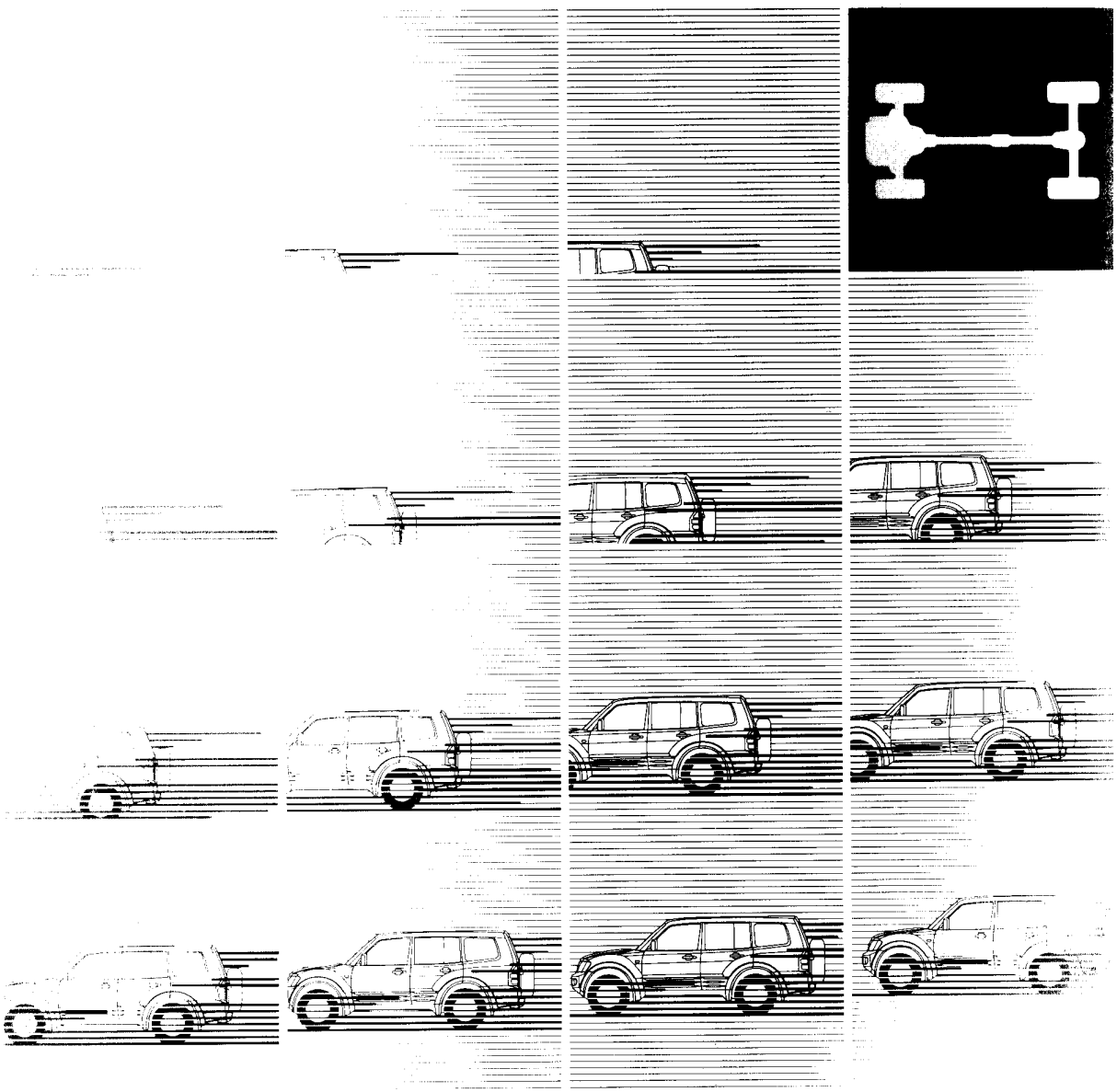
MITSUBISHI MOTORS

Workshop Manual

chassis Volume 1

PAJERO 2001



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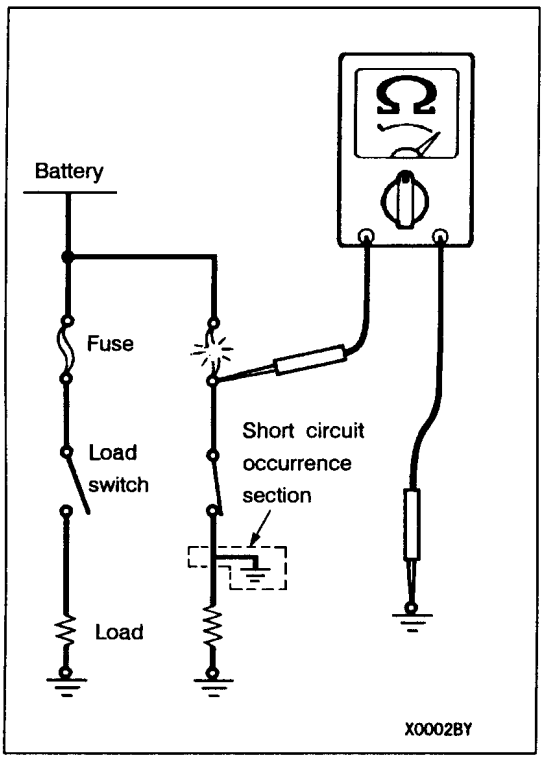
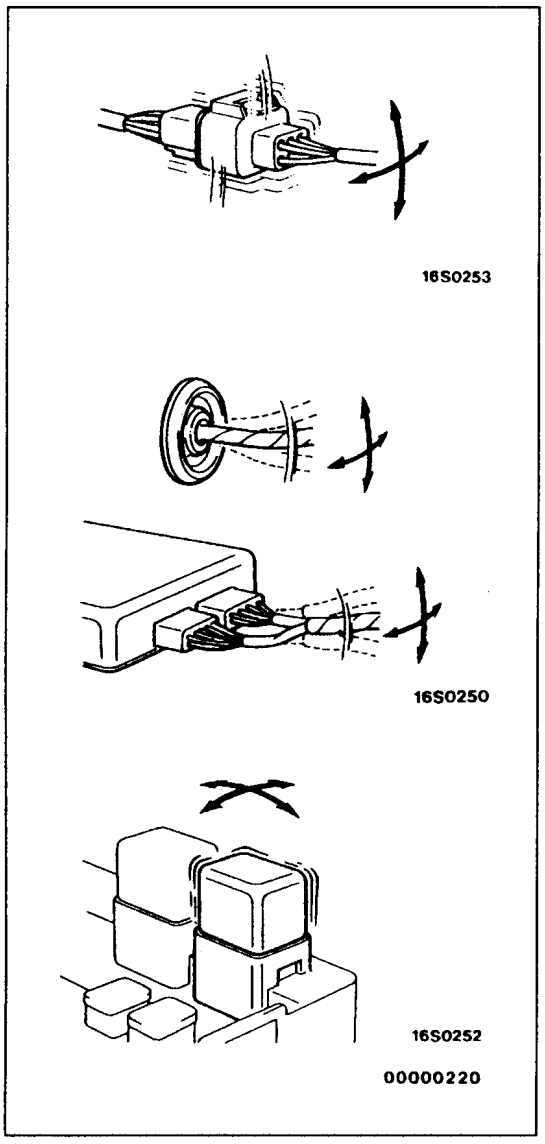


INSPECTION SERVICE POINTS FOR A BLOWN FUSE

Remove the blown fuse and measure the resistance between the load side of the blown fuse and the earth. Set the switches of all circuits which are connected to this fuse to a condition of continuity. If the resistance is almost 0 Ω at this time, there is a short somewhere between these switches and the load. If the resistance is not 0 Ω, there is no short at the present time, but a momentary short has probably caused the fuse to blow.

The main causes of a short circuit are the following.
- Harness being clamped by the vehicle body
- Damage to the outer casing of the harness due to wear or heat
- Water getting into the connector or circuitry
- Human error (mistakenly shorting a circuit, etc.)



POINTS TO NOTE FOR INTERMITTENT MALFUNCTIONS

Intermittent malfunctions often occur under certain conditions, and if these conditions can be ascertained, determining the cause becomes simple. In order to ascertain the conditions under which an intermittent malfunction occurs, first ask the customer for details about the driving conditions, weather conditions, frequency of occurrence and trouble symptoms, and then try to recreate the trouble symptoms. Next, ascertain whether the reason why the trouble symptom occurred under these conditions is due to vibration, temperature or some other factor. If vibration is thought to be the cause, carry out the following checks with the connectors and components to confirm whether the trouble symptom occurs.
The objects to be checked are connectors and components which are indicated by inspection procedures or given as probable causes (which generates diagnosis codes or trouble symptoms.)
- Gently shake the connector up, down and to the left and right.
- Gently shake the wiring harness up, down and to the left and right.
- Gently rock each sensor and relay, etc. by hand.
- Gently shake the wiring harness at suspensions and other moving parts.

NOTE
If determining the cause is difficult, the flight recorder function of the MUT-II can also be used.

