

2012 - Mazda6 - HVAC

NO.8 NO COOL AIR [FULL-AUTO AIR CONDITIONER]

8	No cool air
DESCRIPTION	• Magnetic clutch does not operate.
POSSIBLE CAUSE	• Malfunction in PCM A/C cut control system • Malfunction in climate control unit • Open or short circuit in wiring harness between evaporator temperature sensor and climate control unit • Malfunction in evaporator temperature sensor (internal circuit malfunction) • Malfunction in refrigerant pressure sensor • Malfunction in PCM (A/C signal) • Malfunction in PCM (IG1 signal) • Malfunction in A/C compressor • Malfunction in A/C relay • Malfunction in BCM unit

- When performing an asterisked (*) troubleshooting inspection, shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions. If there is a problem, check to make sure connectors, terminals and wiring harnesses are connected correctly and undamaged.

Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT AIR BLOW OUT • Does air blow out?	Yes Go to the next step.
		No Go to Step 1 of troubleshooting indexes No.1 and 2.
2	INSPECT A/ C COMPRESSOR OPERATION	Yes Go to Step 1 of troubleshooting index No.7.

	Start engine. • Turn A/C switch and fan switch on. • Does A/C compressor operate?		No Go to the next step.
3	INSPECT FOR DTC IN PCM AND CLIMATE CONTROL UNIT • Inspect for DTCs related to the PCM and climate control unit on-board diagnostic system. • Are any DTCs displayed?	Yes	Go to appropriate inspection procedure.
		No	Go to the next step.
4	INSPECT TO SEE WHETHER MALFUNCTION IS IN REFRIGERANT PRESSURE SENSOR OR ELSEWHERE • Start engine and run it at idle. • Measure the PCM terminal 1J (MZR 2.5)/ 1M (MZI 3.7 V6) voltage with A/C switch and fan switch are ON. • Is the voltage is in specified? (See PCM INSPECTION [MZR 2.5].) (See PCM INSPECTION [MZI 3.7 V6].)	Yes	Go to Step 7.
		No	Go to the next step.
5	INSPECT REFRIGERANT PRESSURE SENSOR RELATED HARNESS • Inspect following refrigerant pressure sensor wiring harness (open or short circuit) and connectors (corrosion, pulled out pins). MZR 2.5 ▪ PCM terminal 1AE and refrigerant pressure sensor terminal A ▪ PCM terminal 1AR and refrigerant pressure sensor terminal C ▪ PCM terminal 1J and refrigerant pressure sensor terminal D MZI 3.7 V6 ▪ PCM terminal 1BJ and refrigerant pressure sensor terminal A ▪ PCM terminal 1AT and refrigerant pressure sensor terminal C	Yes	Repair or replace malfunctioning part according to inspection result, then go to Step 14
		No	Go to the next step.

	PCM terminal 1M and refrigerant pressure sensor terminal D Is there any malfunction?		
6	INSPECT REFRIGERANT PRESSURE - Inspect the refrigerant pressure. (See REFRIGERANT PRESSURE CHECK.) - Is the refrigerant pressure normal?	Yes	Repair the refrigerant pressure sensor, then go to Step 14
		No	Repair or replace malfunctioning part according to inspection result, then go to Step 14.
7	INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN A/ C CONTROL SIGNAL CIRCUIT (BETWEEN A/ C RELAY AND PCM) OR ELSEWHERE Does cool air blow out when terminal A of A/C relay connector (A/C control signal) is grounded?	Yes	Release short, then go to the next step.
		No	Go to Step 9.
8*	INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN PCM OR WIRING HARNESS (BETWEEN A/ C RELAY AND PCM) - Test voltage at the A/C relay control signal terminal of PCM. - Is voltage approx. 12 V?	Yes	Inspect PCM, then go to Step 14.
		No	Repair wiring harness between A/C relay and PCM, then go to Step 14.
9*	INSPECT TO SEE WHETHER MALFUNCTION IS IN MAGNETIC CLUTCH OR ELSEWHERE - Test voltage at the following terminal of magnetic clutch thermal protector. - Terminal A (magnetic clutch operation signal) - Is voltage approx. 12 V?	Yes	Go to the next step.
		No	Go to Step 11.
10	INSPECT MAGNETIC CLUTCH CLEARANCE - Inspect the magnetic clutch clearance. (See MAGNETIC CLUTCH ADJUSTMENT [FULL-AUTO AIR CONDITIONER].) - Is the magnetic clutch clearance normal?	Yes	Inspect and repair the magnetic clutch, then go to Step 14 (See MAGNETIC CLUTCH INSPECTION [FULL-AUTO AIR CONDITIONER] .)
		No	Adjust the magnetic clutch clearance, then go to Step 14. (See MAGNETIC CLUTCH ADJUSTMENT [FULL-AUTO AIR CONDITIONER] .)

