

G - TESTS W/CODES

Article Text

1993 Mazda 929

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ARTICLE BEGINNING

1993 ENGINE PERFORMANCE

Mazda Self-Diagnostics

929

INTRODUCTION

If no faults were found while performing F - BASIC TESTING, proceed with self-diagnostics. If no fault codes or only pass codes are present after entering self-diagnostics, proceed to appropriate H - TESTS W/O CODES article for diagnosis by symptom (i.e., ROUGH IDLE, NO START, etc.).

SELF-DIAGNOSTIC SYSTEM

Hard Failures

Hard failures cause CHECK ENGINE to illuminate and remain on until the malfunction is repaired. If light comes on and remains on (light may flash) during vehicle operation, cause of malfunction must be determined using diagnostic (code) charts. If a sensor fails, control unit will use a substitute value in its calculations to continue engine operation. In this condition, vehicle is functional, but driveability may be poor.

Intermittent Failures

Intermittent failures may cause CHECK ENGINE light to flicker or illuminate and go out after the intermittent fault goes away. The corresponding trouble code, however, will be retained in control unit memory. If related fault does not reoccur within a certain time frame, related trouble code will be erased from control unit memory. Intermittent failures may be caused by sensor, connector or wiring related problems. See INTERMITTENTS in H - TESTS W/O CODES article.

RETRIEVING CODES

Accessing Trouble Code

1) Connect jumper wire between diagnostic connector terminals TEN and GND. See Fig. 1. Diagnostic connector is located at left front wheelwell.

2) With ignition on and engine stopped, observe CHECK ENGINE light or Malfunction Indicator Light (MIL). Note trouble codes. See TROUBLE CODE IDENTIFICATION chart for possible cause. If light remains on continuously, MIL circuit is grounded or ECU is defective.

AFTER-REPAIR PROCEDURE

After indicated service or replacement is performed, clear codes. See CLEARING CODES. Recheck ECU memory. No codes should be present. If codes are present, see appropriate trouble code chart to

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repair vehicle.

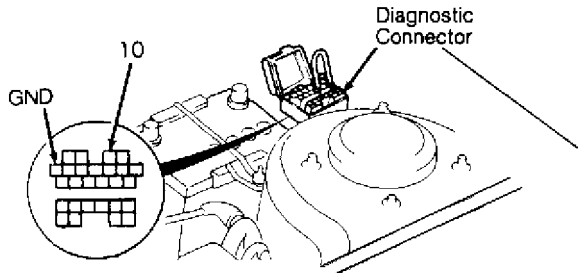


Fig. 1: Locating Self-Diagnostic Connector
Courtesy of Mazda Motors Corp.

CLEARING CODES

Clearing Trouble Codes

1) Disconnect negative battery cable. Depress brake pedal for at least 5 seconds. Reconnect battery cable.

2) Ground test connector with jumper wire. Turn ignition on, but do not start engine for 6 seconds. Operate engine at 2000 RPM for 2 minutes. Verify no codes are displayed.

CODE CHARTS

NOTE: See J - PIN VOLTAGE CHARTS article to identify ECU connector terminals.

