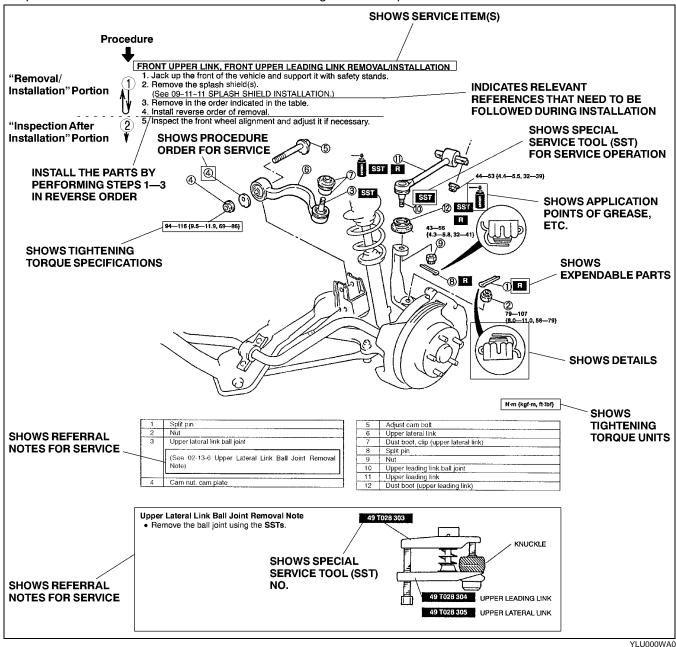
Repair procedure

- 1. Most repair operations begin with an overview illustration. It identifies the components, shows how the parts fit together, and describes visual part inspection. However, only removal/installation procedures that need to be performed methodically have written instructions.
- 2. Expendable parts, tightening torques, and symbols for oil, grease, and sealant are shown in the overview illustration. In addition, symbols indicating parts requiring the use of special service tools or equivalent are also shown.
- 3. Procedure steps are numbered and the part that is the main point of that procedure is shown in the illustration with the corresponding number. Occasionally, there are important points or additional information concerning a procedure. Refer to this information when servicing the related part.



Symbols

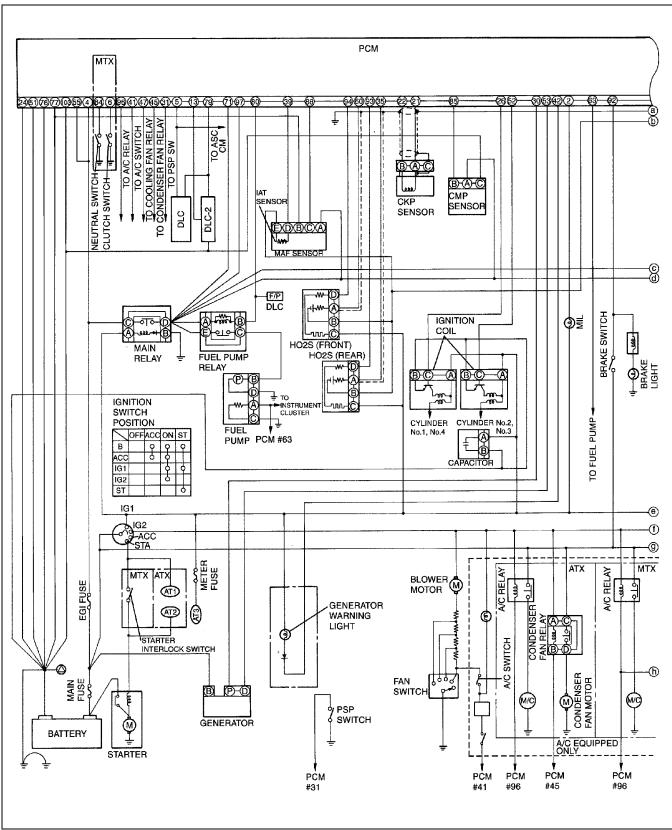
• There are eight symbols indicating oil, grease, fluids, sealant, ane the use of **SST** or equivalent. use. These symbols show application points or use of these materials during service.

