

2012 - Mazda6 - Engine

NO.24 A/ C IS ALWAYS ON OR A/ C COMPRESSOR RUNS CONTINUOUSLY [MZR 2.5]

24	A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY
DESCRIPTION	A/C compressor magnetic clutch does not disengage.
POSSIBLE CAUSE	- PCM or climate control unit DTC is stored. - Short to power supply in wiring harness between A/C relay and magnetic clutch - Magnetic clutch engagement is stuck. - A/C relay malfunction - Short to ground in wiring harness between A/C relay and PCM - Communication error between PCM and instrument cluster - Communication error between climate control unit and instrument cluster (Full-auto air conditioner) - Short to ground in wiring harness between climate control unit terminal 1L and instrument cluster terminal 1A (Manual air conditioner) - Climate control unit malfunction

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	VERIFY PCM AND CLIMATE CONTROL UNIT DTC - Retrieve the PCM and climate control unit DTCs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [MZR 2.5].) (See DTC DISPLAY.) - Are there any DTCs displayed?	Yes	Go to the appropriate DTC inspection. (See DTC TABLE [MZR 2.5] .) (See DTC TABLE .)
		No	Go to the next step.
2	DETERMINE IF MALFUNCTION CAUSE IS	Yes	Go to Step 4.

	MAGNETIC CLUTCH OR OTHER - Start the engine and idle it. - Turn the A/C switch on with blower switch is on. - Remove the A/C relay. - Does the magnetic clutch disengage?	No	Go to the next step.
3	INSPECT IF MALFUNCTION CAUSE IS MAGNETIC CLUTCH POWER SUPPLY OR MAGNETIC CLUTCH - Switch the ignition to ON. - Remove the A/C relay. - Disconnect the magnetic clutch connector. - Switch the ignition to ON. - Measure the voltage between magnetic clutch terminal A and body ground. - Is the voltage B+ ?	Yes	Repair or replace suspected wiring harness and connector.
		No	Replace the A/C compressor. (Magnetic clutch engagement is stuck.) (See A/ C COMPRESSOR REMOVAL/ INSTALLATION.)
4	INSPECT A/ C RELAY - Inspect the A/C relay. (See RELAY INSPECTION.) - Is the A/C relay normal?	Yes	Go to the next step.
		No	Replace the A/C relay.
5	DETERMINE IF MALFUNCTION CAUSE IS A/ C REQUEST SIGNAL OR MAGNETIC CLUTCH CONTROL CIRCUIT - Access and monitor the PCM PID ACCS using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [MZR 2.5].) - Start the engine and idle it. - Turn the A/C switch on and off with blower switch is on. - Is the PID value always ON?	Yes	Full-auto air conditioner: - Replace the climate control unit (A/C switch signal is always on). (See CLIMATE CONTROL UNIT REMOVAL/ INSTALLATION [FULL-AUTO AIR CONDITIONER].) Manual air conditioner: - Go to the next step.
		No	Inspect for short to ground between PCM terminal 1I and A/C relay. Repair or replace suspected wiring harness and connector.

6	DETERMINE IF MALFUNCTION CAUSE IS A/ C REQUEST SIGNAL RELATED WIRING HARNESS OR CLIMATE CONTROL UNIT (MANUAL AIR CONDITIONER) • Switch the ignition to off. • Disconnect the instrument cluster and climate control unit connectors. • Verify continuity between climate control unit connector terminal 1L and body ground. • Is there continuity?	Yes	Repair or replace suspected wiring harness and connector.
		No	Replace the climate control unit. (A/C switch signal is always on.) (See CLIMATE CONTROL UNIT REMOVAL/ INSTALLATION [MANUAL AIR CONDITIONER] .)
7	• Verify test results. ▪ If normal, return to diagnostic index to service any additional symptoms. (See SYMPTOM DIAGNOSTIC INDEX [MZR 2.5].) ▪ If malfunction remains, inspect related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. • If vehicle is repaired, troubleshooting completed. • If vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest.		