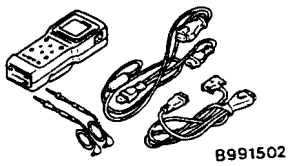
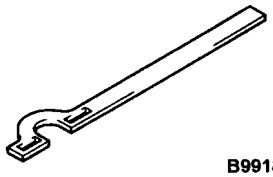
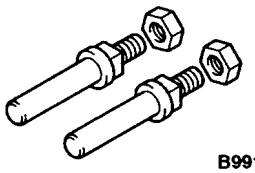
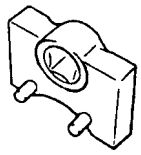
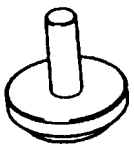
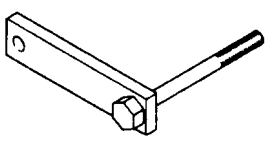
Items			V75W	
			LNXCL6, LNXCR6	LYXCL6, LYXCR6
Vehicle dimensions mm	Overall length	1	4,795	
	Overall width	2	1,875	
	Overall height (unladen)	3	1,855,1,885*1	
	Wheelbase	4	2,780	
	Track-front	5	1,560	
	Track-rear	6	1,560	
	Overhang-front	7	710	
	Overhang-rear	8	1,285*2, 1,305*3	
	Ground clearance (unladen)	9	235	
	Angle of approach degree	10	42°	
	Angle of departure degree)	11	24°	
Vehicle weight kg	Kerb weight		2,095	
	Max. gross vehicle weight		2,760	
	Max. axle weight rating-front		1,110	
	Max. axle weight rating-rear		1,650	
Seating capacity			7	
Engine	Model No.		6G74GDI	
	Total displacement mℓ		3,496	
Transmis-sion	Model No.		V5M31	V5A51
	Type		5-speed manual	5-speed automatic
Fuel system	Fuel supply system		GDI	

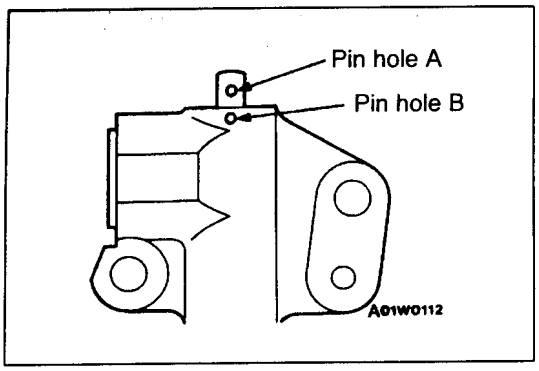
NOTE:
*1: Vehicles with roof rails
*2: Vehicles with 235/80R16 Tyre
*3: Vehicles with 265/70R16 Tyre

SEALANT

Items	Specified sealants	Remarks
Oil pan	MITSUBISHI GENUINE PART MD970389 or equivalent	Semi-drying sealant

SPECIAL TOOLS

Tool	Number	Name	Use
 B991502	MB991502	MUT-II sub assembly	• Checking the ignition timing • Checking the idle speed • Erasing diagnosis code
 B991800	MB991800	Pulley holder	Supporting of crankshaft pulley
 B991802	MB991802	Pin B	
	MD998769	Crankshaft pulley spacer	Operating the crankshaft when installing the timing belt
	MD998767	Tension pulley socket wrench	Timing belt tension adjustment
	MD998718	Crankshaft rear oil seal installer	Press-fitting the crankshaft rear oil seal
	MD998781	Flywheel stopper	Securing the flywheel



4. Slowly compress the push rod of the auto-tensioner until pin hole A in the push rod is aligned with pin hole B in the cylinder.

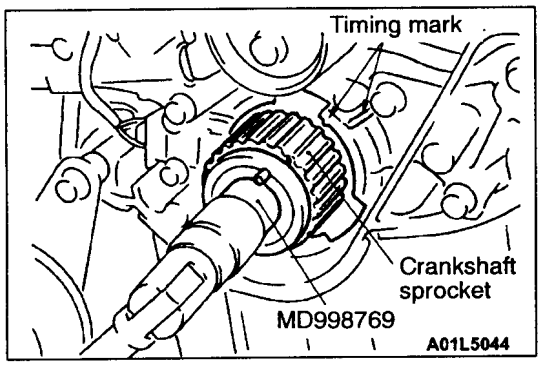
   Caution
   Never compress the push rod too fast, or the push rod may be damaged.

5. Insert the setting pin into the pin holes once they are aligned.

   NOTE
   If replacing the auto-tensioner, the pin will already be inserted into the pin holes of the new part.

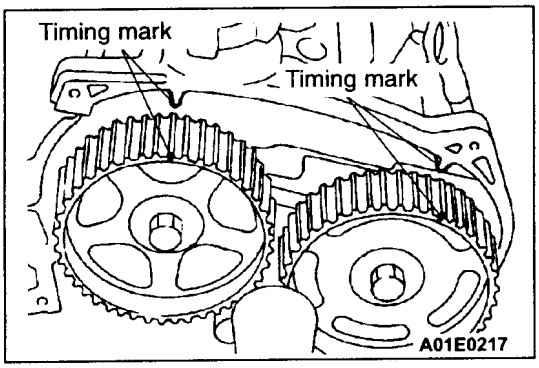
6. Install the auto-tensioner to the engine.

   Caution
   Do not remove the setting pin from the auto-tensioner.

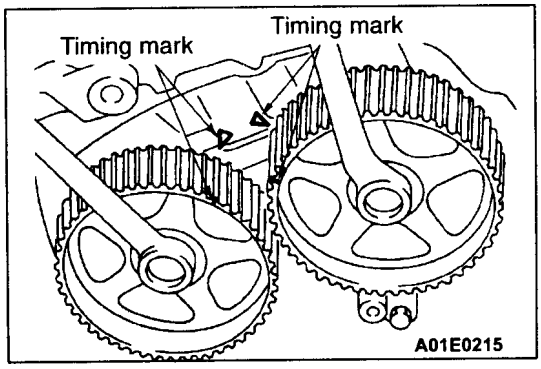


▶B◀ TIMING BELT INSTALLATION

1. Use special tool to align the timing marks on the crankshaft sprocket.



2. Align the timing marks on the right bank side crankshaft sprocket.



3. Align the timing marks on the left bank side crankshaft sprocket, and then hold the sprocket with a wrench as shown.

   Caution
   (1) The left bank side camshaft sprockets will turn readily because of the spring force being applied, so be careful not to get your fingers caught.

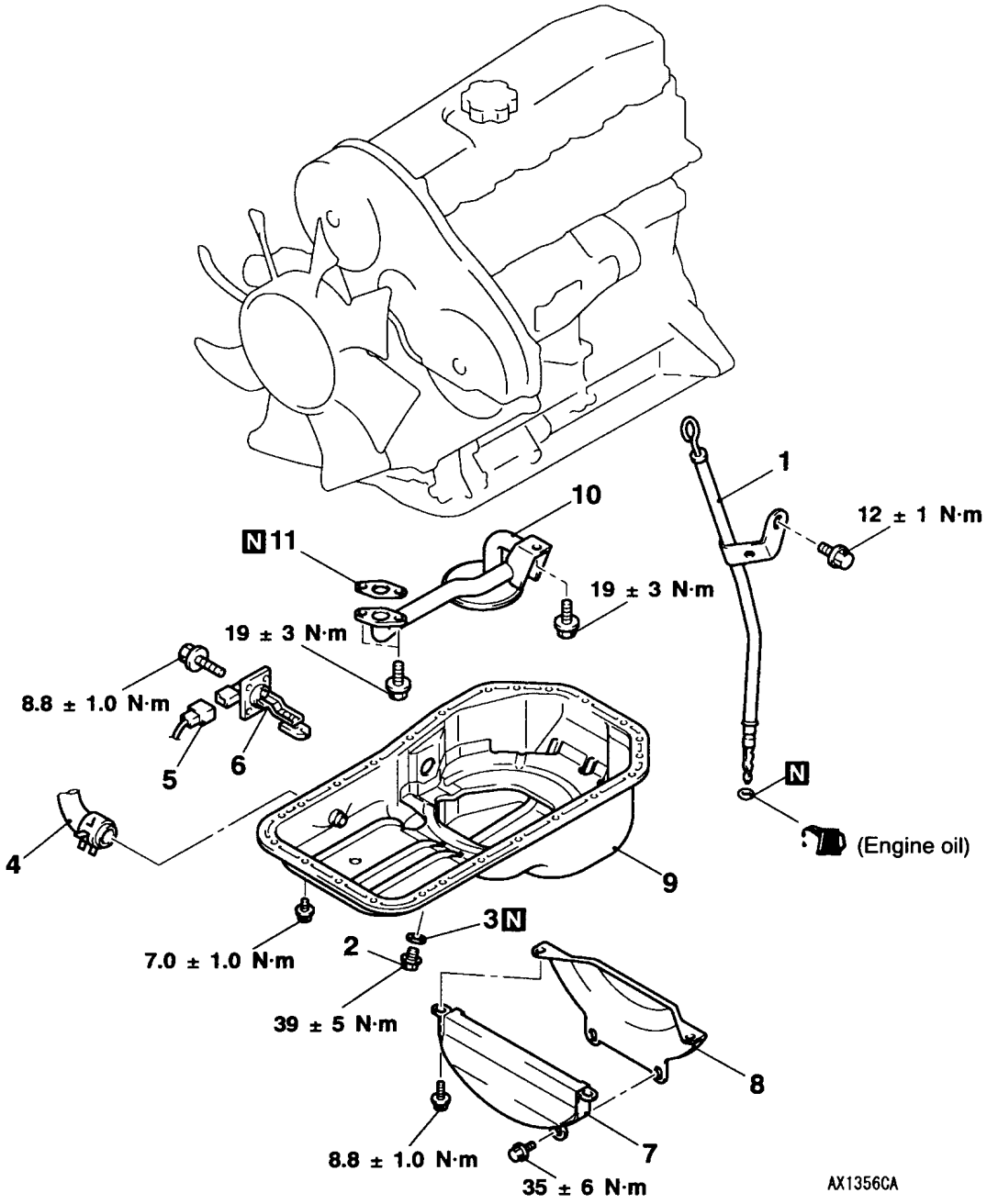
GENERAL INFORMATION

Items			4D56
Total displacement mL			2,477
Bore x Stroke mm			91.1 x 95.0
Compression ratio			21
Combustion chamber			Vortex chamber type
Camshaft arrangement			SOHC
Number of valve	Intake		4
	Exhaust		4
Valve timing	Intake	Opening	BTDC 20°
	Exhaust	Closing	ABDC 49°
	Intake	Opening	BBDC 55°
	Exhaust	Closing	ATDC 22°
Fuel system			Distribution type injection pump
Rocker arm			Roller type
Adjusting screw			Elephant foot type

OIL PAN AND OIL SCREEN

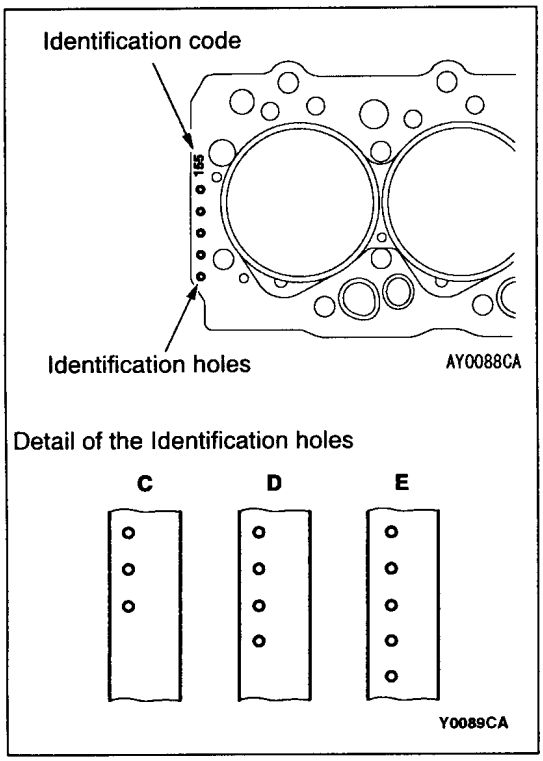
REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation
- Skid Plate and Under Cover Removal and Installation
- Engine Oil Draining and Supplying (Refer to GROUP 12 – On-vehicle Service.)
- Differential Gear Oil Draining and Supplying (Refer to GROUP 26 – On-vehicle Service.)
- Front Differential and No.2 Crossmember Assembly Removal and Installation (Refer to GROUP 11A – Oil Pan and Oil Screen.)