11	INSPECT FUSE Are A/C relay power supply fuses okay?	Yes	Go to the next step.
		No	Replace fuse, then go to Step 14. If fuse burns out immediately, go to the next step.
12	INSPECT WIRING HARNESS BETWEEN FUSE BLOCK AND A/ C RELAY FOR LACK OF CONTINUITY - Test voltages at following terminals of A/C relay. - Terminal E (A/C relay control signal) - Terminal D (A/C control signal) - Are voltages approx. 12 V?	Yes	Go to the next step.
		No	Repair the wiring harness between fuse block and A/C relay, then go to Step 14.
13	INSPECT TO SEE WHETHER MALFUNCTION IS IN A/ C RELAY OR WIRING HARNESS (BETWEEN A/ C RELAY AND MAGNETIC CLUTCH) AND EVAPORATOR A/ C RELAY - Test voltage at the following terminal of A/C relay. - Terminal C (magnetic clutch operation signal) - Is voltage approx. 12 V?	Yes	Inspect wiring harness between A/C relay and magnetic clutch. - If above wiring harness is OK, go to the next step. - If above wiring harness malfunctions, repair wiring harness, then go to the next step.
		No	Replace A/C relay, then go to next step.
14	CONFIRM THAT MALFUNCTION SYMPTOMS DO NOT RECUR AFTER REPAIR Does cool air blow out? (Are the results of refrigerant system performance test okay?)	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

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- When performing an asterisked (*) troubleshooting inspection, shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions. If there is a problem, check to make sure connectors, terminals and wiring harnesses are connected correctly and undamaged.

Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT AIR BLOW OUT • Does air blow out?	Yes Go to the next step.
		No Go to Step 1 of troubleshooting indexes No.1 and 2.
2	INSPECT A/ C COMPRESSOR OPERATION	Yes Go to Step 1 of troubleshooting index No.7.

	Start engine. • Turn A/C switch and fan switch on. • Does A/C compressor operate?		No Go to the next step.
3	INSPECT FOR DTC IN PCM AND CLIMATE CONTROL UNIT • Inspect for DTCs related to the PCM and climate control unit on-board diagnostic system. • Are any DTCs displayed?	Yes	Go to appropriate inspection procedure.
		No	Go to the next step.
4	INSPECT TO SEE WHETHER MALFUNCTION IS IN REFRIGERANT PRESSURE SENSOR OR ELSEWHERE • Start engine and run it at idle. • Measure the PCM terminal 1J (MZR 2.5)/ 1M (MZI 3.7 V6) voltage with A/C switch and fan switch are ON. • Is the voltage is in specified? (See PCM INSPECTION [MZR 2.5].) (See PCM INSPECTION [MZI 3.7 V6].)	Yes	Go to Step 7.
		No	Go to the next step.
5	INSPECT REFRIGERANT PRESSURE SENSOR RELATED HARNESS • Inspect following refrigerant pressure sensor wiring harness (open or short circuit) and connectors (corrosion, pulled out pins). MZR 2.5 ▪ PCM terminal 1AE and refrigerant pressure sensor terminal A ▪ PCM terminal 1AR and refrigerant pressure sensor terminal C ▪ PCM terminal 1J and refrigerant pressure sensor terminal D MZI 3.7 V6 ▪ PCM terminal 1BJ and refrigerant pressure sensor terminal A ▪ PCM terminal 1AT and refrigerant pressure sensor terminal C	Yes	Repair or replace malfunctioning part according to inspection result, then go to Step 14
		No	Go to the next step.

