMOVAL/INSTALLATION.)
		No	Remove obstruction, repair or replace the fan and blower unit case, then go to the next step.
18	**VERIFY THAT MALFUNCTION SYMPTOM DOES NOT RECUR AFTER REPAIR** • Is air discharged from vent?	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if the malfunction recurs. • If the malfunction recurs, replace the climate control unit. (See CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].)

Step	Inspection		Action
6*	**INSPECT TO SEE WHETHER MALFUNCTION (SHORT TO POWER SUPPLY) IS IN POSITION SENSOR GROUND OR ELSEWHERE** • Measure voltage at the following terminal (wiring harness-side). — Climate control unit terminal R • Is voltage below 1.0 V?	Yes	Refer to wiring diagram and inspect for open circuit following. • Between climate control unit terminal L and junction point to actuators / sensors (position sensor power supply). • Between climate control unit terminal R and junction point to actuators / sensors (position sensor ground). Repair or replace the malfunctioning part or wiring harness. Go to Step 22.
		No	Refer to the wiring diagram and verify whether or not there is a common connector between climate control unit terminal and each actuator / sensor terminal. **If there is a common connector:** • Determine the malfunctioning part by inspecting the common connector and the terminal for corrosion, damage, or pin disconnection, and the common wiring harness. • Repair or replace the malfunctioning part. **If there is no common connector:** • Repair or replace the wiring harness. Go to Step 22.
7*	**INSPECT TO SEE WHETHER MALFUNCTION (SHORT TO POWER SUPPLY) IS IN WIRING HARNESS (AIR INTAKE POSITION SIGNAL) OR ELSEWHERE** • Is voltage B+, at Step 3?	Yes	Refer to the wiring diagram and verify whether or not there is a common connector between climate control unit terminal and air intake actuator terminal. **If there is a common connector:** • Determine the malfunctioning part by inspecting the common connector and the terminal for corrosion, damage, or pin disconnection, and the common wiring harness for a short to power supply. • Repair or replace the malfunctioning part. **If there is no common connector:** • Repair or replace the wiring harness which has a short to power supply. Go to Step 22.
		No	Go to the next step.
8	**INSPECT CLIMATE CONTROL UNIT CONNECTOR CONNECTION CONDITION** • Switch the ignition off. • Disconnect the negative battery terminal. (See NEGATIVE BATTERY TERMINAL DISCONNECTION/CONNECTION.) • Inspect the climate control unit connector engagement and connection condition. (See CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].) • Is the connector normal?	Yes	Go to the next step.
		No	Reconnect the climate control unit connector properly. Go to Step 22.
9	**INSPECT CLIMATE CONTROL UNIT CONNECTOR TERMINAL CONDITION** • Disconnect the climate control unit connector. (See CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].) • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Are the connector and terminals normal?	Yes	Go to the next step.
		No	Repair/replace the connector or terminal. Go to Step 22.