Symbol	Meaning	Kind
51	Apply oil	New appropriate engine oil or gear oil

CONTROL SYSTEM WIRING DIAGRAM [ZM]

A3U010218881W15

01-02A



A3U0140W005

ON-BOARD DIAGNOSTIC [ENGINE CONTROL SYSTEM (ZM)]

DTC P0107 [ZM]

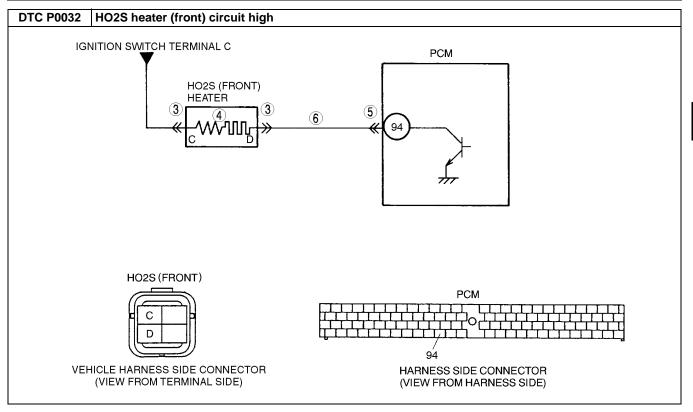
DTC P0107	BARO circuit low input		
DETECTION CONDITION	PCM monitors input voltage from EGR boost sensor when monitoring conditions are met. If input voltage at PCM terminal 34 is below 0.35 V, PCM determines that EGR boost sensor circuit is malfunctioning. MONITORING CONDITIONS — Intake air temperature is above 10 °C {50 °F}. — EGR boost sensor solenoid is turned OFF. (Barometric pressure is applied to EGR boost sensor.) Plagnostic support note.		
POSSIBLE CAUSE	 EGR boost sensor malfunction Connector or terminal malfunction Short to ground in wiring between EGR boost sensor terminal A and PCM terminal 34 Open circuit in wiring between EGR boost sensor terminal C and PCM terminal 90 PCM malfunction 		
	EGR BOOST SENSOR (4) (90) (5) (6) (91) (7) (91) (7) (91) (7) (91) (7) (7) (8) (91) (7) (91) (7) (7) (8) (91) (7) (8) (91) (7) (8) (8) (91) (8) (91) (8) (91) (91) (91) (91) (91) (91) (91) (91		
	EGR BOOST SENSOR PCM 34 A B C HARNESS SIDE CONNECTOR (VIEW FROM TERMINAL SIDE) HARNESS SIDE CONNECTOR (VIEW FROM HARNESS SIDE)		

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN		Go to next step.
	RECORDEDHas FREEZE FRAME DATA been recorded?	No	Record FREEZE FRAME DATA on repair order, then go to next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY • Check for related Service Bulletins availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to available repair information. • If vehicle is not repaired, then go to next step.
		No	Go to next step.
3	VERIFY SIGNAL CIRCUIT VOLTAGE WHEN		Go to next step.
	 EGR BOOST SENSOR CONNECTOR IS DISCONNECTED Disconnect EGR boost sensor connector. Turn ignition key to ON (Engine OFF). Measure voltage between EGR boost sensor connector terminal A (harness-side) and body GND. Is voltage above 4.9 V? 	No	Go to Step 5.

01-02A

ON-BOARD DIAGNOSTIC [ENGINE CONTROL SYSTEM (FS)]



