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2014 MAZDA CX-5 OEM Service and Repair Workshop Manual

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Step	Inspection		Action
18	VERIFY IF MALFUNCTION IS IN A/C COMPRESSOR OR REFRIGERANT LINES • Is noise emitted from A/C compressor?	Yes	Visually inspect A/C compressor, replace appropriate parts if necessary, then go to the next step.
		No	If noise is due to refrigerant lines, repair detached or missing clips, tighten loose bolts, then go to the next step.
19	VERIFY THAT MALFUNCTION SYMPTOM DOES NOT RECUR AFTER REPAIR • Has A/C compressor noise stopped?	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

Sample

STEP	INSPECTION	RESULTS	ACTION
1	VERIFY PCM, INSTRUMENT CLUSTER AND CLIMATE CONTROL UNIT DTC <ul style="list-style-type: none"> Retrieve the PCM, instrument cluster and climate control unit 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)].) 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)] .)
		No	Go to the next step.
2	DETERMINE IF MALFUNCTION CAUSE IS A/C RELAY CONTROL SIGNAL OR A/C REQUEST SIGNAL <ul style="list-style-type: none"> Access the PCM simulation item ACCS 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)].) 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 8.
3	DETERMINE IF MALFUNCTION CAUSE IS REFRIGERANT PRESSURE SENSOR OR OTHER <ul style="list-style-type: none"> Access the PCM PID AC_REQ 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)].) 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 2.5 (WITHOUT CYLINDER DEACTIVATION)].) (See PCM INSPECTION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].) (See PCM INSPECTION [SKYACTIV-G 2.5T].) (See PCM INSPECTION [SKYACTIV-D 2.2].) 	Yes	Go to the next step.
		No	Go to Step 5.
4	INSPECT REFRIGERANT PRESSURE SENSOR <ul style="list-style-type: none"> Inspect the refrigerant pressure sensor. (See REFRIGERANT PRESSURE SENSOR INSPECTION [MANUAL AIR CONDITIONER].) Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results.
		No	Inspect the following: <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> Measure the voltage at the climate control unit terminal 1P (wiring harness-side). Is the voltage normal? (See CLIMATE CONTROL UNIT INSPECTION [MANUAL AIR CONDITIONER].) 	Yes	Go to Step 8.
		No	Go to the next step.