Removal steps

1. Engine oil level gauge and guide assembly
2. Drain plug
▶B◀ 3. Drain plug gasket
4. Alternator vacuum pump oil return hose connection
5. Oil level sensor connector
6. Oil level sensor
7. Space rubber
8. Bell housing cover
◀A▶ ▶A◀ 9. Oil pan
10. Oil screen
11. Oil screen gasket



INSTALLATION SERVICE POINTS

▶A◀ CYLINDER HEAD GASKET INSTALLATION

To replace the cylinder head gasket only, select a gasket of correct specification according to the table below.

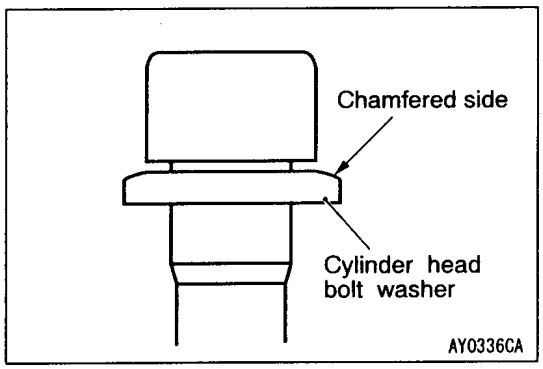
Identification holes specification	Identification code specification	Part number
C (Thickness after tightening the bolts 1.45 mm)	145	MD302891
D (Thickness after tightening the bolts 1.50 mm)	150	MD302892
E (Thickness after tightening the bolts 1.55 mm)	155	MD302893

Caution
The thickness of the original cylinder head gasket is selected according to the protrusion amount of the piston. Therefore, if the piston or the connecting rod is replaced, the protrusion amount may be changed. Always select a correct gasket by measuring the protrusion amount. (For details, refer to the Engine Workshop Manual.)

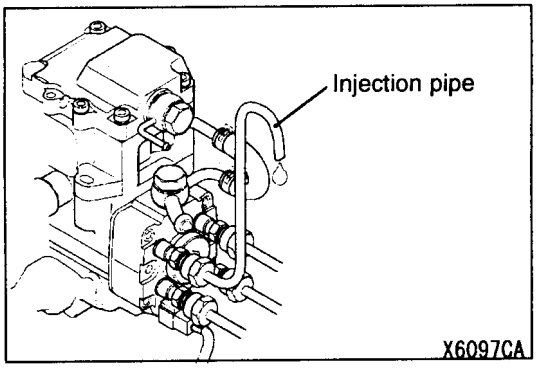
▶B◀ CYLINDER HEAD INSTALLATION

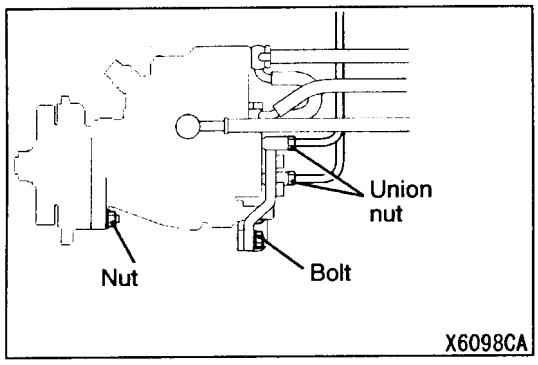
1. Select a cylinder head gasket of correct specification.
2. Clean the cylinder head assembly and the cylinder block mating surfaces with a scraper or a wire brush.

   Caution
   Do not allow foreign material to enter the engine coolant or oil passages and the cylinder.



3. Install the cylinder head bolt washer to the cylinder head bolt so that the washer chamfered side faces as shown.





12. If the fuel flow through the injection pipe decreases, turn the engine more slowly. Then stop turning the engine when the fuel flow stops completely. Check the fuel injection timing during this condition.

    Standard value: 4° BTDC
13. If not at the standard value, adjust by the following procedure.
    (1) Loose the fuel injection pipe union nut, the injection pump securing bolt and nut in that order.

    Caution
    a. When the union nut is loosened, use a open end wrench to prevent the delivery valve holder from rotating with it.
    b. Do not remove the bolt and nut at this time.
    (2) Tile the injection pump housing to the left or the right to adjust.
    (3) Tile the injection pump mounting nut and bolt temporarily.
    (4) Repeat steps 9 – 12 to check that the injection timing is correct.
    (5) Tile the injection pump mounting nut and bolt securely.
    (6) Loose the fuel injection pipe union nut securely.

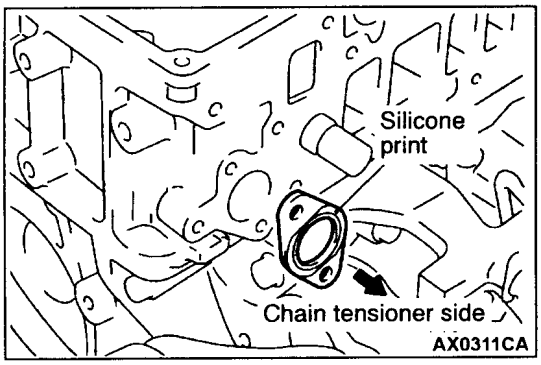
    Caution
    Hold the delivery pipe holder with a open end wrench when tightening the union nut.
14. Remove the special tool.
15. Install the delivery valve (with CPV) and the new gasket.
16. Install the glow plugs.

▶B◀ CAMSHAFT SPROCKET INSTALLATION

1. Install the camshaft sprockets to the camshafts with the timing chain still attached.
2. Hold the hexagonal part of the camshaft with an open end wrench in the same manner as removal.
3. Apply a small amount of engine oil to the camshaft sprocket bolt thread and the flange, and then tighten to the specified torque.

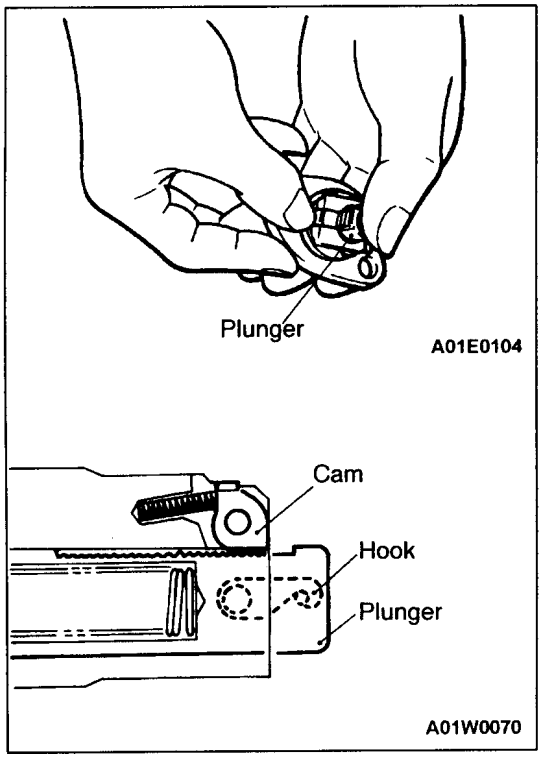
   Tightening torque: 88 ± 8 N·m

   Caution
   (1) Use the timing chain to prevent the camshaft from turning.
   (2) The camshaft sprocket bolt is left threaded, so the arrow indicating its tightening direction is marked on the bolt head.



▶C◀ CHAIN TENSIONER GASKET INSTALLATION

Place the chain tensioner gasket with its silicone print facing toward the chain tensioner side.



▶D◀ CHAIN TENSIONER INSTALLATION

1. Bend up the tab as shown to push in the plunger, and lock it with the hook.
2. Install the chain tensioner to the cylinder head.

   Caution
   To install the chain tensioner, always push in the plunger. If you fail to do this, the timing chain will be excessively tensioned, causing damage.

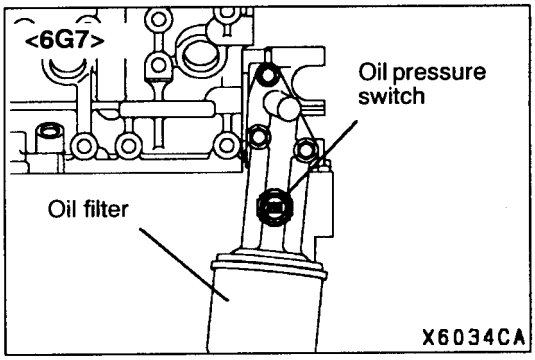
3. Turn the crankshaft clockwise.

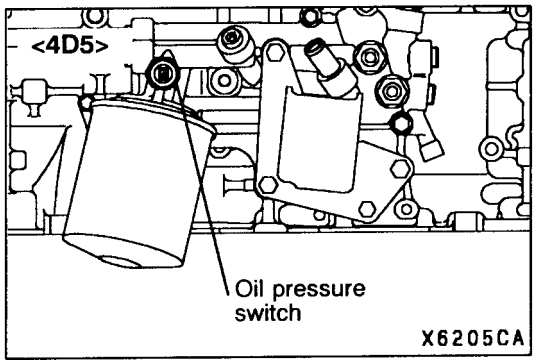
   Caution
   If the crankshaft is turned anticlockwise after the chain tensioner is installed, the plunger will be excessively tensioned, causing the plunger to go beyond the cam inside the chain tensioner.

   NOTE
   If the crankshaft is turned clockwise after the chain tensioner is installed, the plunger is automatically unhooked. Then its internal ratchet mechanism adjusts the timing chain tension.

10. Race the engine 2-3 times, and check to be sure that no engine oil leaks from installation section of the oil filter.