TROUBLE CODE IDENTIFICATION

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





















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Service Code No.	Sensor or Subsystem	Condition	Fail-safe function	Pattern of output signals (Self-Diagnosis Checker or MIL)																																
02	Ne 2 signal	No Ne 2 signal	<table><tr><td>Ne 2</td><td>G</td><td>Ne 1</td><td>*</td></tr><tr><td>NG</td><td>OK</td><td>OK</td><td>A</td></tr><tr><td>OK</td><td>OK</td><td>NG</td><td></td></tr><tr><td>OK</td><td>NG</td><td>OK</td><td>B</td></tr><tr><td>NG</td><td>NG</td><td>OK</td><td></td></tr><tr><td>OK</td><td>NG</td><td>NG</td><td>C</td></tr><tr><td>NG</td><td>OK</td><td>NG</td><td></td></tr><tr><td>NG</td><td>NG</td><td>NG</td><td></td></tr></table>	Ne 2	G	Ne 1	*	NG	OK	OK	A	OK	OK	NG		OK	NG	OK	B	NG	NG	OK		OK	NG	NG	C	NG	OK	NG		NG	NG	NG		ON  OFF 
Ne 2	G	Ne 1	*																																	
NG	OK	OK	A																																	
OK	OK	NG																																		
OK	NG	OK	B																																	
NG	NG	OK																																		
OK	NG	NG	C																																	
NG	OK	NG																																		
NG	NG	NG																																		
03	G signal	No G signal input while a certain number of Ne 1 or Ne 2 signal pulses are input.	<table><tr><td>OK</td><td>NG</td><td>OK</td><td>B</td></tr><tr><td>NG</td><td>NG</td><td>OK</td><td></td></tr><tr><td>OK</td><td>NG</td><td>NG</td><td></td></tr><tr><td>NG</td><td>OK</td><td>NG</td><td>C</td></tr><tr><td>NG</td><td>NG</td><td>NG</td><td></td></tr></table>	OK	NG	OK	B	NG	NG	OK		OK	NG	NG		NG	OK	NG	C	NG	NG	NG		ON  OFF 												
OK	NG	OK	B																																	
NG	NG	OK																																		
OK	NG	NG																																		
NG	OK	NG	C																																	
NG	NG	NG																																		
04	Ne 1 signal	No Ne 1 signal	<table><tr><td>NG</td><td>OK</td><td>NG</td><td>C</td></tr><tr><td>NG</td><td>NG</td><td>NG</td><td></td></tr></table>	NG	OK	NG	C	NG	NG	NG		ON  OFF 																								
NG	OK	NG	C																																	
NG	NG	NG																																		
05	Left side knock sensor	Open or short circuit	Ignition timing retard	ON  OFF 																																
06	Speed signal	No speed signal input while driving vehicle at more than 40 km/h (25 mph) in D, S or L range for 10 sec	Maintains constant 0 km/h (0 mph) command	ON  OFF 																																
07	Right side knock sensor	Open or short circuit	Ignition timing retard	ON  OFF 																																
08	Airflow meter	Short circuit	Basic fuel injection amount fixed as for 3 driving modes 1) Idle switch ON 2) Slight throttle angle 3) Large throttle angle.	ON  OFF 																																
09	Water thermosensor	Open or short circuit	Maintains constant 80°C(176°F) command	ON  OFF 																																
10	Intake air thermosensor (in airflow meter)	Open or short circuit	Maintains constant 20°C(68°F) command	ON  OFF 																																
11	Intake airthermosensor (on dynamic chamber)	Open or short circuit	Maintains constant 20°C(68°F) command	ON  OFF 																																
12	Throttle sensor	Input voltage is less than specified when idle switch OFF, or input voltage is more than specified.	Maintains constant command of throttle valve fully open	ON  OFF 																																
14	Atmospheric pressure sensor	Open or short circuit	Maintains constant command of sea level pressure	ON  OFF 																																
15	Left side oxygen sensor	Sensor output continues less than 0.55V 130 sec. after engine exceeds 1,500 rpm	Cancel engine feedback operation	ON  OFF 																																
16	EGR position sensor	Open or short circuit	Maintains constant command of EGR valve fully open	ON  OFF 																																

* Fail safe operation

A: sequential injection (normal injection)

B: simultaneous injection to all cylinders

C: fuel injection and ignition stopped

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Fig. 2: Trouble Code Identification (1 Of 2)

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


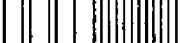
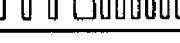



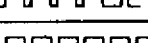

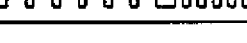
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TROUBLE CODE IDENTIFICATION (Cont.)

Service Code No.	Sensor or subsystem	Condition	Fail-safe function	Pattern of output signals (Self-Diagnosis checker or MIL)
17	Left side feedback system	Sensor output continues unchanged 50sec. after engine exceeds 1,500 rpm	Cancels engine feedback operation	ON  OFF 
23	Right side oxygen sensor	Sensor output continues less than 0.55V 130 sec. after engine exceeds 1,500 rpm		ON  OFF 
24	Right side feedback system	Sensor output continues unchanged 50sec. after engine exceeds 1,500 rpm		ON  OFF 
28	Solenoid valve (purge control)	Open or short circuit	—	ON  OFF 
28	Solenoid valve (EGR—vacuum side)		—	ON  OFF 
29	Solenoid valve (EGR—vent side)		—	ON  OFF 
30	Relay (Cold start injector)		—	ON  OFF 
34	Solenoid valve (ISC)		—	ON  OFF 
36	Right side oxygen sensor heater		—	ON  OFF 
37	Left side oxygen sensor heater		—	ON  OFF 
41	Solenoid valve (VICS)		—	ON  OFF 
65	A/C signal (EC-AT CU)		—	ON  OFF 