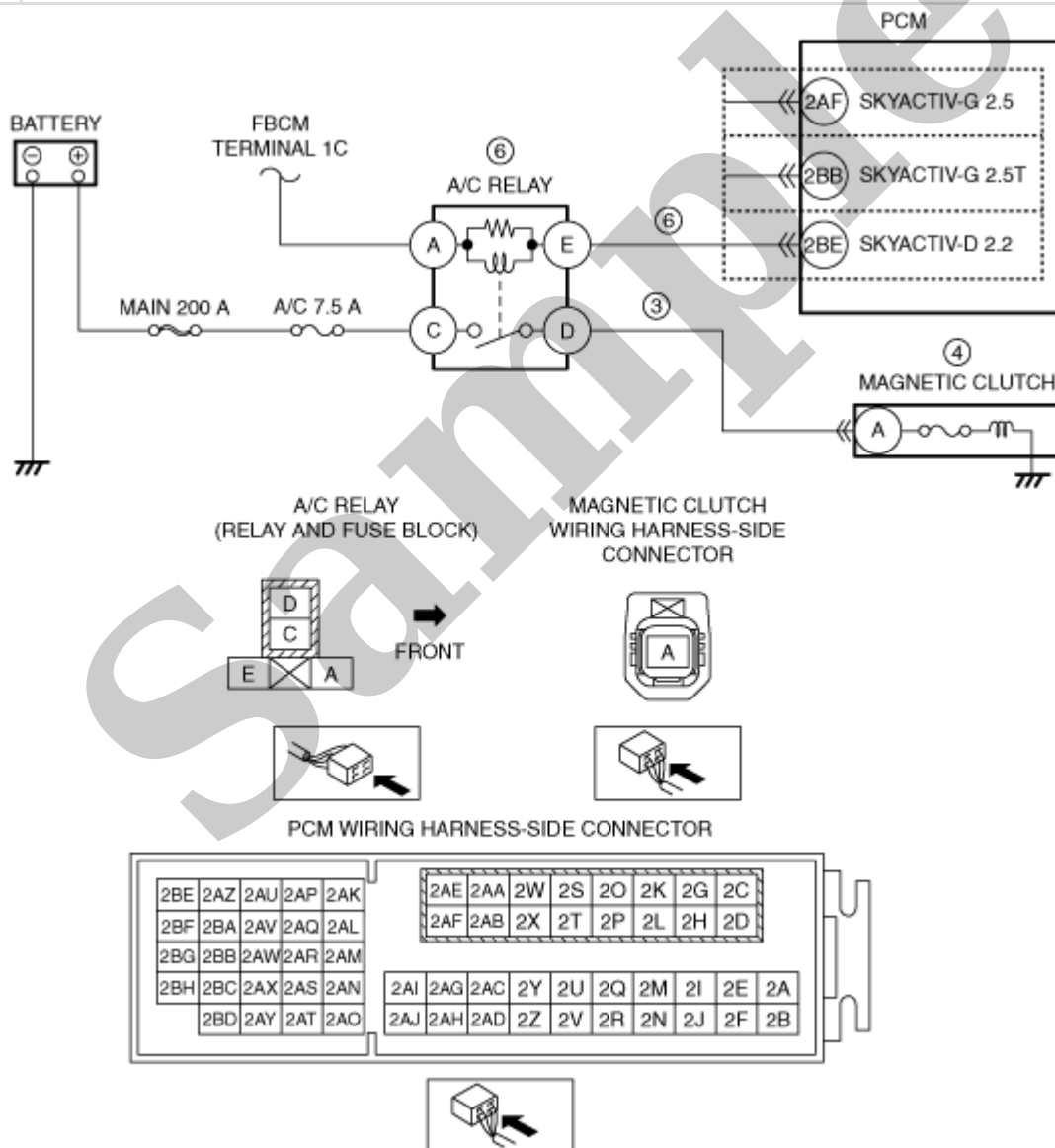
STEP	INSPECTION	RESULTS	ACTION
7	DETERMINE IF MALFUNCTION CAUSE IS INSTRUMENT CLUSTER OR OTHER <ul style="list-style-type: none"> • Verify the display indication of A/C system while turning on and off the air conditioner using the switch on the control panel. • Does the display indicate properly? 	Yes	A/C switch malfunction, or climate control unit can not determine the A/C request or transmit the A/C request signal. <ul style="list-style-type: none"> • Replace the climate control unit. (See CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].)
		No	Instrument cluster does not receive the A/C request signal from climate control unit or transmit it to PCM. <ul style="list-style-type: none"> • Replace the instrument cluster. (See INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
8	DETERMINE IF MALFUNCTION CAUSE IS A/C CONTROL SIGNAL OR MAGNETIC CLUTCH <ul style="list-style-type: none"> • Start the engine and idle it. • Access the PCM simulation item ACCS 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)].) • 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 10.
9	INSPECT IF MALFUNCTION CAUSE IS MAGNETIC CLUTCH OR MAGNETIC CLUTCH GROUND CIRCUIT <ul style="list-style-type: none"> • Switch the ignition 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 [SKYACTIV-G 2.5].) (See MAGNETIC CLUTCH INSPECTION [SKYACTIV-G 2.5T].) (See MAGNETIC CLUTCH INSPECTION [SKYACTIV-D 2.2].) Replace the magnetic clutch if necessary.
		No	Inspect the A/C compressor. (poor contact to ground) <ul style="list-style-type: none"> • If there is any malfunction: <ul style="list-style-type: none"> — Repair or replace the malfunctioning part according to the inspection results. • If there is no malfunction: <ul style="list-style-type: none"> — Replace the A/C compressor. (internal circuit open)
10	INSPECT A/C RELAY <ul style="list-style-type: none"> • Switch the ignition 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.