	PCM terminal 1M and refrigerant pressure sensor terminal D Is there any malfunction?		
6	INSPECT REFRIGERANT PRESSURE - Inspect the refrigerant pressure. (See REFRIGERANT PRESSURE CHECK.) - Is the refrigerant pressure normal?	Yes	Repair the refrigerant pressure sensor, then go to Step 14
		No	Repair or replace malfunctioning part according to inspection result, then go to Step 14.
7	INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN A/ C CONTROL SIGNAL CIRCUIT (BETWEEN A/ C RELAY AND PCM) OR ELSEWHERE Does cool air blow out when terminal A of A/C relay connector (A/C control signal) is grounded?	Yes	Release short, then go to the next step.
		No	Go to Step 9.
8*	INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN PCM OR WIRING HARNESS (BETWEEN A/ C RELAY AND PCM) - Test voltage at the A/C relay control signal terminal of PCM. - Is voltage approx. 12 V?	Yes	Inspect PCM, then go to Step 14.
		No	Repair wiring harness between A/C relay and PCM, then go to Step 14.
9*	INSPECT TO SEE WHETHER MALFUNCTION IS IN MAGNETIC CLUTCH OR ELSEWHERE - Test voltage at the following terminal of magnetic clutch thermal protector. - Terminal A (magnetic clutch operation signal) - Is voltage approx. 12 V?	Yes	Go to the next step.
		No	Go to Step 11.
10	INSPECT MAGNETIC CLUTCH CLEARANCE - Inspect the magnetic clutch clearance. (See MAGNETIC CLUTCH ADJUSTMENT [FULL-AUTO AIR CONDITIONER].) - Is the magnetic clutch clearance normal?	Yes	Inspect and repair the magnetic clutch, then go to Step 14 (See MAGNETIC CLUTCH INSPECTION [FULL-AUTO AIR CONDITIONER] .)
		No	Adjust the magnetic clutch clearance, then go to Step 14. (See MAGNETIC CLUTCH ADJUSTMENT [FULL-AUTO AIR CONDITIONER] .)

11	INSPECT FUSE Are A/C relay power supply fuses okay?	Yes	Go to the next step.
		No	Replace fuse, then go to Step 14. If fuse burns out immediately, go to the next step.
12	INSPECT WIRING HARNESS BETWEEN FUSE BLOCK AND A/ C RELAY FOR LACK OF CONTINUITY - Test voltages at following terminals of A/C relay. - Terminal E (A/C relay control signal) - Terminal D (A/C control signal) - Are voltages approx. 12 V?	Yes	Go to the next step.
		No	Repair the wiring harness between fuse block and A/C relay, then go to Step 14.
13	INSPECT TO SEE WHETHER MALFUNCTION IS IN A/ C RELAY OR WIRING HARNESS (BETWEEN A/ C RELAY AND MAGNETIC CLUTCH) AND EVAPORATOR A/ C RELAY - Test voltage at the following terminal of A/C relay. - Terminal C (magnetic clutch operation signal) - Is voltage approx. 12 V?	Yes	Inspect wiring harness between A/C relay and magnetic clutch. - If above wiring harness is OK, go to the next step. - If above wiring harness malfunctions, repair wiring harness, then go to the next step.
		No	Replace A/C relay, then go to next step.
14	CONFIRM THAT MALFUNCTION SYMPTOMS DO NOT RECUR AFTER REPAIR Does cool air blow out? (Are the results of refrigerant system performance test okay?)	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.