2012 - Mazda6 - HVAC

NO.1 INSUFFICIENT AIR (OR NO AIR) BLOWN FROM VENTS [MANUAL AIR CONDITIONER]

1	Insufficient air (or no air) blown from vents
DESCRIPTION	• Problem with each vent and/or duct. • Airflow mode does not change.
POSSIBLE CAUSE	• Climate control unit (B+ signal) system malfunction • Climate control unit (VENT, DEFROSTER signal) system malfunction • Malfunction in airflow mode actuator • Malfunction in VENT mode system • Malfunction in HEAT mode system • Malfunction in DEFROSTER mode system

- 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 CLIMATE CONTROL UNIT POWER SUPPLY FUSE FOR B+ SIGNAL** • Is the climate control unit power supply fuse for B+ signal normal?	Yes	Go to the next step.
		No	Inspect for short to GND in blown fuse circuit. Repair or replace as necessary. Install appropriate amperage fuse.
2*	**INSPECT TO SEE WHETHER MALFUNCTION (OPEN CIRCUIT) IS IN B+ SIGNAL WIRING**	Yes	Go to the next step.

	HARNESS (BETWEEN FUSE BLOCK AND CLIMATE CONTROL UNIT) OR ELSEWHERE • Disconnect the climate control unit connector (24-pin). • Switch ignition to ON. • Measure the voltage at climate control unit harness-side connector (24-pin) terminal 1Q (B+ signal). • Is the voltage **approx. 12V**?	No	Repair wiring harness between fuse block and climate control unit, then go to Step 20.
3*	**INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN WIRING HARNESS (BETWEEN CLIMATE CONTROL UNIT AND GND) OR ELSE ELSEWHERE** • Climate control unit connector (24-pin) disconnected. • Verify that continuity between climate control unit harness-side connector (24-pin) terminal 1U and GND. • Is there continuity?	Yes	Go to the next step.
		No	Repair wiring harness between climate control unit and GND. Inspect GND point condition. Then go to Step 20.
4*	**INSPECT TO SEE WHETHER MALFUNCTION IS IN BLOWER UNIT OR AIR MIX ACTUATOR** • Switch the ignition to ON. • Measure voltage at climate control unit terminal 1T (24-pin) when temperature controls dial at MAX HOT and MAX COLD. (See **CLIMATE CONTROL UNIT INSPECTION [MANUAL AIR CONDITIONER]**.) • Is voltage normal?	Yes	Go to Step 16.
		No	Go to the next step.
5*	**INSPECT TO SEE WHETHER MALFUNCTION IS IN POSITION OR ELSEWHERE** • Switch the ignition to ON. • Measure voltage at climate control unit terminal 1R (24-pin) when airflow mode change to VENT and DEFROSTER. (See **CLIMATE CONTROL UNIT INSPECTION [MANUAL AIR CONDITIONER]**.) • Are voltages normal?	Yes	Go to Step 8.
		No	Go to the next step.
6*	**INSPECT TO SEE WHETHER MALFUNCTION**	Yes	Go to the next step.

	(LACK OF CONTINUITY OR SHORT TO BATTERY POWER OR GND) IS IN POSITION SENSOR POWER SUPPLY (CLIMATE CONTROL UNIT TERMINAL 1S) OR ELSEWHERE • Switch the ignition to ON. • Measure voltage at climate control unit terminal 1S (24-pin). • Is voltage **approx. 5V**?	No	Repair wiring harness between climate control unit terminal 1S and follows: • Airflow mode actuator terminal F • Air mix actuator terminal F Then go to Step 20.
7*	**INSPECT TO SE WHETHER MALFUNCTION (LACK OF CONTINUITY OR OPEN) IS IN POSITION SENSOR GND (CLIMATE CONTROL UNIT TERMINAL 1V) OR ELSEWHERE** • Measure voltage at climate control unit terminal 1V (24-pin). • Is voltage **below 1.0V**?	Yes	Go to Step 11.
		No	Repair wiring harness between climate control unit terminal 1V and follows: • Airflow mode actuator terminal D • Airflow mode actuator terminal D Then go to Step 20.
8*	**INSPECT TO SEE WHETHER MALFUNCTION (SHORT TO POWER) IS IN WIRING HARNESS (AIRFLOW MODE POSITION SIGNAL) OR ELSEWHERE** • Is climate control unit terminal 1R voltage **approx. 12V**, at Step 4?	Yes	Repair wiring harness between climate control unit terminal 1R and airflow mode actuator terminal E. Then go to Step 20.
		No	Go to the next step.
9*	**INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN WIRING HARNESS (AIRFLOW MODE POSITION SIGNAL) OR ELSEWHERE** • Switch the ignition to off. • Disconnect climate control unit and airflow mode actuator connectors. • Verify continuity between climate control unit terminal 1R (24-pin) and airflow mode actuator terminal E at harness-side connector. • Is there continuity?	Yes	Go to next step.
		No	Repair wiring harness between climate control unit terminal 1R and airflow mode actuator terminal E. Then go to Step 20.

