2012 - Mazda6 - Engine

NO.10 LOW IDLE/ STALLS DURING DECELERATION [MZI 3.7 V6]

10	LOW IDLE/STALLS DURING DECELERATION
DESCRIPTION	• Engine stops unexpectedly at the beginning of deceleration or recovery from deceleration.

POSSIBLE CAUSE	• Improper A/C magnetic clutch operation
	• Vacuum leakage
	• Air leakage from intake-air system
	• Improper routing vacuum line
	• PCM DTC is stored.
	• Improper operation of drive-by-wire control system
	• EVAP control system malfunction
	• Erratic signal to PCM
	  ▪ APP sensor or related circuit malfunction
	  ▪ TP sensor or related circuit malfunction
	  ▪ MAF sensor or related circuit malfunction
	• Brake switch or related circuit malfunction
	• TR switch or related circuit malfunction
	• VSS or related circuit malfunction

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	**VERIFY IF MALFUNCTION INCLUDES ROUGH IDLING** • Does the engine idle roughly?	Yes	Go to the symptom troubleshooting "NO.8 ENGINE RUNS ROUGH/ROLLING IDLE". (See **NO.8 ENGINE RUNS ROUGH/ ROLLING IDLE [MZI 3.7 V6]**.)
		No	Go to the next step.
2	**DETERMINE IF MALFUNCTION CAUSE IS A/ C SYSTEM OR OTHER** • Turn off the A/C switch and fan switch. • Does the A/C magnetic clutch engage?	Yes	Go to the symptom troubleshooting "NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY". (See **NO.24 A/ C IS ALWAYS ON OR A/ C**

			COMPRESSOR RUNS CONTINUOUSLY [MZI 3.7 V6].)
		No	Go to the next step.
3	**INSPECT INTAKE AIR SYSTEM FOR AIR LEAKAGE** • Verify the following: ▪ Proper routing of and no damage to vacuum lines ▪ No air leakage from intake-air system • Are all items normal?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results. Repeat Step 3.
4	**VERIFY PCM DTC** • Switch the ignition to ON (Engine off). • Retrieve any DTCs using the M-MDS. (See **ON-BOARD DIAGNOSTIC TEST [MZI 3.7 V6]**.) • Are there any DTCs displayed?	Yes	DTC is displayed: • Go to the appropriate DTC inspection. (See **DTC TABLE [MZI 3.7 V6]**.)
		No	No DTC is displayed: • Go to the next step.
5	**INSPECT DRIVE-BY-WIRE CONTROL SYSTEM OPERATION** • Perform the drive-by-wire control system operation inspection. (See **ENGINE CONTROL SYSTEM OPERATION INSPECTION [MZI 3.7 V6]**.) • Does the drive-by-wire control system function properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
6	**DETERMINE IF MALFUNCTION CAUSE IS EVAP CONTROL SYSTEM OR OTHER** • Disconnect the vacuum hose between purge solenoid valve and intake manifold from purge solenoid side. • Plug opening end of vacuum hose. • Start the engine. • Does the engine condition improve?	Yes	Inspect the EVAP control system. Repair or replace the malfunctioning part according to the inspection results.
		No	Go to the next step.
7	**VERIFY CURRENT INPUT SIGNAL STATUS** **CAUTION:** • While performing this step, always operate the vehicle in a safe and lawful manner. • When the M-MDS is used to observe monitor system status while driving, be sure to have another technician with you, or record the data in the M-MDS using the PID/DATA MONITOR AND RECORD capturing function and inspect later.	Yes	Go to the next step.
		No	APP1 or APP2 PID is not specified: • Inspect the APP sensor. (See **ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [MZI 3.7 V6]**.) TP1 or TP2 PID is not specified: • Inspect the TP sensor.

	• Access the following PCM PIDs using the M-MDS: (See **ON-BOARD DIAGNOSTIC TEST [MZI 3.7 V6]**.) ▪ APP1 ▪ APP2 ▪ TP1 ▪ TP2 ▪ MAF ▪ VSS • Monitor each PID while driving the vehicle. • Are all PIDs normal? (See **PCM INSPECTION [MZI 3.7 V6]**.)		(See **THROTTLE POSITION (TP) SENSOR INSPECTION [MZI 3.7 V6]**.) MAF PID is not specified: • Inspect the MAF sensor. (See **MASS AIR FLOW (MAF) SENSOR INSPECTION [MZI 3.7 V6]**.) VSS PID is not specified: • Inspect the VSS. (See **VEHICLE SPEED SENSOR (VSS) INSPECTION [AY6A-EL]**.) Repair or replace the malfunctioning part according to the inspection results.
8	**VERIFY CURRENT INPUT SIGNAL STATUS** • Access the following PCM and TCM PIDs using the M-MDS: (See **ON-BOARD DIAGNOSTIC TEST [MZI 3.7 V6]**.) (See **ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [AY6A-EL]**.) ▪ PCM PIDs • AC_REQ • BOO ▪ TCM PID • TR • Are all PIDs normal? (See **PCM INSPECTION [MZI 3.7 V6]**.)	Yes	Go to the next step.
		No	AC_REQ PID is not specified: • Inspect the following: ▪ A/C switch ▪ Evaporator temperature sensor (See **EVAPORATOR TEMPERATURE SENSOR INSPECTION [MANUAL AIR CONDITIONER]**.) (See **EVAPORATOR TEMPERATURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER]**.) ▪ Fan switch ▪ Communication between climate control unit and instrument cluster (Full-auto air conditioner) ▪ Communication between instrument cluster and PCM