Number	Tool	Tightening torque
MD352626	MB991610 or equivalent tool	Approx. 3/4 turn (14±2 N·m)
ME013307	MH061590 or equivalent tool	Approx. 3/4 turn (20±2 N·m)
MD069782	MH061590 or equivalent tool	Approx. 5/8 turn (20±2 N·m)

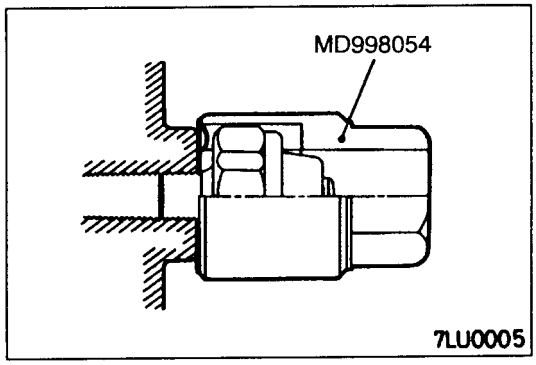




OIL PRESSURE CHECK

<6G7, 4D5>

1. Check engine oil quantity.
2. Remove the oil pressure switch terminal.



3. Use the special tool (oil pressure switch wrench) to remove the oil pressure switch.

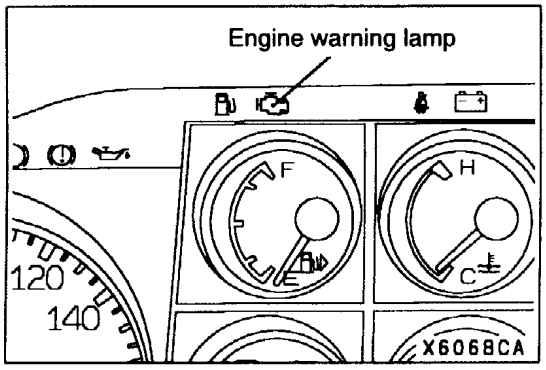
Caution
Since sealant is applied to the thread of oil pressure switch, take care not to damage the oil pressure switch when removing it.

TROUBLESHOOTING <M/T>

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points.

NOTE
When replacing the engine-ECU, replace immobilizer-ECU and ignition key as well at the same time.



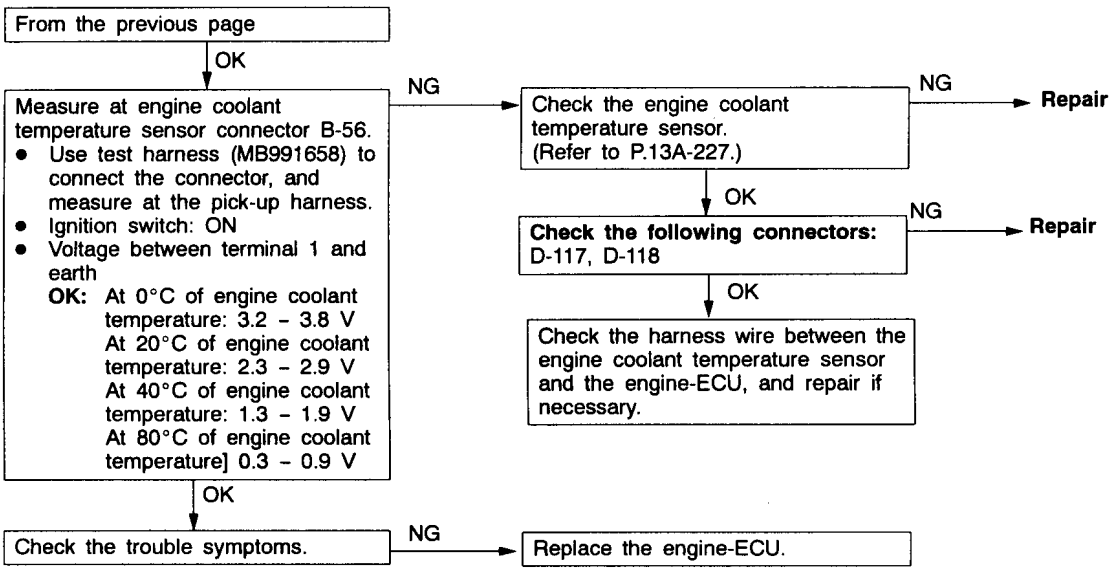
DIAGNOSIS FUNCTION

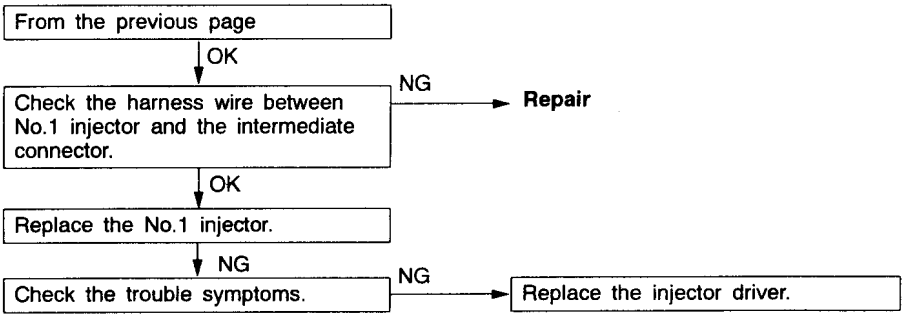
ENGINE WARNING LAMP (CHECK ENGINE LAMP)

If an abnormality occurs in any of the following items related to the GDI system, the engine warning lamp will illuminate or flash.
If the lamp remains illuminated or if the lamp illuminates while the engine is running, check the diagnosis code output.

Engine warning lamp inspection items

Code No.	Diagnosis item
–	Engine-ECU
P0100	Air flow sensor system
P0105	Barometric pressure sensor system
P0110	Intake air temperature sensor system
P0115	Engine coolant temperature sensor system
P0120★	Throttle position sensor (1st channel) system
P0125	Feedback system
P0130	Oxygen sensor (front) system <sensor 1>
P0135	Oxygen sensor heater (front) system <sensor 1>
P0136	Oxygen sensor (rear) system <sensor 2>
P0141	Oxygen sensor heater (rear) system <sensor 2>
P0170	Abnormal fuel system
P0190★	Abnormal fuel pressure
P0201	No.1 injector system
P0202	No.2 injector system
P0203	No.3 injector system
P0204	No.4 injector system
P0205	No.5 injector system


From the previous page
OK
Measure at engine coolant temperature sensor connector B-56.
• Use test harness (MB991658) to connect the connector, and measure at the pick-up harness.
• Ignition switch: ON
• Voltage between terminal 1 and earth
OK: At 0°C of engine coolant temperature: 3.2 – 3.8 V
At 20°C of engine coolant temperature: 2.3 – 2.9 V
At 40°C of engine coolant temperature: 1.3 – 1.9 V
At 80°C of engine coolant temperature] 0.3 – 0.9 V
NG
Check the engine coolant temperature sensor. (Refer to P.13A-227.)
NG
Repair
OK
Check the following connectors: D-117, D-118
NG
Repair
OK
Check the harness wire between the engine coolant temperature sensor and the engine-ECU, and repair if necessary.
OK
Check the trouble symptoms.
NG
Replace the engine-ECU.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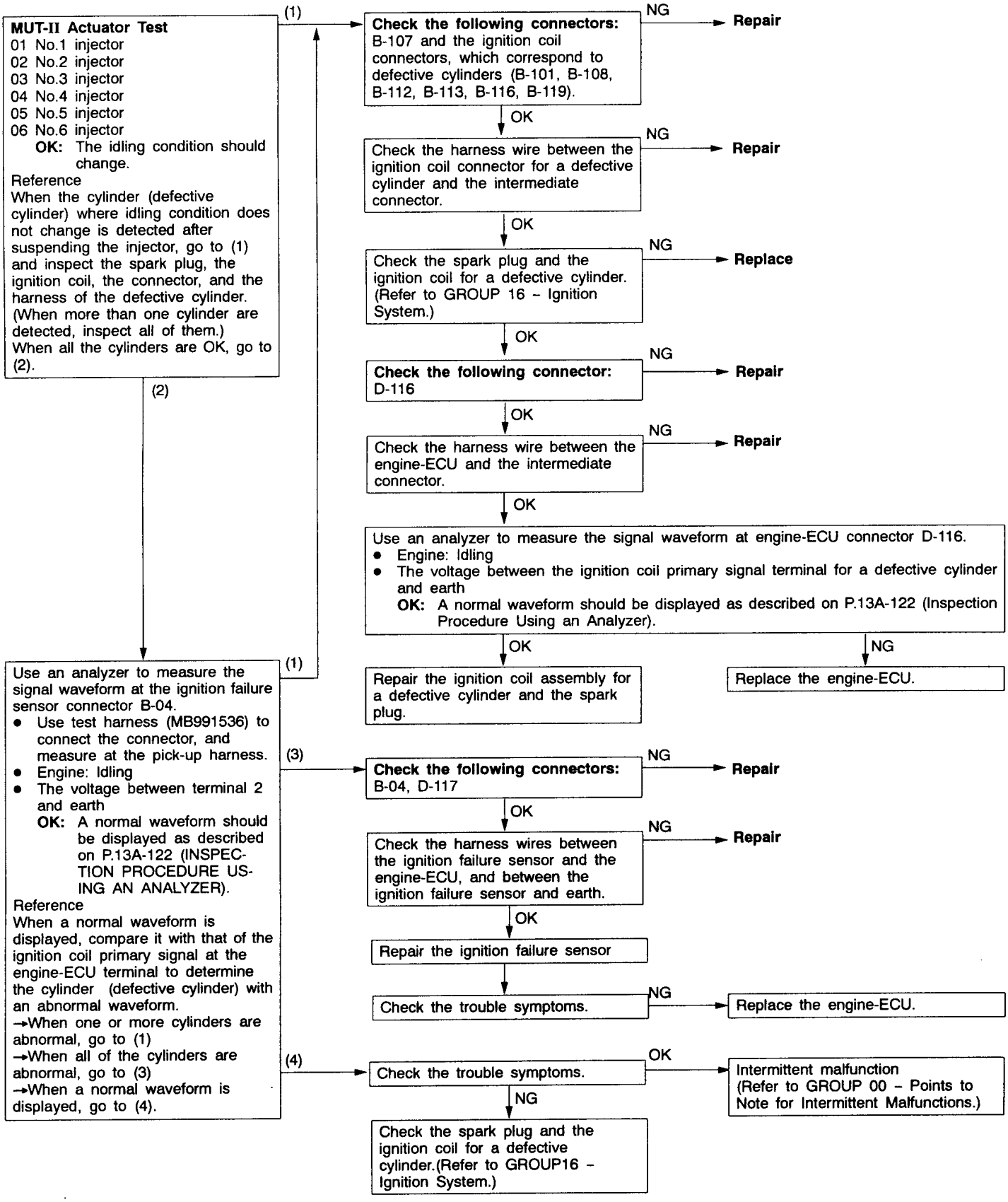
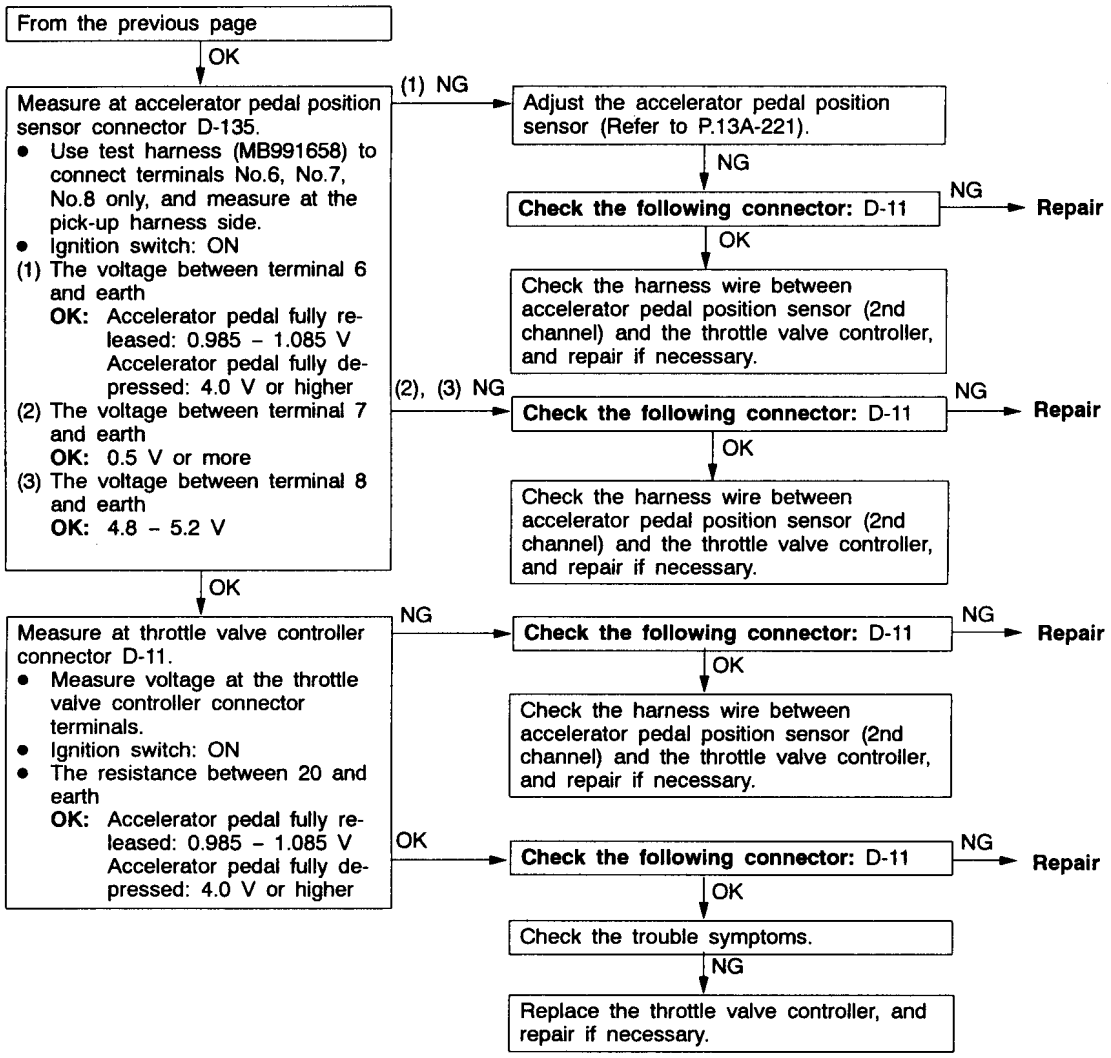
OK
Check the harness wire between No.1 injector and the intermediate connector.
NG
Repair
OK
Replace the No.1 injector.
NG
Check the trouble symptoms.
NG
Replace the injector driver.