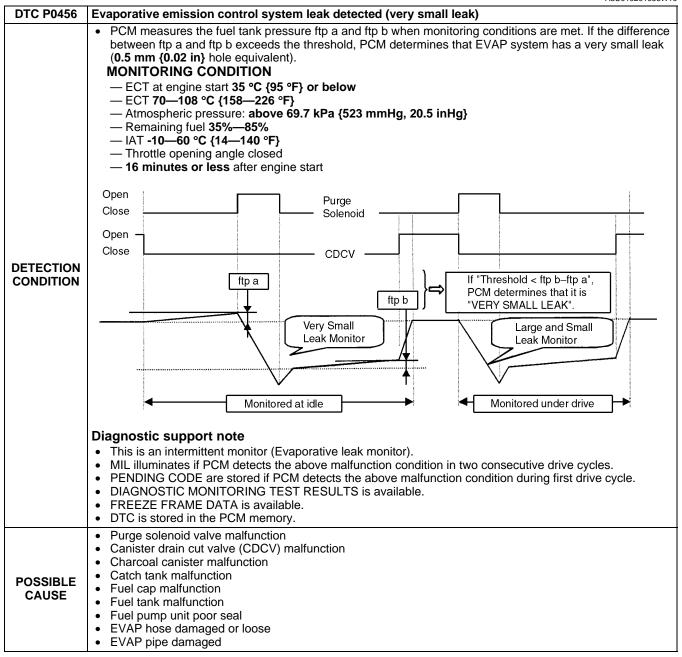
Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN	Yes	Go to next step.
	RECORDED	No	Record FREEZE FRAME DATA on repair order, then go to
	Has FREEZE FRAME DATA been recorded?		next step.
2	VERIFY RELATED REPAIR INFORMATION	Yes	Perform repair or diagnosis according to available repair
	AVAILABILITY Chaptefor related Somine Bulletine eveilebility		information. • If vehicle is not repaired, go to next step.
	Check for related Service Bulletins availability.Is any related repair information available?	No	Go to next step.
3	INSPECT HO2S (FRONT) TERMINALS	Yes	Repair or replace terminal, then go to Step 7.
3	Turn ignition key to OFF.	No	Go to next step.
	Disconnect HO2S (front) connector.	INO	Go to flext step.
	Check for bent terminals.		
	Is there malfunction?		
4	INSPECT HO2S HEATER (FRONT)	Yes	Go to next step.
	 Measure resistance between HO2S (front) terminals C and D (part-side). 	No	Replace the HO2S (front), then go to Step 7.
	Is resistance approx. 5.6 ohms?		
5	INSPECT PCM TERMINAL	Yes	Repair terminal, then go to Step 7.
	 Disconnect PCM connector. 	No	Go to next step.
	Check for bent terminal at terminal 94. In the case greatform of the content of the conten		·
	Is there malfunction? Solution	V	Description and the second of
6	INSPECT HO2S (FRONT) HEATER CONTROL CIRCUIT FOR SHORT TO POWER CIRCUIT	Yes	Repair or replace harness for short to power circuit, then go to next step.
	Turn ignition key to ON (Engine OFF).	No	Go to next step.
	Measure voltage between HO2S (front)	110	GO to flext step.
	terminal D (vehicle harness-side) and body		
	ground. • Is voltage B+ ?		
7	VERIFY TROUBLESHOOTING OF DTC P0032	Yes	Replace PCM, then go to next step.
′	COMPLETED	No	Go to next step.
	Make sure to reconnect all disconnected	INU	Ου το πελί διεμ.
	connectors.		
	Clear DTC from PCM memory using WDS or		
	equivalent.Start engine and warm it up completely.		
	 Is PENDING CODE of same DTC present? 		
		l	04 02D 24

01-02B

ON-BOARD DIAGNOSTIC [ENGINE CONTROL SYSTEM (FS)]

DTC P0456 [FS]



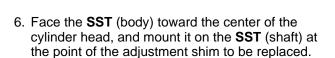
Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED • Has FREEZE FRAME PID DATA been recorded?		Go to next step.
			Record FREEZE FRAME PID DATA on repair order, then go to next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY • Check for related Service Bulletins and/or on-		Perform repair or diagnosis according to available repair information. • If vehicle is not repaired, go to next step.
	line repair information availability.Is any related repair information available?	No	Go to next step.
3	VERIFY RELATED PENDING CODE OR		Go to appropriate DTC inspection.
	 STORED DTC Turn ignition key to OFF then ON (Engine OFF). Verify related pending code or stored DTC. Is other DTC present? 	No	Go to next step.

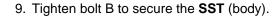
01-10A

Tightening torque 11.3—14.2 N·m {115—145 kgf·cm, 100—125 in-lbf}

- 4. Align the marks on the **SSTs** (shaft and shaft clamp).
- 5. Tighten bolts A to secure the **SST** (shaft).

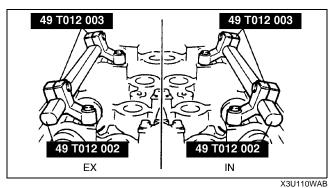


- 7. Face the notch of the tappet so that a fine screwdriver can be inserted.
- 8. Set the **SST** on the tappet by its notch.

