2012 - Mazda6 - HVAC

NO.7 NO COOL AIR [MANUAL AIR CONDITIONER]

7	**No cool air**
DESCRIPTION	• Magnetic clutch does not operate.
POSSIBLE CAUSE	• Malfunction in PCM A/C cut control system • 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 climate control unit • 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

- 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** • Start engine.	Yes	Go to Step 1 of troubleshooting index No.6.

	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, BCM AND INSTRUMENT CLUSTER** • Inspect for DTCs related to the PCM, BCM and instrument cluster 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 A/C REQUEST SIGNAL OR ELSEWHERE** • Does cool air blow out when terminal 1L of climate control unit connector (24-pin, A/C signal) is grounded?	Yes	Go to the next step.
		No	Release short, then go to the next step.
5	**INSPECT EVAPORATOR TEMPERATURE SENSOR RELATED HARNESS** • inspect following evaporator temperature sensor wiring harness (open or short circuit) and connectors (corrosion, pulled out pins). ▪ Climate control unit terminal 1P and evaporator temperature sensor terminal A ▪ Climate control unit terminal 1V and evaporator temperature sensor terminal C • Is there any malfunction?	Yes	Repair or replace malfunctioning part according to inspection result, then go to Step 17.
		No	Go to the next step.
6	**INSPECT TO SEE WHETHER MALFUNCTION IS IN EVAPORATOR TEMPERATURE SENSOR OR CLIMATE CONTROL UNIT** • Inspect evaporator temperature sensor. (See **EVAPORATOR TEMPERATURE SENSOR INSPECTION [MANUAL AIR CONDITIONER]**.) • Is it okay?	Yes	Replace climate control unit, then go to Step 17.
		No	Replace evaporator temperature sensor, then go to Step 17.
7	**INSPECT TO SEE WHETHER MALFUNCTION IS IN REFRIGERANT PRESSURE SENSOR OR ELSEWHERE** • Start the 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.	Yes	Go to Step 10.
		No	Go to the next step.

	• Is voltage is in specified? (See **PCM INSPECTION [MZR 2.5]**.) (See **PCM INSPECTION [MZI 3.7 V6]**.)		
8*	**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 ▪ PCM terminal 1M and refrigerant pressure sensor terminal D • Is there any malfunction?	Yes	Repair or replace malfunctioning part according to inspection result, then go to Step 15.
		No	Go to the next step.
9	**INSPECT REFRIGERANT PRESSURE** • Inspect the refrigerant pressure. (See **REFRIGERANT PRESSURE CHECK**.) • Is the refrigerant pressure normal?	Yes	Replace the refrigerant pressure sensor, then go to Step 17.
		No	Repair or replace malfunctioning part according to inspection result, then go to Step 17.
10	**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 12.

11*	**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 17. (See **PCM INSPECTION [MZR 2.5]**.) (See **PCM INSPECTION [MZI 3.7 V6]**.)
		No	Repair wiring harness between A/C relay and PCM, then go to Step 17.
12*	**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 14.
13	**INSPECT MAGNETIC CLUTCH CLEARANCE** • Inspect the magnetic clutch clearance. (See **MAGNETIC CLUTCH ADJUSTMENT [MANUAL AIR CONDITIONER]**.) • Is the magnetic clutch clearance normal?	Yes	Inspect and repair the magnetic clutch, then go to Step 17. (See **MAGNETIC CLUTCH INSPECTION [MANUAL AIR CONDITIONER]**.)
		No	Adjust the magnetic clutch clearance, then go to Step 17. (See **MAGNETIC CLUTCH ADJUSTMENT [MANUAL AIR CONDITIONER]**.)
14	**INSPECT FUSE** • Are A/C relay power supply fuses okay?	Yes	Go to the next step.
		No	Replace fuse, then go to Step 17. If fuse burns out immediately, go to the next step.
15	**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)	Yes	Go to the next step.
		No	Repair wiring harness between fuse block and A/C relay, then go to Step 17.