MUT-II Actuator Test
01 No.1 injector
02 No.2 injector
03 No.3 injector
04 No.4 injector
05 No.5 injector
06 No.6 injector
OK: The idling condition should change.
Reference
When the cylinder (defective cylinder) where idling condition does not change is detected after suspending the injector, go to (1) and inspect the spark plug, the ignition coil, the connector, and the harness of the defective cylinder. (When more than one cylinder are detected, inspect all of them.)
When all the cylinders are OK, go to (2).
(1)
Check the following connectors: B-107 and the ignition coil connectors, which correspond to defective cylinders (B-101, B-108, B-112, B-113, B-116, B-119).
NG
Repair
OK
Check the harness wire between the ignition coil connector for a defective cylinder and the intermediate connector.
NG
Repair
OK
Check the spark plug and the ignition coil for a defective cylinder. (Refer to GROUP 16 – Ignition System.)
NG
Replace
OK
Check the following connector: D-116
NG
Repair
OK
Check the harness wire between the engine-ECU and the intermediate connector.
NG
Repair
OK
Use an analyzer to measure the signal waveform at engine-ECU connector D-116.
• Engine: Idling
• The voltage between the ignition coil primary signal terminal for a defective cylinder and earth
OK: A normal waveform should be displayed as described on P.13A-122 (Inspection Procedure Using an Analyzer).
OK
NG
Repair the ignition coil assembly for a defective cylinder and the spark plug.
Replace the engine-ECU.
(2)
Use an analyzer to measure the signal waveform at the ignition failure sensor connector B-04.
• Use test harness (MB991536) to connect the connector, and measure at the pick-up harness.
• Engine: Idling
• The voltage between terminal 2 and earth
OK: A normal waveform should be displayed as described on P.13A-122 (INSPECTION PROCEDURE USING AN ANALYZER).
Reference
When a normal waveform is displayed, compare it with that of the ignition coil primary signal at the engine-ECU terminal to determine the cylinder (defective cylinder) with an abnormal waveform.
→When one or more cylinders are abnormal, go to (1)
→When all of the cylinders are abnormal, go to (3)
→When a normal waveform is displayed, go to (4).
(1)
(3)
Check the following connectors: B-04, D-117
NG
Repair
OK
Check the harness wires between the ignition failure sensor and the engine-ECU, and between the ignition failure sensor and earth.
NG
Repair
OK
Repair the ignition failure sensor
Check the trouble symptoms.
NG
Replace the engine-ECU.
(4)
Check the trouble symptoms.
OK
Intermittent malfunction (Refer to GROUP 00 – Points to Note for Intermittent Malfunctions.)
NG
Check the spark plug and the ignition coil for a defective cylinder.(Refer to GROUP16 – Ignition System.)

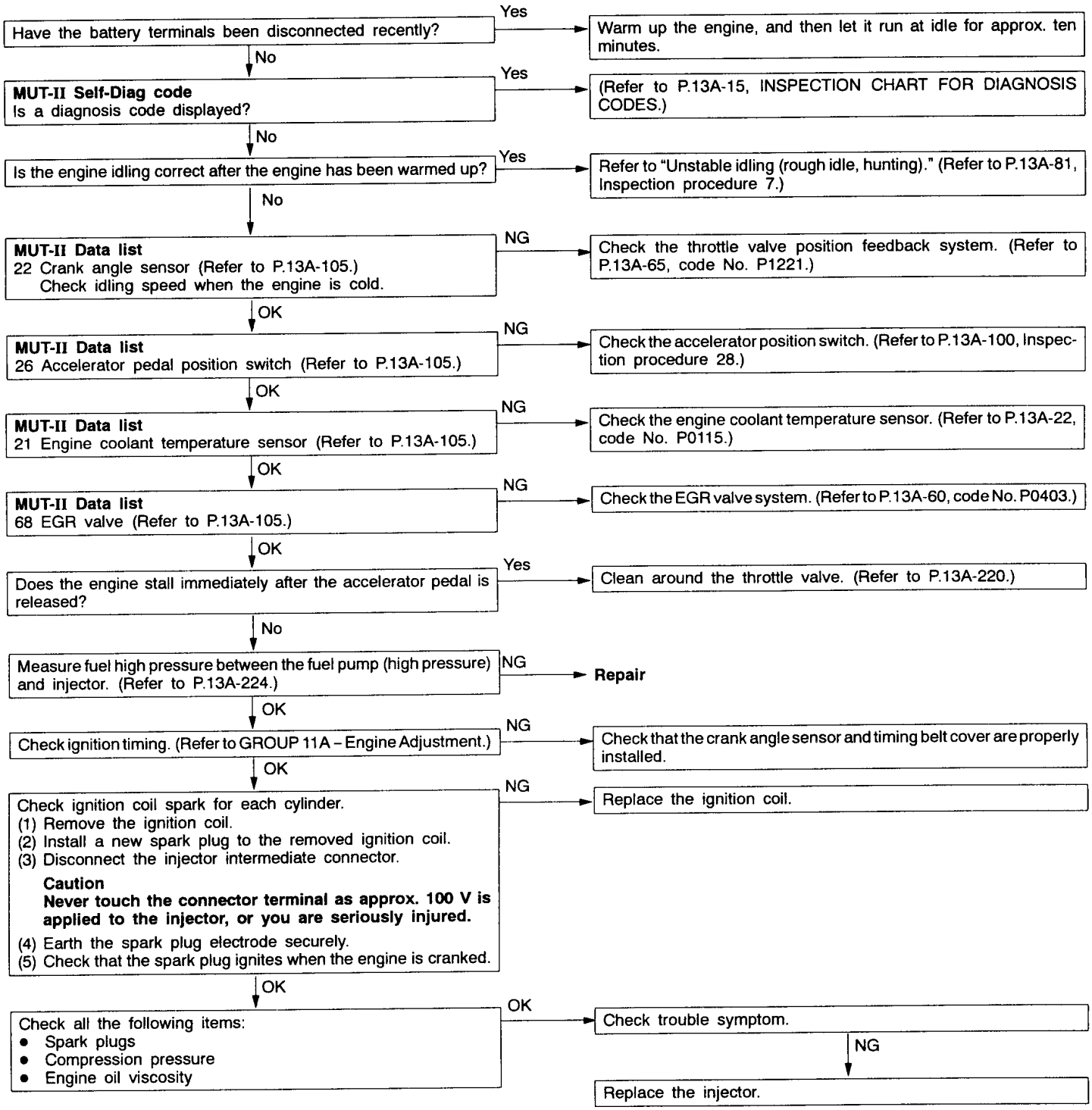


Code No.P1226 Throttle valve controller system	Probable cause
Set Conditions • Errors in reading or writing to the throttle valve controller ROM.	• Malfunction of the throttle valve controller

Replace the throttle valve controller.