A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY [MANUAL AIR CONDITIONER]

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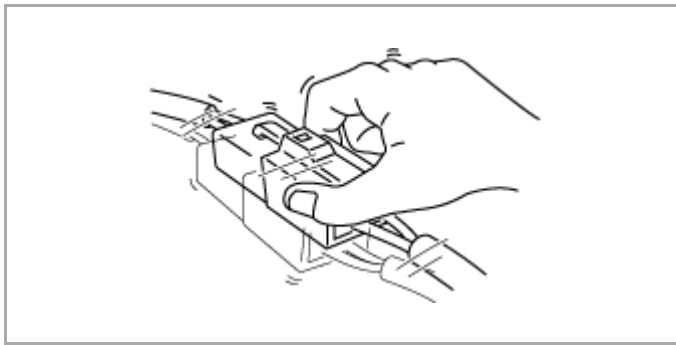
DESCRIPTION	<ul style="list-style-type: none"> A/C compressor magnetic clutch does not disengage.
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM, instrument cluster, climate control unit or front body control module (FBCM) DTC is stored Short to power supply in wiring harness between A/C relay terminal D and magnetic clutch terminal A Magnetic clutch engagement is stuck Climate control unit malfunction (Climate control unit always transmits A/C request signal) A/C relay is stuck closed Short to ground in wiring harness between A/C relay terminal E and PCM terminal 2AF (SKYACTIV-G 2.5) Short to ground in wiring harness between A/C relay terminal E and PCM terminal 2BB (SKYACTIV-G 2.5T) Short to ground in wiring harness between A/C relay terminal E and PCM terminal 2BE (SKYACTIV-D 2.2)



Diagnostic Procedure

STEP	INSPECTION	RESULTS	ACTION
7	<p>Verify the test results.</p> <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. (See SYMPTOM DIAGNOSTIC INDEX [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].) (See SYMPTOM DIAGNOSTIC INDEX [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].) (See SYMPTOM DIAGNOSTIC INDEX [SKYACTIV-G 2.5T].) (See SYMPTOM DIAGNOSTIC INDEX [SKYACTIV-D 2.2].) • If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> — If the vehicle is repaired, troubleshooting is completed. — If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

Sample

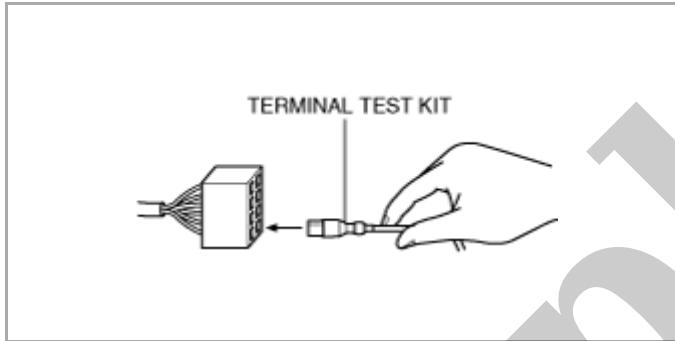


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— Inspect the female terminals on the connector of the electric component which is suspected to be the cause of the malfunction for poor connection. (See **ELECTRICAL SYSTEM**.)

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**.)