10*	**INSPECT TO SEE WHETHER MALFUNCTION (SHORT TO GND) IS IN WIRING HARNESS (AIRFLOW MODE POSITION SIGNAL) OR POSITION SENSOR COMMON (POWER SUPPLY OR GND) HARNESS** • Verify continuity between climate control unit harness-side connector terminal 1R (24-pin) and GND. • Is there continuity?	Yes	Repair wiring harness between climate control unit terminal 1R and airflow mode actuator terminal E. Then go to Step 20.
		No	Inspection and repair for open circuit following: • Between airflow mode actuator terminal F and junction point to each air mix actuator (position sensor power supply). • Between airflow mode actuator terminal D and junction point to each air mix actuator (position sensor GND). Then go to Step 20.
11*	**INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN AIRFLOW MODE ACTUATOR WIRING HARNESS (BETWEEN CLIMATE CONTROL UNIT AND AIRFLOW MODE ACTUATOR) OR ELSEWHERE** • Switch the ignition to ON. • Measure voltage at the following terminals of climate control unit. (See **CLIMATE CONTROL UNIT INSPECTION [MANUAL AIR CONDITIONER]**.) ▪ Terminal 1D (24-pin, DEFROSTER mode motor drive signal) ▪ Terminal 1F (24-pin, VENT mode motor drive signal) • Are voltages okay?	Yes	Go to the next step.
		No	Go to Step 13.
12*	**INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN AIRFLOW MODE ACTUATOR OR WIRING HARNESS**	Yes	Go to Step 17.
		No	Repair wiring harness between

	(BETWEEN CLIMATE CONTROL UNIT AND AIRFLOW MODE ACTUATOR) • Measure voltage at the following terminals of climate control unit. ▪ Terminal 1D (DEFROSTER mode motor drive signal) ▪ Terminal 1F (VENT mode motor drive signal) • Are voltages as shown below? ▪ DEFROSTER mode motor drive signal: **approx. 10V** during DEFROSTER mode and **approx. 0.5V** during VENT mode ▪ VENT mode motor drive signal: **approx. 0.5V** during DEFROSTER mode and **approx. 10V** during VENT mode		climate control unit and airflow mode actuator. Then go to Step 20.
13*	**INSPECT TO SEE WHETHER MALFUNCTION IS IN AIRFLOW MODE ACTUATOR OR ELSEWHERE** • Disconnect the airflow mode actuator. • Measure voltage at the following terminals of climate control unit. (See **CLIMATE CONTROL UNIT INSPECTION [MANUAL AIR CONDITIONER]**.) ▪ Terminal 1D (24-pin, DEFROSTER mode motor drive signal) ▪ Terminal 1F (24-pin, VENT mode motor drive signal) • Are voltage okay?	Yes	Go to Step 16.
		No	Go to the next step.
14*	**INSPECT TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (SHORT TO B+ BETWEEN CLIMATE CONTROL UNIT AND AIRFLOW MODE ACTUATOR) OR ELSEWHERE** • Disconnect the climate control unit connector. • Measure voltage at the following terminal of the climate control unit harness-side connector. ▪ Terminal 1D (24-pin, DEFROSTER mode motor drive signal)	Yes	Go to the next step.
		No	Repair wiring between climate control unit and airflow mode actuator. Then go to the Step 20.