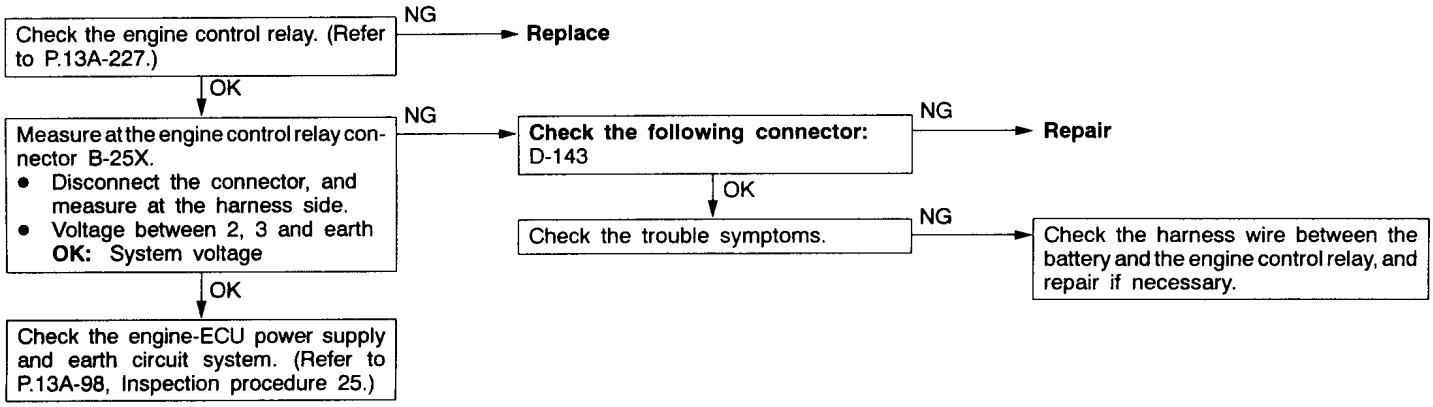
Inspection procedure 9

When the engine is cold, it stalls at idling. (Die out)	Probable cause
The cause is probably an incorrect air/fuel ratio or poor intake air amount when the engine is cold.	• Malfunction of the electronic-control throttle valve system • Malfunction of the throttle body



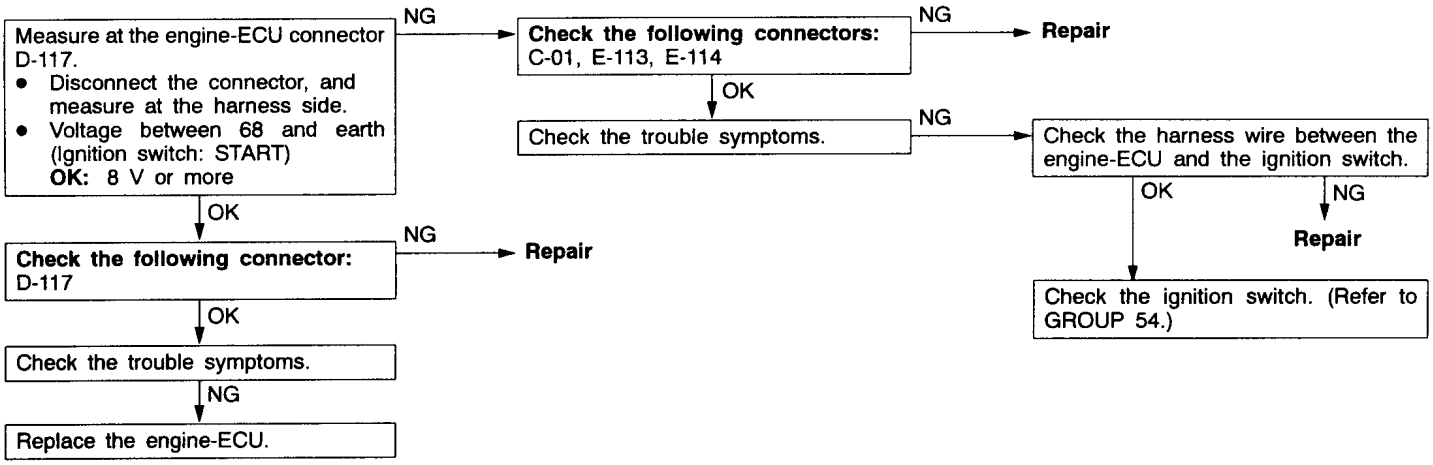
Inspection procedure 26

Engine control relay and ignition switch-IG system	Probable cause
When the ignition switch ON signal is input to the engine-ECU, the engine-ECU turns on the engine control relay. This causes system voltage to be supplied to the engine-ECU and to the sensors and actuators.	• Malfunction of the ignition switch • Malfunction of the engine control relay • Open circuit or short-circuited harness wire of the engine control relay circuit • Malfunction of the engine-ECU



Inspection procedure 27

Ignition switch-ST system	Probable cause
The ignition switch-ST outputs a HIGH signal to the engine-ECU while the engine is cranking. The engine-ECU uses this signal to carry out functions such as fuel injection control during starting.	• Malfunction of the ignition switch • Open circuit or short-circuited harness wire of the ignition switch circuit • Malfunction of the engine-ECU