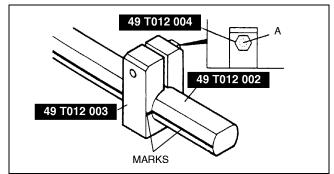


Caution

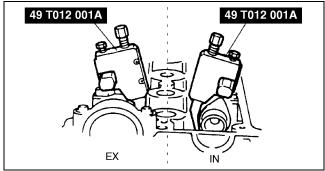
- Cylinder head can be damaged when the tappet is pressed down.
- 10. Tighten bolt C, and press down the tappet.



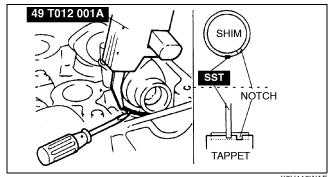




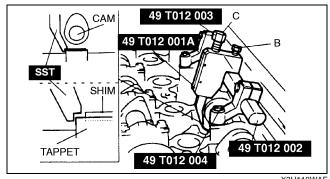
X3U110WAC



X3U110WAD



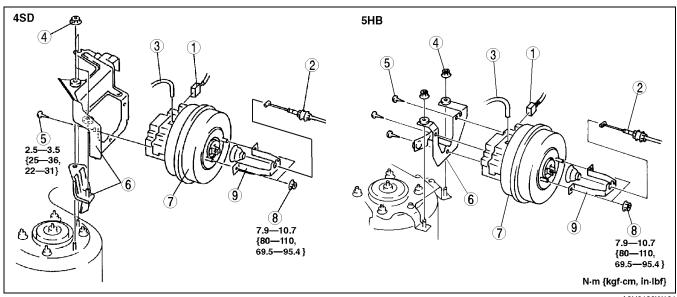
X3U110WAE



X3U110WAF

CRUISE ACTUATOR REMOVAL/INSTALLATION

- 1. Disconnect the negative battery cable.
- 2. Remove in the order indicated in the table.
- 3. Install in the reverse order of removal.



A3U0120W101

A3U012066310W02

A3U012066310W01

Ī	1	Cruise actuator connector
	2	Actuator cable (See 01–20–5 ACTUATOR CABLE REMOVAL) (See 01–20–5 ACTUATOR CABLE INSTALLATION)
	3	Vacuum hose

4	Nut
5	Screw
6	Bracket
7	Cruise actuator
8	Nut
9	Bracket

CRUISE ACTUATOR INSPECTION

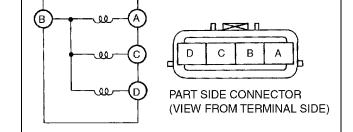
- 1. Disconnect the negative battery cable.
- 2. Disconnect the cruise actuator connector.
- 3. Measure the resistance between the cruise actuator terminals using an ohmmeter.

○₩○ : Resistance

Ston		Term	ninal	
Step	Α	В	С	D
1	OW			R ₁
2		<u></u>		R ₂
3		0		—○ R ₃

 R_1 : Approx. 55 ohms R_2 : Approx. 21 ohms R_3 : Approx. 55 ohms

Z3U0120W003



Y3U120WA2

- 4. Disconnect the actuator cable from the accelerator pedal.
- 5. Allow the engine to idle.
- 6. Connect B+ and a ground to the terminals as shown and confirm the operation of the actuator cable.
 - If not as specified, replace the cruise actuator.

Step	Te	erminal c	Operation of		
Step	Α	В	С	D	actuator cable
1	1 Ground B+ Ground		Ground	Pull	
2	Ground	Ground B+		Ground	Hold
3	3 — B+		_	Ground	Extend
4		1	_	1	Released