	▪ Terminal D (A/C control signal) • Are voltages **approx. 12 V**?		
16	**INSPECT TO SEE WHETHER MALFUNCTION IS IN A/C RELAY OR WIRING HARNESS (BETWEEN A/C RELAY AND MAGNETIC CLUTCH) OR 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 the next step.
17	**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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NO.7 NO COOL AIR [MANUAL AIR CONDITIONER]

7	**No cool air**
DESCRIPTION	• Magnetic clutch does not operate.
POSSIBLE CAUSE	• Malfunction in PCM A/C cut control system • 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 climate control unit • 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

- 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** • Start engine.	Yes	Go to Step 1 of troubleshooting index No.6.

	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, BCM AND INSTRUMENT CLUSTER** • Inspect for DTCs related to the PCM, BCM and instrument cluster 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 A/C REQUEST SIGNAL OR ELSEWHERE** • Does cool air blow out when terminal 1L of climate control unit connector (24-pin, A/C signal) is grounded?	Yes	Go to the next step.
		No	Release short, then go to the next step.
5	**INSPECT EVAPORATOR TEMPERATURE SENSOR RELATED HARNESS** • inspect following evaporator temperature sensor wiring harness (open or short circuit) and connectors (corrosion, pulled out pins). ▪ Climate control unit terminal 1P and evaporator temperature sensor terminal A ▪ Climate control unit terminal 1V and evaporator temperature sensor terminal C • Is there any malfunction?	Yes	Repair or replace malfunctioning part according to inspection result, then go to Step 17.
		No	Go to the next step.
6	**INSPECT TO SEE WHETHER MALFUNCTION IS IN EVAPORATOR TEMPERATURE SENSOR OR CLIMATE CONTROL UNIT** • Inspect evaporator temperature sensor. (See **EVAPORATOR TEMPERATURE SENSOR INSPECTION [MANUAL AIR CONDITIONER]**.) • Is it okay?	Yes	Replace climate control unit, then go to Step 17.
		No	Replace evaporator temperature sensor, then go to Step 17.
7	**INSPECT TO SEE WHETHER MALFUNCTION IS IN REFRIGERANT PRESSURE SENSOR OR ELSEWHERE** • Start the 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.	Yes	Go to Step 10.
		No	Go to the next step.

	• Is voltage is in specified? (See **PCM INSPECTION [MZR 2.5]**.) (See **PCM INSPECTION [MZI 3.7 V6]**.)		
8*	**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 ▪ PCM terminal 1M and refrigerant pressure sensor terminal D • Is there any malfunction?	Yes	Repair or replace malfunctioning part according to inspection result, then go to Step 15.
		No	Go to the next step.
9	**INSPECT REFRIGERANT PRESSURE** • Inspect the refrigerant pressure. (See **REFRIGERANT PRESSURE CHECK**.) • Is the refrigerant pressure normal?	Yes	Replace the refrigerant pressure sensor, then go to Step 17.
		No	Repair or replace malfunctioning part according to inspection result, then go to Step 17.
10	**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 12.

11*	**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 17. (See **PCM INSPECTION [MZR 2.5]**.) (See **PCM INSPECTION [MZI 3.7 V6]**.)
		No	Repair wiring harness between A/C relay and PCM, then go to Step 17.
12*	**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 14.
13	**INSPECT MAGNETIC CLUTCH CLEARANCE** • Inspect the magnetic clutch clearance. (See **MAGNETIC CLUTCH ADJUSTMENT [MANUAL AIR CONDITIONER]**.) • Is the magnetic clutch clearance normal?	Yes	Inspect and repair the magnetic clutch, then go to Step 17. (See **MAGNETIC CLUTCH INSPECTION [MANUAL AIR CONDITIONER]**.)
		No	Adjust the magnetic clutch clearance, then go to Step 17. (See **MAGNETIC CLUTCH ADJUSTMENT [MANUAL AIR CONDITIONER]**.)
14	**INSPECT FUSE** • Are A/C relay power supply fuses okay?	Yes	Go to the next step.
		No	Replace fuse, then go to Step 17. If fuse burns out immediately, go to the next step.
15	**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)	Yes	Go to the next step.
		No	Repair wiring harness between fuse block and A/C relay, then go to Step 17.

	▪ Terminal D (A/C control signal) • Are voltages **approx. 12 V**?		
16	**INSPECT TO SEE WHETHER MALFUNCTION IS IN A/C RELAY OR WIRING HARNESS (BETWEEN A/C RELAY AND MAGNETIC CLUTCH) OR 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 the next step.
17	**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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