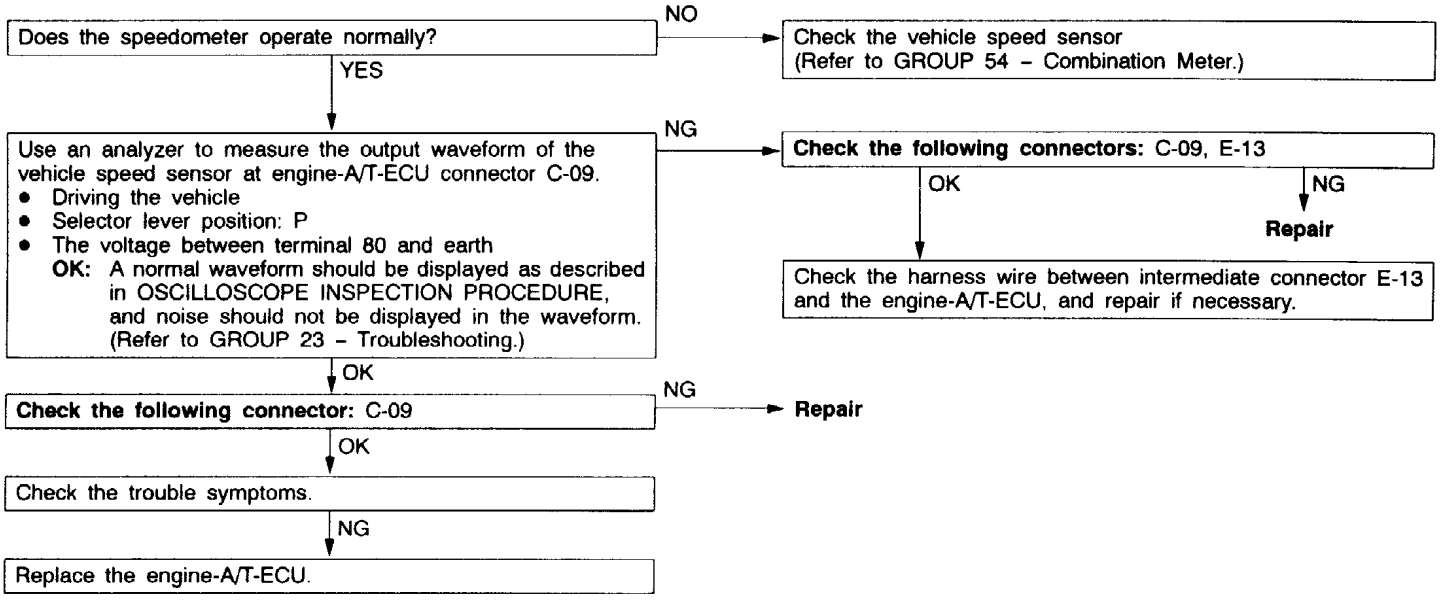


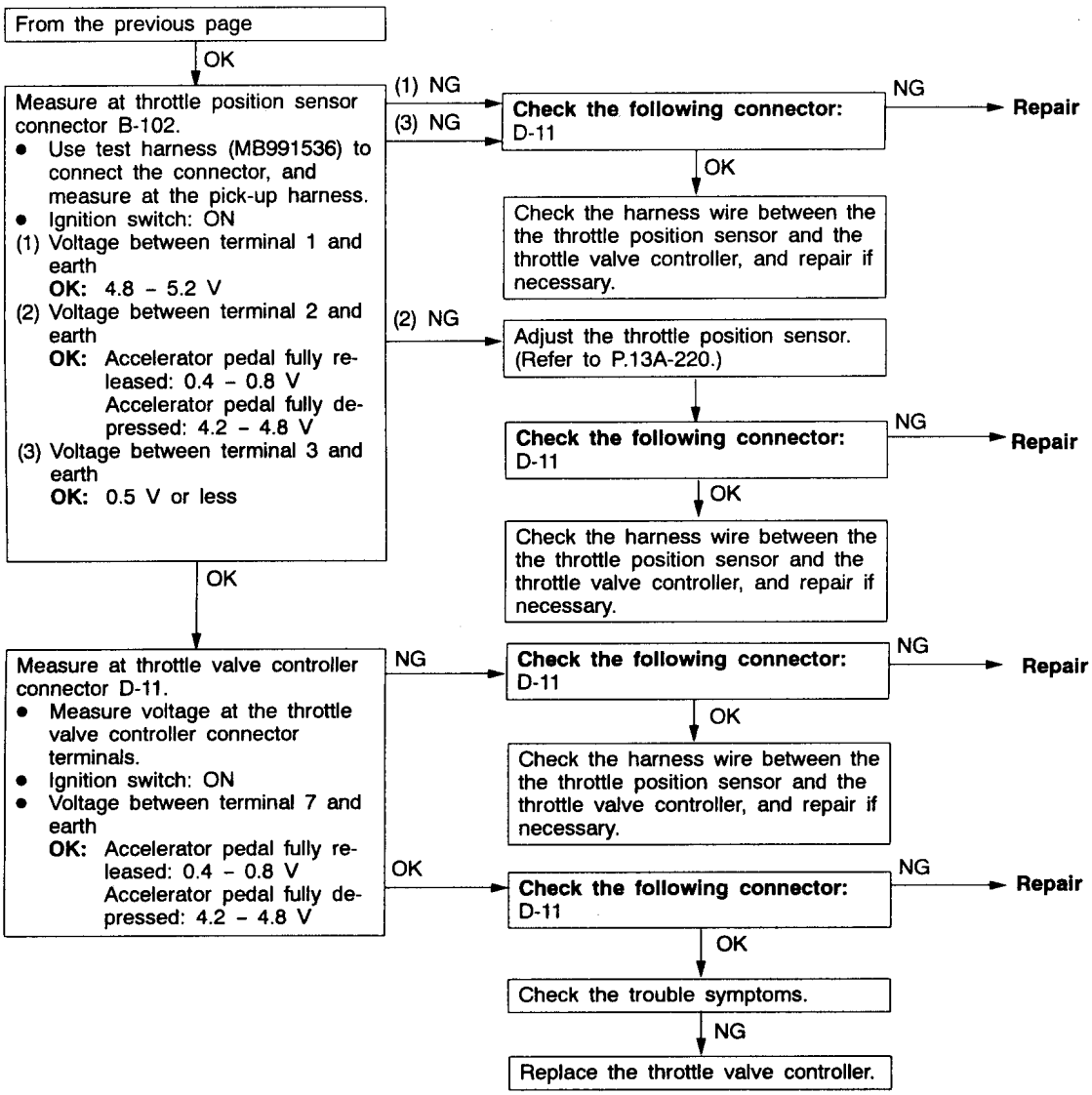
Terminal No.	Check item	Check requirements (engine condition)		Normal condition
63	Stop lamp switch	Depress the brake pedal.		System voltage
		Release the brake pedal.		0 – 3 V
65	A/C switch (2nd channel)	Refer to GROUP 55 - Troubleshooting "Check at the A/C-ECU terminal, engine-ECU output terminals."		
66	Clutch switch	Depress the clutch pedal.		0 – 3 V
		Release the clutch pedal.		System voltage
68	Ignition switch-ST	Engine: Cranking		8V or more
71	Oxygen sensor (front)	Engine: Warm up, and then hold the engine speed at 2,500r/min (Use a digital voltmeter).		0 ↔ 0.8 V alternates.
76	Air flow sensor reset signal	Engine: Idling		0 – 1 V
		Engine: 3,000 r/min		6 – 9 V
78	Throttle position sensor (2nd channel)	Ignition switch: ON	Release the accelerator pedal.	4.5 – 5.5 V
			Depress the accelerator pedal fully.	0.4 – 0.6 V
79	Accelerator pedal position switch	Ignition switch: ON	Release the accelerator pedal.	0 – 1 V
			Depress the accelerator pedal fully.	4V or more
80	Vehicle speed sensor	• Ignition switch: ON • Move the vehicle forward.		0 ↔ system voltage alternates.
83	A/C switch (1st channel)	Engine: Idling	A/C switch: OFF	0 – 3 V
			A/C switch: ON (Compressor is operating)	System voltage
88	Small lamp switch	Lighting switch: OFF		0 – 3 V
		Lighting switch: ON (Taillamp: ON)		System voltage
89	Oxygen sensor heater (front)	Engine: Idling		0 – 3 V
		Engine: 3,500 r/min		System voltage
90	Oxygen sensor heater (rear)	Engine: Idling		0 – 3 V
		Engine: 3,500 r/min		System voltage
92	Fuel pressure sensor	Engine: Idling		0.3 – 4.7 V

Malfunctioning item	Control contents during malfunction
Accelerator pedal position sensor (1st channel)	1. Suspends lean burn operation. 2. Controls the throttle valve position by using signals from the accelerator pedal position sensor (2nd channel). (However, this control is not applicable if the voltage difference between the accelerator pedal position sensor (1st channel) and accelerator pedal position sensor (2nd channel) is1.0 V or higher.) 3. Also suspends the electronic-controlled throttle valve system when the accelerator pedal position sensor (2nd channel) is defective.
Throttle position sensor (1st channel)	1. Suspends lean burn operation. 2. Controls throttle opening angle feedback by using signals from throttle position sensor (2nd channel). (However, the controlling system is not applied when the throttle position sensor (1st channel) and throttle position sensor (2nd channel) combination output voltage is outside 4 – 6 V.) 3. Refrains from controlling the throttle opening angle feedback when throttle position sensor (2nd channel) is also defective.
Electronic-controlled throttle valve system	1. Suspends the electronic controlled throttle valve system. 2. Suspends lean burn operation. 3. Suspends the idle speed feedback control.
Throttle valve position feedback	1. Suspends the electronic controlled throttle valve system. 2. Suspends lean burn operation. 3. Suspends the engine speed feedback control. However, if the throttle valve opening angle is significantly wide, this system carries out the following controls. 1. Always cuts the fuel supply to three cylinders. 2. Cuts the fuel supply when the engine speed reaches 3,000 r/min or more.
Throttle control servo	1. Suspends the electronic-controlled throttle valve system. 2. Suspends lean burn operation. 3. Suspends the engine speed feedback control.
Communication line between the throttle valve controller and the ECU	1. Communication error between the throttle valve controller and the engine-A/T-ECU: • Suspends lean burn operation. • Cuts the fuel supply when the engine speed reaches 3,000 r/min or more. • Suspends the cruise-control. 2. Communication error between the throttle valve controller and the engine-A/T-ECU: • Suspends lean burn operation. • Cuts the fuel supply when the engine speed reaches 3,000 r/min or more. • Suspends the cruise-control. • The throttle valve controller controls the throttle valve opening angle by using signals from accelerator pedal position sensor (2nd channel).
Throttle valve controller	1. Suspends the electronic-controlled throttle valve system. 2. Suspends lean burn operation. 3. Suspends the engine speed feedback control.

NOTE
If the electronic-controlled throttle valve system is suspended, the engine warning lamp will illuminate.

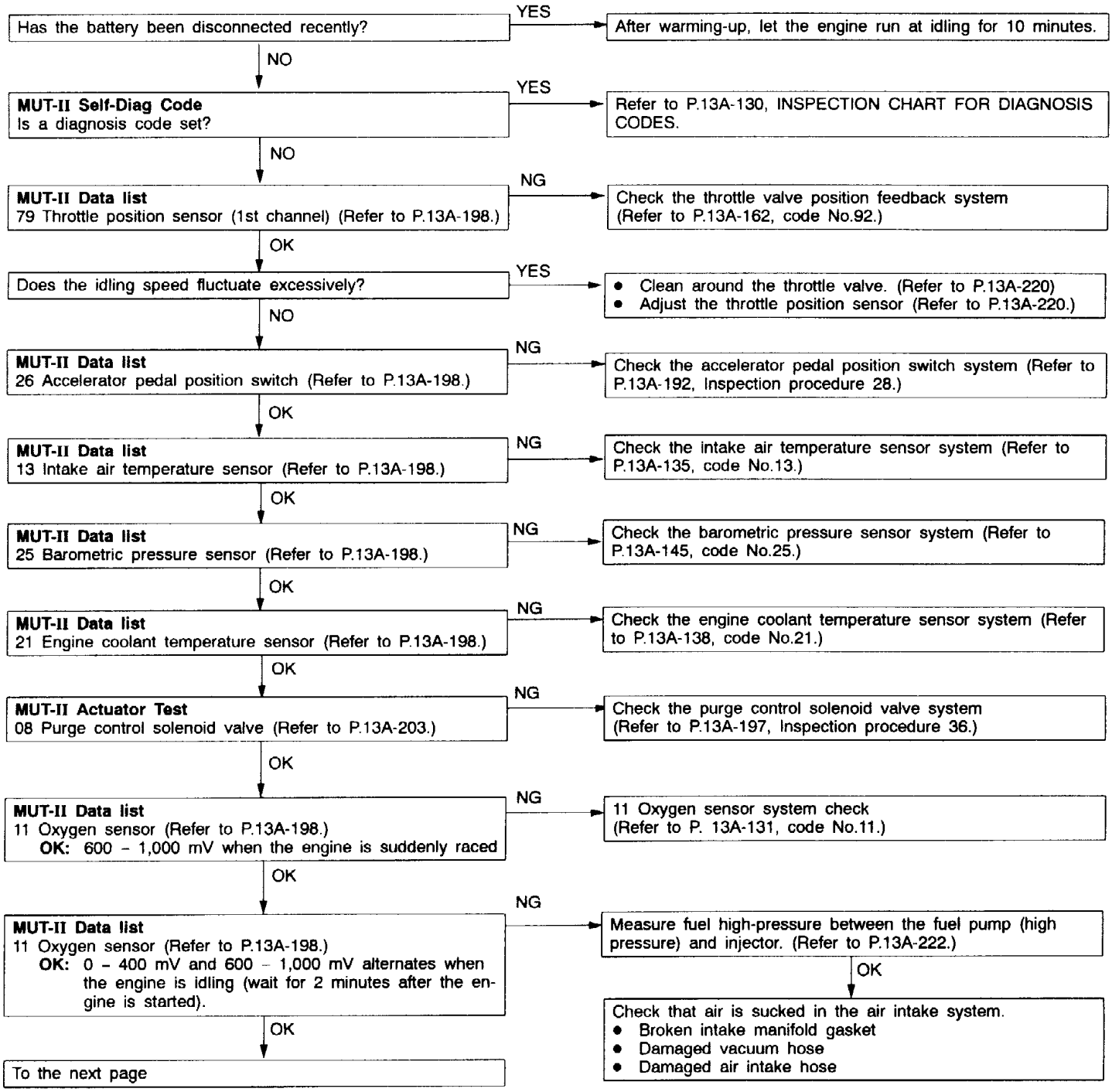
Code No.24 Vehicle speed sensor system	Probable cause
Range of Check • Engine: Two seconds after the engine was started • Idle switch: OFF • Engine speed: 2,500 r/min or more • During high engine load Set Conditions • The sensor output voltage does not change for 4 seconds (no pulse signal input).	• Malfunction of the vehicle speed sensor • Open or short circuit in the vehicle speed sensor circuit or loose connector contact • Malfunction of engine-A/T-ECU




From the previous page
OK
Measure at throttle position sensor connector B-102.
• Use test harness (MB991536) to connect the connector, and measure at the pick-up harness.
• Ignition switch: ON
(1) Voltage between terminal 1 and earth
OK: 4.8 – 5.2 V
(2) Voltage between terminal 2 and earth
OK: Accelerator pedal fully released: 0.4 – 0.8 V
Accelerator pedal fully depressed: 4.2 – 4.8 V
(3) Voltage between terminal 3 and earth
OK: 0.5 V or less
(1) NG
(3) NG
Check the following connector: D-11
NG
Repair
OK
Check the harness wire between the the throttle position sensor and the throttle valve controller, and repair if necessary.
(2) NG
Adjust the throttle position sensor. (Refer to P.13A-220.)
Check the following connector: D-11
NG
Repair
OK
Check the harness wire between the the throttle position sensor and the throttle valve controller, and repair if necessary.
OK
Measure at throttle valve controller connector D-11.
• Measure voltage at the throttle valve controller connector terminals.
• Ignition switch: ON
• Voltage between terminal 7 and earth
OK: Accelerator pedal fully released: 0.4 – 0.8 V
Accelerator pedal fully depressed: 4.2 – 4.8 V
NG
Check the following connector: D-11
NG
Repair
OK
Check the harness wire between the the throttle position sensor and the throttle valve controller, and repair if necessary.
OK
Check the following connector: D-11
NG
Repair
OK
Check the trouble symptoms.
NG
Replace the throttle valve controller.