	▪ Terminal 1F (24-pin, VENT mode motor drive signal) • Are voltages **approx. 0V**?		
15*	**INSPECT TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (SHORT TO GND BETWEEN CLIMATE CONTROL UNIT AND AIRFLOW MODE ACTUATOR) OR ELSEWHERE** • Switch the ignition to off. • Verify that continuity at the following harness-side connector terminals between climate control unit and GND. ▪ Terminal 1D (24-pin, DEFROSTER mode motor drive signal) ▪ Terminal 1F (24-pin, VENT mode motor drive signal) • Is there continuity?	Yes	Repair wiring harness between climate control unit and airflow mode actuator. Then go to the Step 20.
		No	Go to the next step.
16	**INSPECT AIRFLOW MODE ACTUATOR** • Inspect airflow mode actuator. (See **AIRFLOW MODE ACTUATOR INSPECTION [MANUAL AIR CONDITIONER]**.) • Is airflow mode actuator normal?	Yes	Go to the next step.
		No	Replace the airflow mode actuator. (See **AIRFLOW MODE ACTUATOR REMOVAL/ INSTALLATION [MANUAL AIR CONDITIONER]**.) Then go to the Step 20.
17	**INSPECT AIRFLOW MODE LINK** • Inspect airflow mode links. ▪ Is grease on link? ▪ Are links securely and properly installed? ▪ Are links free of obstructions and hindrances? • Are above items okay?	Yes	Go to the next step.
		No	Apply grease to links. If any links are damaged, replace malfunctioning part. Then go to the Step 20.
18	**INSPECT TO SEE WHETHER MALFUNCTION IS IN CLIMATE CONTROL UNIT OR AIRFLOW MODE DOOR** • Inspect blower unit airflow mode door. ▪ Is door free of obstructions,	Yes	Go to the next step.
		No	Remove the obstruction, or install door in proper position. If any doors are cracked or

	cracks and damage? ▪ Are door securely and properly installed? • Are above items okay?		damaged, replace them. Then go to the Step 20.
19	**VERIFY THAT DUCTS INSTALLATION CONDITION** • Are following ducts installed properly? ▪ Dashboard ducts ▪ Defroster ducts	Yes	Inspect ducts for clogging, deformity, and air leakage, then go to the next step.
		No	Install the suspected ducts properly, then go to the next step.
20	**CONFIRM THAT MALFUNCTION SYMPTOM DOES NOT RECUR AFTER REPAIR** • Does air blow out?	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if the malfunction recurs.

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NO.1 INSUFFICIENT AIR (OR NO AIR) BLOWN FROM VENTS [MANUAL AIR CONDITIONER]

1	Insufficient air (or no air) blown from vents
DESCRIPTION	• Problem with each vent and/or duct. • Airflow mode does not change.
POSSIBLE CAUSE	• Climate control unit (B+ signal) system malfunction • Climate control unit (VENT, DEFROSTER signal) system malfunction • Malfunction in airflow mode actuator • Malfunction in VENT mode system • Malfunction in HEAT mode system • Malfunction in DEFROSTER mode system

- 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 CLIMATE CONTROL UNIT POWER SUPPLY FUSE FOR B+ SIGNAL** • Is the climate control unit power supply fuse for B+ signal normal?	Yes	Go to the next step.
		No	Inspect for short to GND in blown fuse circuit. Repair or replace as necessary. Install appropriate amperage fuse.
2*	**INSPECT TO SEE WHETHER MALFUNCTION (OPEN CIRCUIT) IS IN B+ SIGNAL WIRING**	Yes	Go to the next step.

	HARNESS (BETWEEN FUSE BLOCK AND CLIMATE CONTROL UNIT) OR ELSEWHERE • Disconnect the climate control unit connector (24-pin). • Switch ignition to ON. • Measure the voltage at climate control unit harness-side connector (24-pin) terminal 1Q (B+ signal). • Is the voltage **approx. 12V**?	No	Repair wiring harness between fuse block and climate control unit, then go to Step 20.
3*	**INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN WIRING HARNESS (BETWEEN CLIMATE CONTROL UNIT AND GND) OR ELSE ELSEWHERE** • Climate control unit connector (24-pin) disconnected. • Verify that continuity between climate control unit harness-side connector (24-pin) terminal 1U and GND. • Is there continuity?	Yes	Go to the next step.
		No	Repair wiring harness between climate control unit and GND. Inspect GND point condition. Then go to Step 20.
4*	**INSPECT TO SEE WHETHER MALFUNCTION IS IN BLOWER UNIT OR AIR MIX ACTUATOR** • Switch the ignition to ON. • Measure voltage at climate control unit terminal 1T (24-pin) when temperature controls dial at MAX HOT and MAX COLD. (See **CLIMATE CONTROL UNIT INSPECTION [MANUAL AIR CONDITIONER]**.) • Is voltage normal?	Yes	Go to Step 16.
		No	Go to the next step.
5*	**INSPECT TO SEE WHETHER MALFUNCTION IS IN POSITION OR ELSEWHERE** • Switch the ignition to ON. • Measure voltage at climate control unit terminal 1R (24-pin) when airflow mode change to VENT and DEFROSTER. (See **CLIMATE CONTROL UNIT INSPECTION [MANUAL AIR CONDITIONER]**.) • Are voltages normal?	Yes	Go to Step 8.
		No	Go to the next step.
6*	**INSPECT TO SEE WHETHER MALFUNCTION**	Yes	Go to the next step.