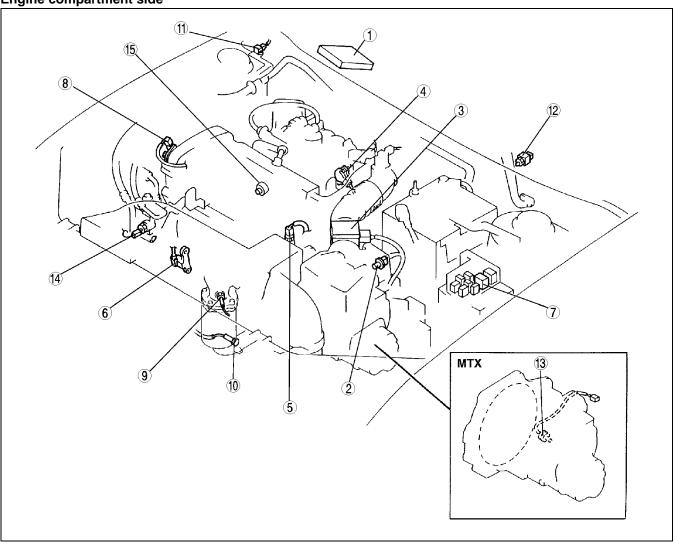
CONTROL SYSTEM [ZM]

Terminal	Signal	Connected to	Test condition	Voltage (V)	Action
67	Purge control	Purge solenoid valve	Inspect using the wave profile. (See 01–40A–21 Inspection Usir Oscilloscope (Reference))	(See 01–40A–21 Inspection Using An	
68	EGR valve #1 coil control	EGR valve (terminal E)	Ignition switch ON Idle	Below 1.0 Below 1.0	Inspect EGR valve (See 01–16–15 EGR VALVE INSPECTION) Inspect related harness
69	_	_	_	_	_
70	_	_	_	_	_
71	Power supply	Main relay	Ignition switch ON Ignition switch off	B+ Below 1.0	Inspect main relay (See 09–21–5 RELAY INSPECTION) Inspect EGI fuse Inspect related harness
72	EGR valve #2 coil control	EGR valve (terminal A)	Ignition switch ON Idle	B+ B+	Inspect EGR valve (See 01–16–15 EGR VALVE INSPECTION) Inspect related harness
73	_	_	_	_	_
74	Fuel injection (#3)	Fuel injector No.3	Inspect using the wave profile. (See 01–40A–21 Inspection Usir Oscilloscope (Reference))	ng An	Inspect fuel injector No.3 (See 01–14–24 FUEL INJECTOR INSPECTION) Inspect related harness
75	Fuel injection (#1)	Fuel injector No.1	Inspect using the wave profile. (See 01–40A–21 Inspection Usir Oscilloscope (Reference))	(See 01–40A–21 Inspection Using An	
76	GND	GND	Under any condition	Below 1.0	Inspect related harness
77	GND	GND	Under any condition	Below 1.0	Inspect related harness
78	_	_	<u> </u>	_	_
79	K-LINE (serial communication)	DLC terminal KLN	Because this terminal is for serial communication, good/no good judgr terminal voltage is not possible.	nent by	Inspect related harness
80	Fuel pump control	Fuel pump relay	Ignition switch ON Cranking Idle	B+ Below 1.0 Below 1.0	Inspect fuel pump relay (See 09–21–5 RELAY INSPECTION) Inspect related harness
81* ¹	Pressure control solenoid (–) control	Pressure control solenoid	Inspect using the wave profile. (See 01–40A–21 Inspection Usir Oscilloscope (Reference))	ng An	Inspect pressure control solenoid (See 05–17–28 SOLENOID VALVES INSPECTION) Inspect related harness

CONTROL SYSTEM COMPONENT LOCATION INDEX [FS]

Engine compartment side

A3U014018881W01



Z3U0140W101

	1	PCM (See 01–40B–7 PCM REMOVAL/INSTALLATION [FS].) (See 01–40B–7 PCM INSPECTION [FS])
	2	Intake air temperature (IAT) sensor (See 01–40B–27 INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [FS])
	3	Mass air flow (MAF) sensor (See 01–40B–28 MASS AIR FLOW (MAF) SENSOR INSPECTION [FS])
	4	Throttle position (TP) sensor (See 01–40B–29 THROTTLE POSITION (TP) SENSOR INSPECTION [FS])
= = = = = = = = = = = = = = = = = = = =	5	Engine coolant temperature (ECT) sensor (See 01–40B–30 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/ INSTALLATION [FS]) (See 01–40B–31 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [FS])
-	6	Crankshaft position (CKP) sensor (See 01–40B–32 CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [FS]) (See 01–40B–34 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [FS])