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NO.24 A/ C IS ALWAYS ON OR A/ C COMPRESSOR RUNS CONTINUOUSLY [MZR 2.5]

24	A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY
DESCRIPTION	A/C compressor magnetic clutch does not disengage.
POSSIBLE CAUSE	- PCM or climate control unit DTC is stored. - Short to power supply in wiring harness between A/C relay and magnetic clutch - Magnetic clutch engagement is stuck. - A/C relay malfunction - Short to ground in wiring harness between A/C relay and PCM - Communication error between PCM and instrument cluster - Communication error between climate control unit and instrument cluster (Full-auto air conditioner) - Short to ground in wiring harness between climate control unit terminal 1L and instrument cluster terminal 1A (Manual air conditioner) - Climate control unit malfunction

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	VERIFY PCM AND CLIMATE CONTROL UNIT DTC - Retrieve the PCM and climate control unit DTCs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [MZR 2.5] .) (See DTC DISPLAY .) - Are there any DTCs displayed?	Yes	Go to the appropriate DTC inspection. (See DTC TABLE [MZR 2.5] .) (See DTC TABLE .)
		No	Go to the next step.
2	DETERMINE IF MALFUNCTION CAUSE IS	Yes	Go to Step 4.

	MAGNETIC CLUTCH OR OTHER - Start the engine and idle it. - Turn the A/C switch on with blower switch is on. - Remove the A/C relay. - Does the magnetic clutch disengage?	No	Go to the next step.
3	INSPECT IF MALFUNCTION CAUSE IS MAGNETIC CLUTCH POWER SUPPLY OR MAGNETIC CLUTCH - Switch the ignition to ON. - Remove the A/C relay. - Disconnect the magnetic clutch connector. - Switch the ignition to ON. - Measure the voltage between magnetic clutch terminal A and body ground. - Is the voltage B+ ?	Yes	Repair or replace suspected wiring harness and connector.
		No	Replace the A/C compressor. (Magnetic clutch engagement is stuck.) (See A/ C COMPRESSOR REMOVAL/ INSTALLATION.)
4	INSPECT A/ C RELAY - Inspect the A/C relay. (See RELAY INSPECTION.) - Is the A/C relay normal?	Yes	Go to the next step.
		No	Replace the A/C relay.
5	DETERMINE IF MALFUNCTION CAUSE IS A/ C REQUEST SIGNAL OR MAGNETIC CLUTCH CONTROL CIRCUIT - Access and monitor the PCM PID ACCS using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [MZR 2.5].) - Start the engine and idle it. - Turn the A/C switch on and off with blower switch is on. - Is the PID value always ON?	Yes	Full-auto air conditioner: - Replace the climate control unit (A/C switch signal is always on). (See CLIMATE CONTROL UNIT REMOVAL/ INSTALLATION [FULL-AUTO AIR CONDITIONER].) Manual air conditioner: - Go to the next step.
		No	Inspect for short to ground between PCM terminal 1I and A/C relay. Repair or replace suspected wiring harness and connector.

6	DETERMINE IF MALFUNCTION CAUSE IS A/ C REQUEST SIGNAL RELATED WIRING HARNESS OR CLIMATE CONTROL UNIT (MANUAL AIR CONDITIONER) • Switch the ignition to off. • Disconnect the instrument cluster and climate control unit connectors. • Verify continuity between climate control unit connector terminal 1L and body ground. • Is there continuity?	Yes	Repair or replace suspected wiring harness and connector.
		No	Replace the climate control unit. (A/C switch signal is always on.) (See CLIMATE CONTROL UNIT REMOVAL/ INSTALLATION [MANUAL AIR CONDITIONER] .)
7	• Verify test results. ▪ If normal, return to diagnostic index to service any additional symptoms. (See SYMPTOM DIAGNOSTIC INDEX [MZR 2.5].) ▪ If malfunction remains, inspect related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. • If vehicle is repaired, troubleshooting completed. • If vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest.		