	(LACK OF CONTINUITY OR SHORT TO BATTERY POWER OR GND) IS IN POSITION SENSOR POWER SUPPLY (CLIMATE CONTROL UNIT TERMINAL 1S) OR ELSEWHERE • Switch the ignition to ON. • Measure voltage at climate control unit terminal 1S (24-pin). • Is voltage **approx. 5V**?	No	Repair wiring harness between climate control unit terminal 1S and follows: • Airflow mode actuator terminal F • Air mix actuator terminal F Then go to Step 20.
7*	**INSPECT TO SE WHETHER MALFUNCTION (LACK OF CONTINUITY OR OPEN) IS IN POSITION SENSOR GND (CLIMATE CONTROL UNIT TERMINAL 1V) OR ELSEWHERE** • Measure voltage at climate control unit terminal 1V (24-pin). • Is voltage **below 1.0V**?	Yes	Go to Step 11.
		No	Repair wiring harness between climate control unit terminal 1V and follows: • Airflow mode actuator terminal D • Airflow mode actuator terminal D Then go to Step 20.
8*	**INSPECT TO SEE WHETHER MALFUNCTION (SHORT TO POWER) IS IN WIRING HARNESS (AIRFLOW MODE POSITION SIGNAL) OR ELSEWHERE** • Is climate control unit terminal 1R voltage **approx. 12V**, at Step 4?	Yes	Repair wiring harness between climate control unit terminal 1R and airflow mode actuator terminal E. Then go to Step 20.
		No	Go to the next step.
9*	**INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN WIRING HARNESS (AIRFLOW MODE POSITION SIGNAL) OR ELSEWHERE** • Switch the ignition to off. • Disconnect climate control unit and airflow mode actuator connectors. • Verify continuity between climate control unit terminal 1R (24-pin) and airflow mode actuator terminal E at harness-side connector. • Is there continuity?	Yes	Go to next step.
		No	Repair wiring harness between climate control unit terminal 1R and airflow mode actuator terminal E. Then go to Step 20.

10*	**INSPECT TO SEE WHETHER MALFUNCTION (SHORT TO GND) IS IN WIRING HARNESS (AIRFLOW MODE POSITION SIGNAL) OR POSITION SENSOR COMMON (POWER SUPPLY OR GND) HARNESS** • Verify continuity between climate control unit harness-side connector terminal 1R (24-pin) and GND. • Is there continuity?	Yes	Repair wiring harness between climate control unit terminal 1R and airflow mode actuator terminal E. Then go to Step 20.
		No	Inspection and repair for open circuit following: • Between airflow mode actuator terminal F and junction point to each air mix actuator (position sensor power supply). • Between airflow mode actuator terminal D and junction point to each air mix actuator (position sensor GND). Then go to Step 20.
11*	**INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN AIRFLOW MODE ACTUATOR WIRING HARNESS (BETWEEN CLIMATE CONTROL UNIT AND AIRFLOW MODE ACTUATOR) OR ELSEWHERE** • Switch the ignition to ON. • Measure voltage at the following terminals of climate control unit. (See **CLIMATE CONTROL UNIT INSPECTION [MANUAL AIR CONDITIONER]**.) ▪ Terminal 1D (24-pin, DEFROSTER mode motor drive signal) ▪ Terminal 1F (24-pin, VENT mode motor drive signal) • Are voltages okay?	Yes	Go to the next step.
		No	Go to Step 13.
12*	**INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN AIRFLOW MODE ACTUATOR OR WIRING HARNESS**	Yes	Go to Step 17.
		No	Repair wiring harness between