7	Main relay (See 09–21–5 RELAY INSPECTION)
8	Camshaft position (CMP) sensor (See 01–40B–34 CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [FS]) (See 01–40B–35 CAMSHAFT POSITION (CMP) SENSOR INSPECTION [FS])
9	Heated oxygen sensor (front) (See 01–40B–37 HEATED OXYGEN SENSOR (HO2S) INSPECTION [FS])
10	Heated oxygen sensor (rear) (See 01–40B–37 HEATED OXYGEN SENSOR (HO2S) INSPECTION [FS])
11	EGR boost sensor (See 01–40B–39 EGR BOOST SENSOR INSPECTION [FS])
12	Clutch switch (See 01–40B–42 CLUTCH SWITCH INSPECTION [FS])
13	Neutral switch (See 01–40B–43 NEUTRAL SWITCH INSPECTION [FS])
14	Power steering pressure (PSP) switch (See 01–40B–44 POWER STEERING PRESSURE (PSP) SWITCH INSPECTION [FS])

CONTROL SYSTEM [FS]

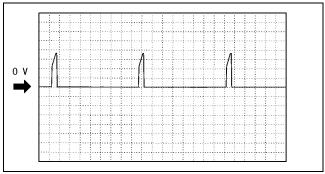
Inspection Using An Oscilloscope (Reference) Ne signal

- PCM terminal: 21(+)-22(-)
- Oscilloscope setting: 2 V/DIV(Y), 2 ms/DIV(X), DC range
- Vehicle condition: idle after warm up



IGT signal

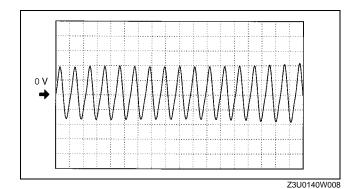
- PCM terminal:
 - IGT1: 26(+)-103(-)IGT2: 52(+)-103(-)
- Oscilloscope setting: 1 V/DIV(Y), 10ms/DIV(X), DC range
- · Vehicle condition: idle after warm up



Z3U0140W007

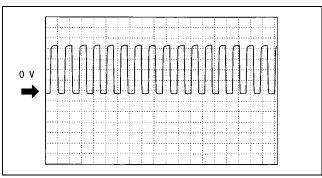
Input/turbine speed signal

- PCM terminal: 84(+)-23(-)
- Oscilloscope setting: 0.4 V/DIV(Y), 2.5 ms/ DIV(X), DC range
- · Vehicle condition: idle after warm up



Generator output voltage signal

- PCM terminal: 30(+)-103(-)
- Oscilloscope setting: 2 V/DIV(Y), 5 ms/DIV(X), DC range
- Vehicle condition: idle after warm up

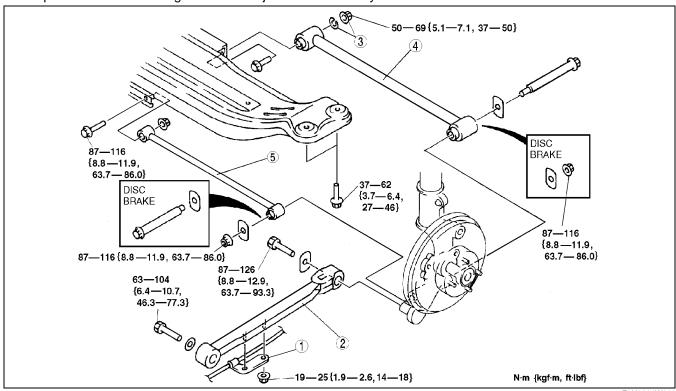


Z3U0140W009

02-14

Caution

- Performing the following procedures without first removing the ABS wheel-speed sensor may possibly cause an open circuit in the harness if it is pulled by mistake. Before performing the following procedures, remove the ABS wheel-speed sensor (axle side) and fix it to an appropriate place where the sensor will not be pulled by mistake while servicing the vehicle.
- 1. Remove in the order indicated in the table.
- 2. Install in the reverse order of removal.
- 3. Inspect the rear wheel alignment and adjust it as necessary.