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Fig. 3: Trouble Code Identification (2 Of 2)

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TROUBLE CODE NO. 2 (NE2 SIGNAL - DISTRIBUTOR)

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CODE No.		02 (CRANK ANGLE SENSOR — Ne 2 SIGNAL)	
STEP	INSPECTION	ACTION	
1	Is there poor connection in crank angle sensor circuit?	Yes	Repair or replace connector
		No	Go to next step
2	Disconnect connector from ECU Is resistance of connector between 3F (L/Y) and 3H (L/G) terminal OK? Resistance: 0.95—1.25 kΩ	Yes	Go to next step
		No	Go to Step 4
3	Is there continuity of connector between ground and 3F or ground and 3H terminal? (At harness side)	Yes	Check for short circuit in wiring from crank angle sensor to 3F or 3H terminal
		No	Replace ECU
4	Is resistance of crank angle sensor OK? Resistance: 0.95—1.25 kΩ	Yes	Check for open circuit in wiring from ECU to crank angle sensor
		No	Replace crank angle sensor

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Fig. 4: Trouble Code No. 2 - Diagnostic Flowchart
Courtesy Of Mazda Motors Corp.

TROUBLE CODE NO. 3 (G SIGNAL - DISTRIBUTOR)

CODE No.		03 (DISTRIBUTOR G SIGNAL)	
STEP	INSPECTION	ACTION	
1	Is there poor connection in distributor circuit?	Yes	Repair or replace connector
		No	Go to next step
2	Is Code No. 04 also present?	Yes	Go to next step
		No	Go to Step 5
3	Is there continuity between distributor terminal-wire (B/LG) and ground?	Yes	Go to next step
		No	Check for open circuit in wiring from distributor to ground
4	Is there battery voltage at distributor terminal-wire (B/W)?	Yes	Go to next step
		No	Check for open circuit in wiring from distributor to main relay
5	Is there approx. 5V at distributor terminal-wire (L)? (With AT harness-side connector with disconnected)	Yes	Replace distributor
		No	Go to next step
6	Is there approx. 5V at ECU terminal 3G? (With distributor connector disconnected)	Yes	Check for short or open circuit in wiring from distributor to ECU terminal 3G
		No	Replace ECU.

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Fig. 5: Trouble Code No. 3 - Diagnostic Flowchart
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TROUBLE CODE NO. 5/7 (LEFT/RIGHT KNOCK SENSOR)

CODE NO.		05 and/or 07 (KNOCK SENSOR)	
STEP	INSPECTION		ACTION
1	Does knock sensor circuit have a poor connection?	Yes	Repair or replace connector
		No	Go to next step
2	Does the wire harness between the knock sensor and ECU have a continuity?	Yes	Repair or replace harness
		No	Check continuity between ECU terminals (2M and/or 2N) and ground ⇒ If continue, repair or replace harness ⇒ If does not continue, go to next step
3	Try known good knock sensor does same Code No. present?	Yes	Replace ECU
		No	Replace knock sensor

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Fig. 6: Trouble Code No. 5/7 - Diagnostic Flowchart

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TROUBLE CODE NO. 4 (NE1 SIGNAL - DISTRIBUTOR)

CODE No.		04 (DISTRIBUTOR No 1 SIGNAL)	
STEP	INSPECTION		ACTION
1	Is there poor connection in distributor circuit?	Yes	Repair or replace connector
		No	Go to next step
2	Is Code No. 03 also present?	Yes	Go to next step
		No	Go to Step 5
3	Is there continuity between distributor terminal-wire (B/LG) and ground?	Yes	Go to next step
		No	Check for open circuit in wiring from distributor to ground
4	Is there battery voltage at distributor terminal-wire (B/W)?	Yes	Go to next step
		No	Check for open circuit in wiring from distributor to main relay
5	Is there approx. 5V at distributor terminal-wire (G/W)? (AT harness-side connector with disconnected)	Yes	Replace distributor
		No	Go to next step
6	Is there approx. 5V at ECU terminal 3E? (With distributor connector disconnected)	Yes	Check for short or open circuit in wiring from distributor to ECU terminal 3E
		No	Replace ECU

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Fig. 7: Trouble Code No. 4 - Diagnostic Flowchart

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TROUBLE CODE NO. 6 (SPEEDOMETER SENSOR)