	(BETWEEN CLIMATE CONTROL UNIT AND AIRFLOW MODE ACTUATOR) • Measure voltage at the following terminals of climate control unit. ▪ Terminal 1D (DEFROSTER mode motor drive signal) ▪ Terminal 1F (VENT mode motor drive signal) • Are voltages as shown below? ▪ DEFROSTER mode motor drive signal: **approx. 10V** during DEFROSTER mode and **approx. 0.5V** during VENT mode ▪ VENT mode motor drive signal: **approx. 0.5V** during DEFROSTER mode and **approx. 10V** during VENT mode		climate control unit and airflow mode actuator. Then go to Step 20.
13*	**INSPECT TO SEE WHETHER MALFUNCTION IS IN AIRFLOW MODE ACTUATOR OR ELSEWHERE** • Disconnect the airflow mode actuator. • Measure voltage at the following terminals of climate control unit. (See **CLIMATE CONTROL UNIT INSPECTION [MANUAL AIR CONDITIONER]**.) ▪ Terminal 1D (24-pin, DEFROSTER mode motor drive signal) ▪ Terminal 1F (24-pin, VENT mode motor drive signal) • Are voltage okay?	Yes	Go to Step 16.
		No	Go to the next step.
14*	**INSPECT TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (SHORT TO B+ BETWEEN CLIMATE CONTROL UNIT AND AIRFLOW MODE ACTUATOR) OR ELSEWHERE** • Disconnect the climate control unit connector. • Measure voltage at the following terminal of the climate control unit harness-side connector. ▪ Terminal 1D (24-pin, DEFROSTER mode motor drive signal)	Yes	Go to the next step.
		No	Repair wiring between climate control unit and airflow mode actuator. Then go to the Step 20.

	▪ Terminal 1F (24-pin, VENT mode motor drive signal) • Are voltages **approx. 0V**?		
15*	**INSPECT TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (SHORT TO GND BETWEEN CLIMATE CONTROL UNIT AND AIRFLOW MODE ACTUATOR) OR ELSEWHERE** • Switch the ignition to off. • Verify that continuity at the following harness-side connector terminals between climate control unit and GND. ▪ Terminal 1D (24-pin, DEFROSTER mode motor drive signal) ▪ Terminal 1F (24-pin, VENT mode motor drive signal) • Is there continuity?	Yes	Repair wiring harness between climate control unit and airflow mode actuator. Then go to the Step 20.
		No	Go to the next step.
16	**INSPECT AIRFLOW MODE ACTUATOR** • Inspect airflow mode actuator. (See **AIRFLOW MODE ACTUATOR INSPECTION [MANUAL AIR CONDITIONER]**.) • Is airflow mode actuator normal?	Yes	Go to the next step.
		No	Replace the airflow mode actuator. (See **AIRFLOW MODE ACTUATOR REMOVAL/ INSTALLATION [MANUAL AIR CONDITIONER]**.) Then go to the Step 20.
17	**INSPECT AIRFLOW MODE LINK** • Inspect airflow mode links. ▪ Is grease on link? ▪ Are links securely and properly installed? ▪ Are links free of obstructions and hindrances? • Are above items okay?	Yes	Go to the next step.
		No	Apply grease to links. If any links are damaged, replace malfunctioning part. Then go to the Step 20.
18	**INSPECT TO SEE WHETHER MALFUNCTION IS IN CLIMATE CONTROL UNIT OR AIRFLOW MODE DOOR** • Inspect blower unit airflow mode door. ▪ Is door free of obstructions,	Yes	Go to the next step.
		No	Remove the obstruction, or install door in proper position. If any doors are cracked or

	cracks and damage? ▪ Are door securely and properly installed? • Are above items okay?		damaged, replace them. Then go to the Step 20.
19	**VERIFY THAT DUCTS INSTALLATION CONDITION** • Are following ducts installed properly? ▪ Dashboard ducts ▪ Defroster ducts	Yes	Inspect ducts for clogging, deformity, and air leakage, then go to the next step.
		No	Install the suspected ducts properly, then go to the next step.
20	**CONFIRM THAT MALFUNCTION SYMPTOM DOES NOT RECUR AFTER REPAIR** • Does air blow out?	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if the malfunction recurs.

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