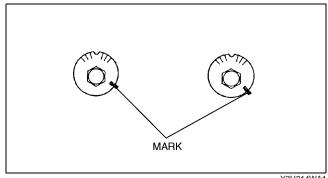
Z3U021	4W006

ĺ	1	Parking brake cable bracket				
ĺ	2	Trailing link				
		Nut, cam plate and adjusting cam bolt (See 02–14–5 Nut, Cam Plate and Adjusting Cam Bolt Removal Note) (See 02–14–6 Nut, Cam Plate, and Adjusting Cam Bolt Installation Note)				

C Creat leteral link	4	Rear lateral link
(See 02–14–6 Front Lateral Link Removal Note)		Front lateral link (See 02–14–6 Front Lateral Link Removal Note)

Nut, Cam Plate and Adjusting Cam Bolt Removal Note

1. Before loosening the nut, make a mark on the cam plate and the crossmember for reference during installation.



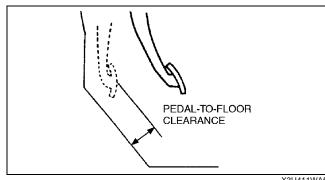
Y3U214WA1

Pedal-to-floor Clearance Inspection

- 1. Start the engine and depress the brake pedal with a force of 588 N {60 kgf, 132 lbf}
- 2. Verify that the distance from the floor panel to the pedal pad center is as specified when the pedal is depressed.
 - If the distance is less than specified, check for the air in brake system.

Specification

ZM: 88 mm {3.5 in} min. FS: 84 mm {3.3 in} min.



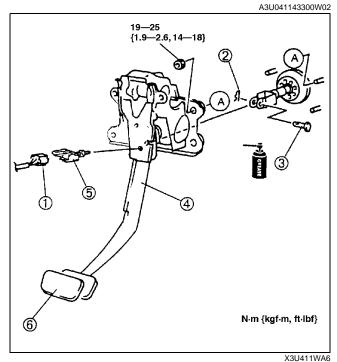
X3U411WA5

BRAKE PEDAL REMOVAL/INSTALLATION

1. Remove in the order indicated in the table.

1	Brake switch connector
2	Spring pin
3	Clevis pin
4	Brake pedal
5	Brake switch
6	Pedal pad

2. Install in the reverse order of removal.



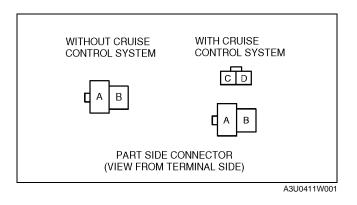
A3U041166490W01

BRAKE SWITCH INSPECTION

- 1. Disconnect the brake switch connector.
- 2. Inspect for continuity between the terminals of the brake switch connector using the ohmmeter.
 - If not as specified, replace the brake switch.

O—──○ : Continui				
Condition	Terminal			
Condition	Α	В	С	D
Brake pedal is depressed	0-	0		
Brake pedal is not depressed			<u> </u>	0

Y3U411WA8

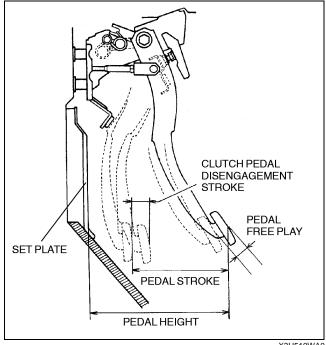


CLUTCH

Clutch Pedal Free Play Inspection

- 1. Depress the clutch pedal by hand until clutch resistance is felt, and measure the pedal free
 - If not as specified, adjust the clutch pedal free play.

Free play 0.7—3.5 mm {0.03—0.13 in} **Total free play** 5.6—15.0 mm {0.23—0.59 in}



X3U510WA0

A3U051041030W02

CLUTCH PEDAL ADJUSTMENT

Clutch Pedal Height Adjustment

1. Adjust the pedal height by turning locknut A and adjustment bolt B.

Pedal height

210—215 mm {8.27—8.46 in} [from set plate]

Clutch Pedal Free Play Adjustment

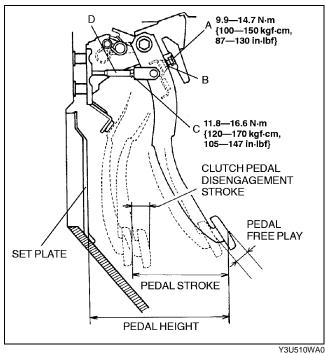
1. Adjust the pedal free play by turning locknut C and adjusting push rod D.