CODE No.		06 (SPEEDOMETER SENSOR)											
STEP	INSPECTION	ACTION											
1	Are there any poor connections at speedometer sensor and ECU connectors?	Yes	Go to next step										
		No	Repair or replace connector										
2	Connect a circuit tester to terminals as shown Is input voltage of speedometer sensor at ECU OK? <table border="1"><tr><td>(+) term.</td><td>(-) term.</td><td>Voltage (V)</td><td>Condition</td></tr><tr><td rowspan="2">1M</td><td rowspan="2">Ground</td><td>2—3</td><td>While driving</td></tr><tr><td>0 or 4.5—5.5</td><td>Vehicle stopped</td></tr></table>	(+) term.	(-) term.	Voltage (V)	Condition	1M	Ground	2—3	While driving	0 or 4.5—5.5	Vehicle stopped	Yes	Go to Step 8
		(+) term.	(-) term.	Voltage (V)	Condition								
1M	Ground	2—3	While driving										
		0 or 4.5—5.5	Vehicle stopped										
		No	Go to next step										
3	Remove combination meter Is there continuity between 1M terminal of meter connector and 1M terminal of ECU	Yes	Go to next step										
		No	Repair or replace wiring and/or connector										
4	Connect circuit tester to 1K and 1L terminals of meter connector Does pointer of circuit tester move slightly when rear wheels slowly turned?	Yes	Replace speedometer										
		No	Go to next step										
5	Remove speedometer sensor Is resistance felt when turning speedometer driven gear by hand?	Yes	Go to next step										
		No	Replace speedometer sensor										
6	Disconnect speedometer sensor connector and connect circuit tester Does pointer of circuit tester moves slightly when driven gear slowly turned?	Yes	Go to next step										
		No	Replace speedometer sensor										
7	Disconnect speedometer sensor connector Is continuity of sensor OK? Resistance: Approx. 290 Ω (20°C [68°F]); reference	Yes	Check wiring and connectors from speedometer sensor to speedometer If OK, go to next step If not OK, repair wiring and/or connector										
8	Disconnect negative battery cable for at least 20 seconds Connect battery cable and recheck for service code Is service code displayed?	Yes	Replace ECU										
		No	Intermittent poor connection Check for cause										

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Fig. 8: Trouble Code No. 6 - Diagnostic Flowchart
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TROUBLE CODE NO. 8 (AIRFLOW METER)

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CODE No.	08 (AIRFLOW METER)		
STEP	INSPECTION		ACTION
1	Is there poor connection in airflow sensor circuit?	Yes	Repair or replace connector
		No	Go to next step
2	Is there continuity between airflow meter and ECU?	Yes	Go to next step
3	Is resistance of airflow meter OK? See system and component testing article.	Yes	Go to next step
4	Are ECU terminals 2B, 2I, and 3D voltages OK?  - SEE PIN VOLTAGE CHARTS ARTICLE.	Yes	Replace ECU
5	Is there continuity between water thermosensor and ECU?	Yes	Go to next step
6	Is resistance of water thermosensor correct?	Yes	Go to next step
7	Are ECU terminal 2E and 3D voltages correct? * - SEE PIN VOLTAGE CHARTS ARTICLE.	Yes	Replace ECU

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Fig. 9: Trouble Code No. 8 - Diagnostic Flowchart
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TROUBLE CODE NO. 9 (COOLANT THERMOSENSOR)

CODE No.	09 (WATER THERMOSENSOR)		
STEP	INSPECTION		ACTION
1	Is there a poor connection in water thermosensor circuit?	Yes	Repair or replace connector
		No	Go to next step
2	Is there continuity between water thermosensor and ECU?	Yes	Go to next step
3	Is resistance of water thermosensor correct?	Yes	Go to next step
4	Are ECU terminal 2E and 3D voltages correct? * - SEE PIN VOLTAGE CHARTS ARTICLE.	Yes	Replace ECU

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Fig. 10: Trouble Code No. 9 - Diagnostic Flowchart
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TROUBLE CODE NO. 10 (INTAKE AIR THERMOSENSOR - AIRFLOW METER)