			▪ Short to ground in wiring harness between climate control unit terminal 1L and instrument cluster terminal 1A (Manual air conditioner) BOO PID is not specified: • Inspect the brake switch and related wiring harness for vibration or intermittent open/short circuit. (See **BRAKE SWITCH INSPECTION**.) TR PID is not specified: • Inspect the TR switch. (See **TRANSAXLE RANGE (TR) SWITCH INSPECTION [AY6A-EL]**.) Repair or replace the malfunctioning part according to the inspection results.
9	Verify test results. • If normal, return to diagnostic index to service any additional symptoms. (See **SYMPTOM DIAGNOSTIC INDEX [MZI 3.7 V6]**.) • 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	Go to the next step.
2	**DETERMINE IF MALFUNCTION CAUSE IS A/ C SYSTEM OR OTHER** • Turn off the A/C switch and fan switch. • Does the A/C magnetic clutch engage?	Yes	Go to the symptom troubleshooting "NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY". (See **NO.24 A/ C IS ALWAYS ON OR A/ C**

			COMPRESSOR RUNS CONTINUOUSLY [MZI 3.7 V6].)
		No	Go to the next step.
3	**INSPECT INTAKE AIR SYSTEM FOR AIR LEAKAGE** • Verify the following: ▪ Proper routing of and no damage to vacuum lines ▪ No air leakage from intake-air system • Are all items normal?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results. Repeat Step 3.
4	**VERIFY PCM DTC** • Switch the ignition to ON (Engine off). • Retrieve any DTCs using the M-MDS. (See **ON-BOARD DIAGNOSTIC TEST [MZI 3.7 V6]**.) • Are there any DTCs displayed?	Yes	DTC is displayed: • Go to the appropriate DTC inspection. (See **DTC TABLE [MZI 3.7 V6]**.)
		No	No DTC is displayed: • Go to the next step.
5	**INSPECT DRIVE-BY-WIRE CONTROL SYSTEM OPERATION** • Perform the drive-by-wire control system operation inspection. (See **ENGINE CONTROL SYSTEM OPERATION INSPECTION [MZI 3.7 V6]**.) • Does the drive-by-wire control system function properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
6	**DETERMINE IF MALFUNCTION CAUSE IS EVAP CONTROL SYSTEM OR OTHER** • Disconnect the vacuum hose between purge solenoid valve and intake manifold from purge solenoid side. • Plug opening end of vacuum hose. • Start the engine. • Does the engine condition improve?	Yes	Inspect the EVAP control system. Repair or replace the malfunctioning part according to the inspection results.
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7	**VERIFY CURRENT INPUT SIGNAL STATUS** **CAUTION:** • While performing this step, always operate the vehicle in a safe and lawful manner. • When the M-MDS is used to observe monitor system status while driving, be sure to have another technician with you, or record the data in the M-MDS using the PID/DATA MONITOR AND RECORD capturing function and inspect later.	Yes	Go to the next step.
		No	APP1 or APP2 PID is not specified: • Inspect the APP sensor. (See **ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [MZI 3.7 V6]**.) TP1 or TP2 PID is not specified: • Inspect the TP sensor.

	• Access the following PCM PIDs using the M-MDS: (See **ON-BOARD DIAGNOSTIC TEST [MZI 3.7 V6]**.) ▪ APP1 ▪ APP2 ▪ TP1 ▪ TP2 ▪ MAF ▪ VSS • Monitor each PID while driving the vehicle. • Are all PIDs normal? (See **PCM INSPECTION [MZI 3.7 V6]**.)		(See **THROTTLE POSITION (TP) SENSOR INSPECTION [MZI 3.7 V6]**.) MAF PID is not specified: • Inspect the MAF sensor. (See **MASS AIR FLOW (MAF) SENSOR INSPECTION [MZI 3.7 V6]**.) VSS PID is not specified: • Inspect the VSS. (See **VEHICLE SPEED SENSOR (VSS) INSPECTION [AY6A-EL]**.) Repair or replace the malfunctioning part according to the inspection results.
8	**VERIFY CURRENT INPUT SIGNAL STATUS** • Access the following PCM and TCM PIDs using the M-MDS: (See **ON-BOARD DIAGNOSTIC TEST [MZI 3.7 V6]**.) (See **ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [AY6A-EL]**.) ▪ PCM PIDs • AC_REQ • BOO ▪ TCM PID • TR • Are all PIDs normal? (See **PCM INSPECTION [MZI 3.7 V6]**.)	Yes	Go to the next step.
		No	AC_REQ PID is not specified: • Inspect the following: ▪ A/C switch ▪ Evaporator temperature sensor (See **EVAPORATOR TEMPERATURE SENSOR INSPECTION [MANUAL AIR CONDITIONER]**.) (See **EVAPORATOR TEMPERATURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER]**.) ▪ Fan switch ▪ Communication between climate control unit and instrument cluster (Full-auto air conditioner) ▪ Communication between instrument cluster and PCM

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