Pedal free play 0.7—3.5 mm {0.03—0.13 in}

Clutch Pedal Disengagement Stroke

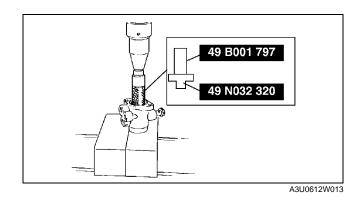
- 1. Measure the clutch pedal disengagement stroke.
 - If the clutch pedal disengagement stroke is not within the specification, adjust the pedal height and pedal free play, and verify the pedal stroke.

Clutch pedal disengagement stroke 45—55 mm {1.8—2.1 in} (reference value) Pedal stroke 130-140 mm {5.12-5.51 in} (reference value)



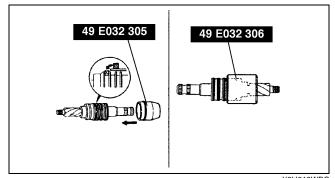
Upper Bearing Assembly Note

- 1. Apply grease to a new upper bearing.
- 2. Press in the new oil seal using the **SSTs**.



Seal Ring Assembly Note

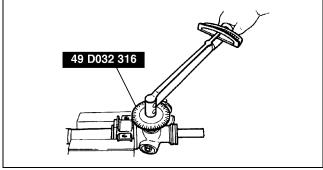
- 1. Install a new seal ring to the valve part of the pinion shaft using the SST.
- 2. After installing it, seat it properly using the SST.
- 3. Install the snap ring.



X3U612WBC

Adjusting Cover Assembly Note

- 1. Set the rack to the center position.
- 2. Tighten the adjusting cover to 20 N-m {2.0 kgf-m, 14 ft-lbf} 3 times, then return it 42° using the
- 3. Apply sealant to the threads of the locknut.
- 4. Attach the locknut.

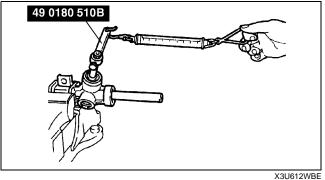


X3U612WBD

- 5. Measure the pinion torque using the SST and a pull scale.
 - If not as specified, repeat Step 2 through 5.

Standard

Center of rack ±90° 0.8—1.1 N·m {8—11 kgf-cm, 7-9 in-lbf} [Pull scale reading 8-11 N {0.8—1.1 kgf, 1.7—2.4 lbf}]

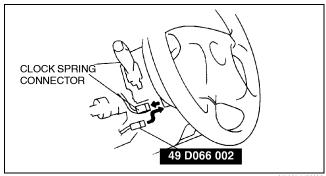


06–12

AIR BAG SYSTEM

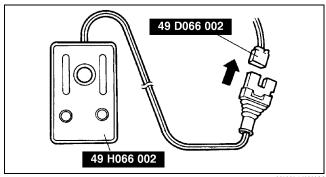
Driver-side air bag module

- 1. Remove the column cover.
- 2. Disconnect the clock spring connector.
- 3. Connect the **SST** (Adapter harness) to the clock spring as shown in the figure.

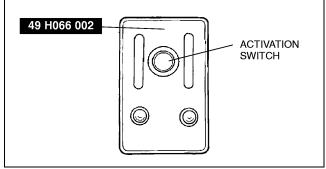


X3U810WAL

- Connect the SST (Deployment tool) to the SST (Adapter harness).
- 5. Connect the red clip of the **SST** (Deployment tool) to the positive battery terminal and the black clip to the negative battery terminal.
- Verify that the red light on the SST (Deployment tool) is illuminated.
- 7. Make sure all persons are standing at least 6 m {20 ft} away from the vehicle.
- 8. Press the activation switch on the **SST** (Deployment tool) to deploy the driver-side air bag module.



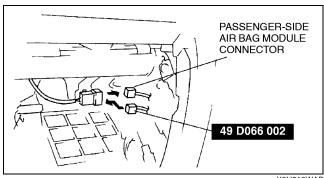
X3U810WAM



X3U810WAN

Passenger-side air bag module

- 1. Remove the glove compartment.
- 2. Disconnect the passenger-side air bag module connector.
- 3. Connect the **SST** (Adapter harness) to the passenger-side air bag module as shown in the figure.



X3U810WAP