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CODE No.		10 (INTAKE AIR THERMOSENSOR — IN AIRFLOW METER)	
STEP	INSPECTION	ACTION	
1	Is there a poor connection in intake air thermosensor circuit?	Yes	Repair or replace connector
		No	Go to next step
2	Is there continuity between intake air thermosensor and ECU?	Yes	Go to next step
		No	Check for open circuit in wiring from intake air thermosensor to ECU
	Intake air thermosensor		
	ECU		
3	Is resistance of intake air thermosensor between terminals C(B) and E(G/O) OK?	Yes	Go to next step
		No	Replace intake air thermosensor
	Coolant temp		
	Resistance (k Ω)		
4	Are ECU terminal 2K and 3D voltages OK? ★ - SEE PIN VOLTAGE CHARTS ARTICLE.	Yes	Replace ECU
		No	Check for short circuit in wiring from intake air thermosensor to ECU

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Fig. 11: Trouble Code No. 10 - Diagnostic Flowchart
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TROUBLE CODE NO. 11 (INTAKE AIR THERMOSENSOR - DYNAMIC CHAMBER)

CODE No.		11 (INTAKE AIR THERMOSENSOR — IN DYNAMIC CHAMBER)	
STEP	INSPECTION	ACTION	
1	Is there a poor connection in intake air thermosensor circuit?	Yes	Repair or replace connector
		No	Go to next step
2	Is there continuity between intake air thermosensor and ECU?	Yes	Go to next step
		No	Check for open circuit in wiring from intake air thermosensor and ECU
	Intake air thermosensor		
	ECU		
3	Is resistance of intake air thermosensor OK?	Yes	Go to next step
		No	Replace intake air thermosensor
	Coolant temp		
	Resistance (k Ω)		
4	Is there continuity between intake air thermosensor and ground?	Yes	Replace ECU
		No	Check for open circuit in wiring from intake air thermosensor to ground

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Fig. 12: Trouble Code No. 11 - Diagnostic Flowchart
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TROUBLE CODE NO. 12 (THROTTLE SENSOR)

CODE No.	12 (THROTTLE SENSOR)		
STEP	INSPECTION		ACTION
1	Is there a poor connection in throttle sensor circuit?	Yes	Repair or replace connector
		No	Go to next step
2	Is there continuity between throttle sensor and ECU	Yes	Go to next step
		No	Check for open circuit in wiring from throttle sensor and ECU
	Throttle sensor		
	A (B/LG)		
	C (L)		
	D (BR/W)		
	ECU		
	ground		
	2F (L)		
	2f (BR/W)		
3	Is idle switch of throttle sensor OK? Check following switch monitor function test	Yes	Go to next step
		No	Replace throttle sensor
4	Is ECU terminal 2F voltage correct? * - SEE PIN VOLTAGE CHARTS ARTICLE.	Yes	Replace ECU
		No	Check for short circuit in wiring from throttle sensor to ECU


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Fig. 13: Trouble Code No. 12 - Diagnostic Flowchart
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TROUBLE CODE NO. 14 (ATMOSPHERIC PRESSURE)

* If code No. 14 is present, replace ECU.

TROUBLE CODE NO. 15/23 (LEFT/RIGHT SIDE OXYGEN SENSOR)

CODE No.	15 and/or 23 (OXYGEN SENSOR — INACTIVATION)		
Note ● If Code Nos. 15 and 17, and/or 23 and 24 are both present, first perform the checking procedure for Code No. 17 and/or 24.			
STEP	INSPECTION		ACTION
1	Are there are poor connections in oxygen sensor circuit?	Yes	Repair or replace connector
		No	Go to next step
2	Is oxygen sensor output voltage correct?	Yes	Go to next step
		No	Replace oxygen sensor
3	Is there continuity between oxygen sensor (left and/or right) and ECU terminals (2D and/or 2C)?	Yes	Go to next step
		No	Check for open circuit in wiring from oxygen sensor to ECU
4	Are ECU terminals (2D and/or 2C) voltage correct?	Yes	Go to next step
		No	Check for short circuit in wiring from oxygen sensor to ECU
5	Is sensitivity of oxygen sensor correct?  - SEE PIN VOLTAGE CHARTS ARTICLE.	Yes	Replace ECU
		No	Try known good oxygen sensor and check if condition improves

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Fig. 14: Trouble Code No. 15/23 - Diagnostic Flowchart
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TROUBLE CODE NO. 16 (EGR POSITION SENSOR)