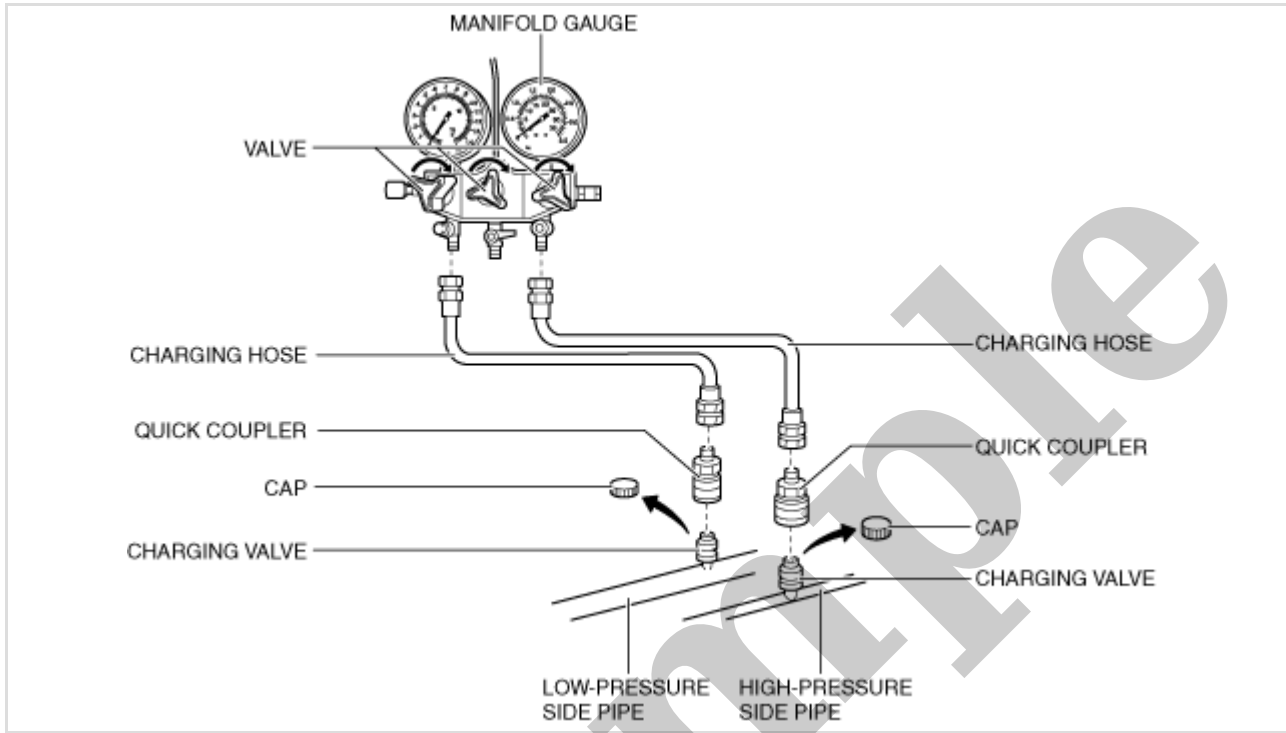
Step	Inspection		Action
6	VERIFY AIRFLOW CONDITION <ul style="list-style-type: none"> • Set the airflow mode to DEFROSTER mode. • Turn the A/C switch off. • Set the airflow volume control switch to MAX. • Does sufficient air flow from the vents when the airflow mode is in DEFROSTER mode? 	Yes	Go to the Step 9.
		No	Go to the next step.
7	VERIFY DUCT INSTALLATION CONDITION <ul style="list-style-type: none"> • Is the duct under any of the following conditions? (See DASHBOARD REMOVAL/INSTALLATION.) (See FRONT HEAT DUCT REMOVAL/INSTALLATION.) (See REAR HEAT DUCT REMOVAL/INSTALLATION.) <ul style="list-style-type: none"> — Clogging — Deformation — Air leakage — Poor installation 	Yes	Install the incorrectly installed ducts properly, then go to step 10 (See DASHBOARD REMOVAL/INSTALLATION.) (See FRONT HEAT DUCT REMOVAL/INSTALLATION.) (See REAR HEAT DUCT REMOVAL/INSTALLATION.)
		No	Go to the next step.
8	VERIFY FRONT AIRFLOW MODE LINK OPERATION <ul style="list-style-type: none"> • Remove the front airflow mode actuator. (See AIRFLOW MODE ACTUATOR REMOVAL [MANUAL AIR CONDITIONER].) (See AIRFLOW MODE ACTUATOR INSTALLATION [MANUAL AIR CONDITIONER].) • Verify the operation by manually operating the front airflow mode link. • Does the front airflow mode link operate smoothly? 	Yes	Replace the front A/C unit because there is a malfunction in the front airflow mode door. (See A/C UNIT REMOVAL/INSTALLATION.) (See A/C UNIT DISASSEMBLY/ASSEMBLY.) Go to the Step 10.
		No	Replace the airflow mode link. (See A/C UNIT REMOVAL/INSTALLATION.) (See A/C UNIT DISASSEMBLY/ASSEMBLY.) Go to the Step 10.
9	VERIFY EVAPORATOR TEMPERATURE SENSOR <ul style="list-style-type: none"> • Inspect the evaporator temperature sensor. (See EVAPORATOR TEMPERATURE SENSOR INSPECTION [MANUAL AIR CONDITIONER].) • Is the evaporator temperature sensor normal? 	Yes	Go to the next step.
		No	Replace the evaporator temperature sensor. (See EVAPORATOR TEMPERATURE SENSOR REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].) (See A/C UNIT DISASSEMBLY/ASSEMBLY.) Go to the Step 10.
10	VERIFY THAT MALFUNCTION SYMPTOM DOES NOT RECUR AFTER REPAIR <ul style="list-style-type: none"> • 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.

MANIFOLD GAUGE SET CONNECTION

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1. Fully close the valves of the manifold gauge.



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2. Connect the charging hoses to the high- and low-pressure side joints of the manifold gauge.

3. Connect the quick couplers to the ends of the charging hoses.

4. Connect the quick couplers to the charging valves.