CODE No.	16 (EGR POSITION SENSOR)								
STEP	INSPECTION		ACTION						
1	Does EGR position sensor circuit have a poor connection?	Yes	Repair or replace connector						
		No	Go to next step						
2	Is EGR control valve OK?	Yes	Go to next step						
		No	Replace EGR control valve						
3	Is resistance of EGR position sensor OK? Resistance: (B) ↔ (C) Approx. 5kΩ (A) ↔ (C) 0.7—5 kΩ (A) ↔ (B) 0.7—5 kΩ	Yes	Go to next step						
		No	Replace EGR control valve						
4	Is there continuity between EGR position and ECU? <table border="1"><tr><td>EGR position sensor</td><td>ECU</td></tr><tr><td>(A) (Y wire)</td><td>2J</td></tr><tr><td>(C) (BR/W wire)</td><td>2I</td></tr></table>	EGR position sensor	ECU	(A) (Y wire)	2J	(C) (BR/W wire)	2I	Yes	Replace ECU
		EGR position sensor	ECU						
		(A) (Y wire)	2J						
(C) (BR/W wire)	2I								
No	Check for open circuit in wiring from EGR position sensor to ECU								
5	Is there 4.5—5.5V at C terminal of EGR position sensor connector?	Yes	Go to next step						
		No	Check for short circuit in wiring from EGR position sensor terminal C to ECU						
6	Is ECU terminal 2J voltage OK?	Yes	Replace ECU						
		No	Short circuit in wiring harness EGR position sensor terminal A to ECU						

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Fig. 15: Trouble Code No. 16 - Diagnostic Flowchart

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TROUBLE CODE NO. 17/24 (LEFT/RIGHT SIDE FEEDBACK SYSTEM)

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CODE No.		17 and/or 24 (FEEDBACK SYSTEM)	
STEP	INSPECTION	ACTION	
1	Is same Code No. present after performing after-repair procedure?	Yes	Go to next step
		No	Check oxygen sensor circuit for poor connection ⇨ If OK, perform troubleshooting Code No. 15 and/or 23 ⇨ If not OK, repair or replace connector
2	Does monitor lamp of Self-Diagnosis Checker illuminate at idle after warming-up engine and running it at 2,500-3,000 rpm for 3 minutes?	Yes	Go to next step Note • A/F mixture is rich
		No	Go to Step 5 Note • A/F mixture is lean or misfire occurring
3	Is fuel line pressure at idle OK? Fuel line pressure: 255—314 kPa (2.6—3.2 kg/cm², 37—45 psi) (vacuum hose to pressure regulator disconnected)	Yes	Go to next step
		No	High pressure Check if fuel return hose is clogged or restricted? ⇨ If OK, replace pressure regulator ⇨ If not OK, repair or replace hose

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Fig. 16: Trouble Code No. 17/24 - Diagnostic Flowchart (1 Of 2)

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STEP	INSPECTION		ACTION
4	Is there leakage of fuel injector?	Yes	Replace injector
		No	Is water thermosensor OK? ⇒ If OK, go to Step 7 ⇒ If not OK, replace water thermosensor
5	Disconnect each high-tension lead at idle; does engine speed decrease equally at each cylinder?	Yes	Go to next step
		No	Go to Step 8
6	Is fuel line pressure at idle correct? Fuel line pressure: 255—314 kPa (2.6—3.2 kg/cm ² , 37—45 psi) (vacuum hose to pressure regulator disconnected)	Yes	Go to next step
		No	Low pressure Check fuel line pressure while pinching fuel return hose ⇒ If fuel line pressure quickly increases, check pressure regulator ⇒ If fuel line pressure gradually increases, check for clogging between fuel pump and pressure regulator If hose is not clogged, check fuel pump maximum pressure
7	Is there air leakage in intake air system components?	Yes	Go to Step 10
		No	Repair or replace
8	Was misfire found in Step 5 of inspection?	Yes	Repair or replace ignition system
		No	Go to next step
9	Replace injector Is same Code No. present following performing after-repair procedure?	Yes	Go to next step
		No	Replace injector
10	Try known good ECU; does condition improve?		

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Fig. 17: Trouble Code No. 17/24 - Diagnostic Flowchart (2 Of 2)

Courtesy Of Mazda Motors Corp.

TROUBLE CODE NO. 26 (PURGE CONTROL SOLENOID VALVE)

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CODE No.		26 (SOLENOID VALVE — PURGE CONTROL)	
STEP	INSPECTION		ACTION
1	Is there a poor connection in solenoid valve circuit?	Yes	Repair or replace connector
		No	Go to next step
2	Disconnect connector from solenoid valve Is there continuity of solenoid valve between terminals?	Yes	Go to next step
		No	Replace solenoid valve
3	Is there battery voltage at solenoid valve terminal-wire (B/W)?	Yes	Go to next step
		No	Check for open circuit in wiring from main relay to solenoid valve terminal-wire (B/W)
4	Is there continuity between solenoid valve and ECU terminal 2O?	Yes	Check for short circuit in wiring from solenoid valve terminal-wire (BR/L) to ECU terminal 2O
		No	Check for open circuit in wiring from solenoid valve terminal-wire (BR/L) to ECU terminal 2O

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Fig. 18: Trouble Code No. 26 - Diagnostic Flowchart

Courtesy Of Mazda Motors Corp.

TROUBLE CODE NO. 28 (EGR VACUUM SOLENOID VALVE)

CODE No.		28 (SOLENOID VALVE — EGR VACUUM)					
STEP	INSPECTION		ACTION				
1	Is there a poor connection in solenoid valve (EGR vacuum) circuit?	Yes	Repair or replace connector				
		No	Go to next step				
2	Is connector terminal A (B/W) voltages with solenoid valve connector disconnected OK? <table border="1"><tr><td>Condition</td><td>Voltage</td></tr><tr><td>IG switch ON</td><td>Battery voltage</td></tr></table>	Condition	Voltage	IG switch ON	Battery voltage	Yes	Go to next step
		Condition	Voltage				
IG switch ON	Battery voltage						
		No	Check for open or short circuit in wiring from solenoid valve terminal A (B/W) to main relay terminal				
3	Is continuity between solenoid valve terminal B(L/W) and ECU terminal 3P OK?	Yes	Check for short circuit in wiring from solenoid valve terminal B (L/W) to ECU terminal 3P ⇨ If OK, go to next step ⇨ If not OK, repair or replace wire harness				
		No	Repair or replace wire harness				
4	Is solenoid valve OK?	Yes	Replace ECU				
		No	Replace solenoid valve				

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Fig. 19: Trouble Code No. 28 - Diagnostic Flowchart

Courtesy Of Mazda Motors Corp.

TROUBLE CODE NO. 29 (EGR VENT SOLENOID VALVE)

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CODE No.	29 (SOLENOID VALVE — EGR VENT)			
STEP	INSPECTION		ACTION	
1	Is there a poor connection in solenoid valve (EGR vent) circuit?	Yes	Repair or replace connector	
		No	Go to next step	
2	Is connector terminal A (B/W) voltages with solenoid valve connector disconnected OK?	Yes	Go to next step	
		No	Check for open or short circuit in wiring from solenoid valve terminal A (B/W) to main relay terminal	
				<table><tr><td>Condition</td><td>Voltage</td></tr><tr><td>IG switch ON</td><td>Battery voltage</td></tr></table>
Condition	Voltage			
IG switch ON	Battery voltage			
3	Is continuity between solenoid valve terminal B (O/L) and ECU terminal 30 OK?	Yes	Check for short circuit in wiring from solenoid valve terminal B (O/L) to ECU terminal 30 ⇨ If OK, go to next step ⇨ If not OK, repair or replace wire harness	
		No	Repair or replace wire harness	
4	Is solenoid valve OK?	Yes	Replace ECU	
		No	Replace solenoid valve	

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Fig. 20: Trouble Code No. 29 - Diagnostic Flowchart

Courtesy Of Mazda Motors Corp.

TROUBLE CODE NO. 30 (COLD START INJECTOR RELAY)

CODE No.	30 (COLD START INJECTOR RELAY)		
STEP	INSPECTION		ACTION
1	Is there a poor connection in CSI relay circuit?	Yes	Repair or replace connector
		No	Go to next step
2	Disconnect connector from CSI relay Is there continuity of CSI relay terminals between A (B/W) and B (P)?	Yes	Go to next step
		No	Replace solenoid valve
3	Is there battery voltage at CSI relay terminal-wire (B/W)?	Yes	Go to next step
		No	Check for open circuit in wiring from main relay to CSI relay terminal-wire (B/W)
4	Is there continuity between CSI relay and ECU terminal 3I?	Yes	Check for short circuit in wiring from CSI relay terminal-wire (P) to ECU terminal 3I
		No	Check for open circuit in wiring from CSI relay terminal-wire (P) to ECU terminal 3I

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Fig. 21: Trouble Code No. 30 - Diagnostic Flowchart

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TROUBLE CODE NO. 34 (IDLE SPEED CONTROL)

CODE No.	34 (SOLENOID VALVE-ISC) — In BAC valve		
STEP	INSPECTION		ACTION
1	Is there a poor connection in solenoid valve circuit?	Yes	Repair or replace connector
		No	Go to next step
2	Disconnect connector from solenoid valve Is there continuity of solenoid valve between terminals?	Yes	Go to next step
		No	Replace solenoid valve
3	Is there battery voltage at solenoid valve terminal-wire (B/W)?	Yes	Go to next step
		No	Check for open circuit in wiring from main relay to solenoid valve terminal-wire (B/W)
4	Is there continuity between solenoid valve and ECU terminal 3Q?	Yes	Check for short circuit in wiring from solenoid valve terminal-wire (L/O) to ECU terminal 3Q
		No	Check for open circuit in wiring from solenoid valve terminal-wire (L/O) to ECU terminal 3Q

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Fig. 22: Trouble Code No. 34 - Diagnostic Flowchart

Courtesy Of Mazda Motors Corp.

TROUBLE CODE NO. 36/37 (RIGHT/LEFT OXYGEN SENSOR HEATER RELAY)

CODE No.	36 or 37 (HEATER-OXYGEN SENSOR RIGHT or LEFT)		
STEP	INSPECTION		ACTION
1	Is there a poor connection in solenoid valve circuit?	Yes	Repair or replace connector
		No	Go to next step
2	Disconnect connector from oxygen sensor Is there continuity of oxygen sensor heater between terminal (B/W) and (L/W) or (B/W) and (L/B)?	Yes	Go to next step
		No	Replace oxygen sensor
3	Is there battery voltage at oxygen sensor terminal-wire (B/W)?	Yes	Go to next step
		No	Check for open circuit in wiring from main relay to oxygen sensor terminal-wire (B/W)
4	Is there continuity between oxygen sensor and ECU terminal 3K and 3N?	Yes	Check for short circuit in wiring from oxygen sensor terminal-wire (L/W) or (L/B) to ECU terminal
		No	Check for open circuit in wiring from oxygen sensor terminal-wire (L/W) or (L/B) to ECU terminal

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Fig. 23: Trouble Code No. 36/37 - Diagnostic Flowchart

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TROUBLE CODE NO. 41 (VARIABLE RESISTANCE INDUCTION SYSTEM)

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CODE No.		41 (SOLENOID VALVE-VICS)	
STEP	INSPECTION		ACTION
1	Is there poor connection in solenoid valve circuit?	Yes	Repair or replace connector
		No	Go to next step
2	Disconnect connector from solenoid valve Is there continuity of solenoid valve between terminals?	Yes	Go to next step
		No	Replace solenoid valve
3	Is there battery voltage at solenoid valve terminal-wire (B/W)?	Yes	Go to next step
		No	Check for open circuit in wiring from main relay to solenoid valve terminal-wire (B/W)
4	Is there continuity between solenoid valve and ECU terminal 3J?	Yes	Check for short circuit in wiring from solenoid valve terminal-wire (Y/R) to ECU terminal 3J
		No	Check for open circuit in wiring from solenoid valve terminal-wire (Y/R) to ECU terminal 3J

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Fig. 24: Trouble Code No. 41 - Diagnostic Flowchart
Courtesy Of Mazda Motors Corp.

TROUBLE CODE NO. 65 (A/C INPUT SIGNAL)

CODE No.		65 (A/C-SIGNAL — EC-AT CU)	
STEP	INSPECTION		ACTION
1	Is there poor connection in A/C-signal circuit between ECU and EC-AT CU?	Yes	Repair or replace connector
		No	Go to next step
2	Is there continuity between ECU terminal 1K and EC-AT CU terminal L?	Yes	Go to next step
		No	Check for open circuit in wiring from EC-AT CU to ECU
3	Is EC-AT CU terminal L voltage OK?	Yes	Go to next step
		No	Check for cause
4	Is ECU terminal 1K voltage OK?	Yes	Replace ECU
		No	Check for short circuit in wiring from EC-AT CU to ECU

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Fig. 25: Trouble Code No. 65 - Diagnostic Flowchart
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SUMMARY

If no hard fault codes (or only pass codes) are present, driveability symptoms exist or intermittent codes exist, proceed to H - TESTS W/O CODES article for diagnosis by symptom (i.e., ROUGH

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IDLE, NO START, etc.) or intermittent diagnostic procedures.

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