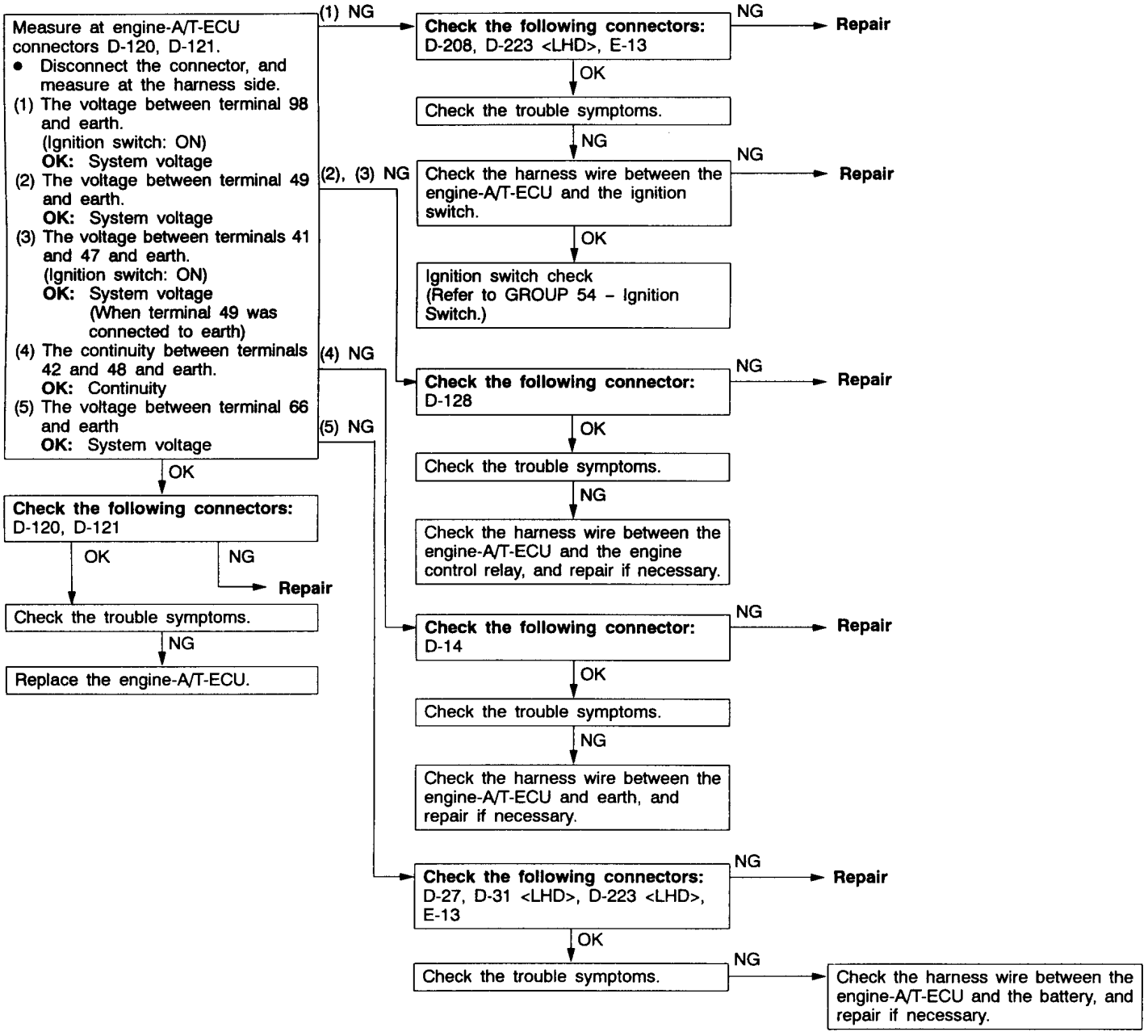
Inspection procedure 7

Unstable idling (Rough idling, hunting)	Probable cause
The cause is probably a malfunction of the ignition system, air/fuel ratio control system, electronic controlled throttle valve system, compression pressure, etc. As many causes can be suspected, diagnose from easier items.	• Malfunction of the ignition system • Malfunction of the air/fuel ratio control system • Malfunction of the electronic-controlled throttle valve system • Poor compression • Air sucking into the air intake system



Inspection procedure 24

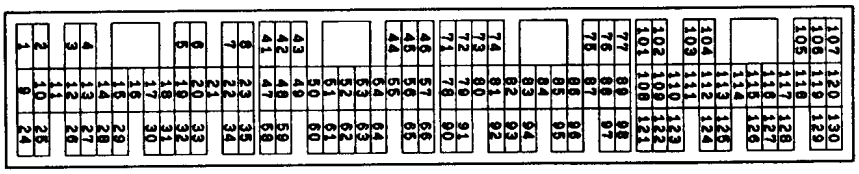
Engine-A/T-ECU power supply and earth circuit system	Probable cause
The cause is probably the malfunction of the engine-A/T-ECU, or the malfunctions listed at right.	• Open circuit or short-circuited harness wire in the engine-A/T-ECU power supply circuit. • Open circuit or short-circuited harness wire to earth in the engine-A/T-ECU. • Malfunction of the engine-A/T-ECU



CHECK AT THE ENGINE-ECU TERMINALS

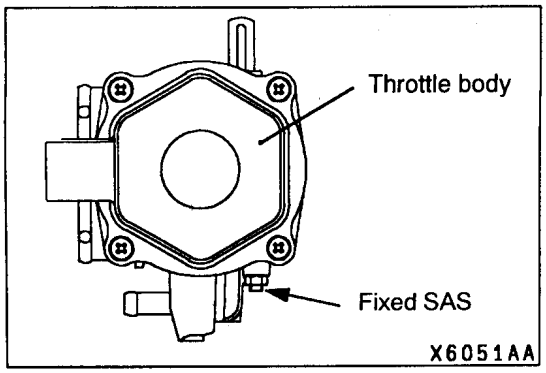
TERMINAL VOLTAGE CHECK CHART

Engine-A/T-ECU Connector Terminal Arrangement



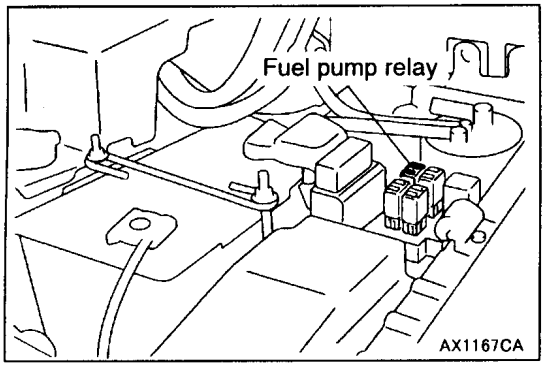
7FU1763

Terminal No.	Check item	Check condition (Engine condition)	Normal condition
1	No.1 injector	While engine is idling after having warmed up, suddenly depress the accelerator pedal.	From 9 – 13 V, momentarily drops slightly
9	No.2 injector		
24	No.3 injector		
2	No.4 injector		
10	No.5 injector		
25	No.6 injector		
3	Oxygen sensor heater	Engine: Idling	0 – 3 V
		Engine: 5,000 r/min	System voltage
6	Injector driver relay	Ignition switch: OFF	0 – 0.1 V
		Ignition switch: ON	0.5 – 1.0 V
8	Alternator G terminal	• Engine: Idling after warming-up • Radiator fan: Not operating • Headlamp: off to on • Stop lamp: off to on • Defogger switch: OFF to ON	The voltage increases by 0.2 – 3.5 V
54	Alternator FR terminal	• Engine: Idling after warming-up • Radiator fan: Not operating • Headlamp: off to on • Stop lamp: off to on • Defogger switch: OFF to ON	The voltage drops
11	No.1 ignition coil	Engine speed: 3,000 r/min	0.3 – 3.0 V
31	No.2 ignition coil		
13	No.3 ignition coil		
30	No.4 ignition coil		
12	No.5 ignition coil		
32	No.6 ignition coil		
14	Throttle control servo relay	Ignition switch: OFF	0 – 0.1 V
		Ignition switch: ON	0.5 – 1.0 V



ON-VEHICLE SERVICE

Caution
(1) Never attempt to tamper the fixed SAS. The fixed SAS is precisely adjusted at factory.
(2) Should it be tampered, the full closed position of the throttle valve will be changed. This causes the engine-ECU to learn a wrong position of the throttle valve.



FUEL PUMP CONNECTOR DISCONNECTION (HOW TO REDUCE FUEL PRESSURE)

When removing the fuel pipe, hose, etc., since fuel pressure in the fuel pipe line is high, do the following operation so as to release fuel pressure in the line and prevent fuel from running out.

1. Remove the fuel filler cap to release pressure in the fuel tank.
2. Remove the fuel pump relay.
3. Connect the MUT-II to the diagnosis connector.

   Caution
   Turn off the ignition switch before disconnecting or connecting the MUT-II.

4. Turn off the ignition switch.
5. Select "Item No.74" from the MUT-II Data list.
6. Crank the engine for at least two seconds.
7. If the engine is not be started, use the MUT-II to make sure that the fuel pressure is 0.5 MPa or less. Then turn off the ignition switch.
8. If the engine is started, release fuel pressure by the following procedure:
   (1) Turn off the ignition switch, and then stop the engine.
   (2) Disconnect one of the ignition coil connectors.
   (3) Crank the engine for at least two seconds.
   (4) If the engine is not be started, use the MUT-II to make sure that the fuel pressure is 0.5 MPa or less. Then turn off the ignition switch.
   (5) If the engine is started, stop it by racing and use the MUT-II to make sure that the fuel pressure is 0.5 MPa or less. Then turn off the ignition switch.
   (6) Reconnect the ignition coil connector.

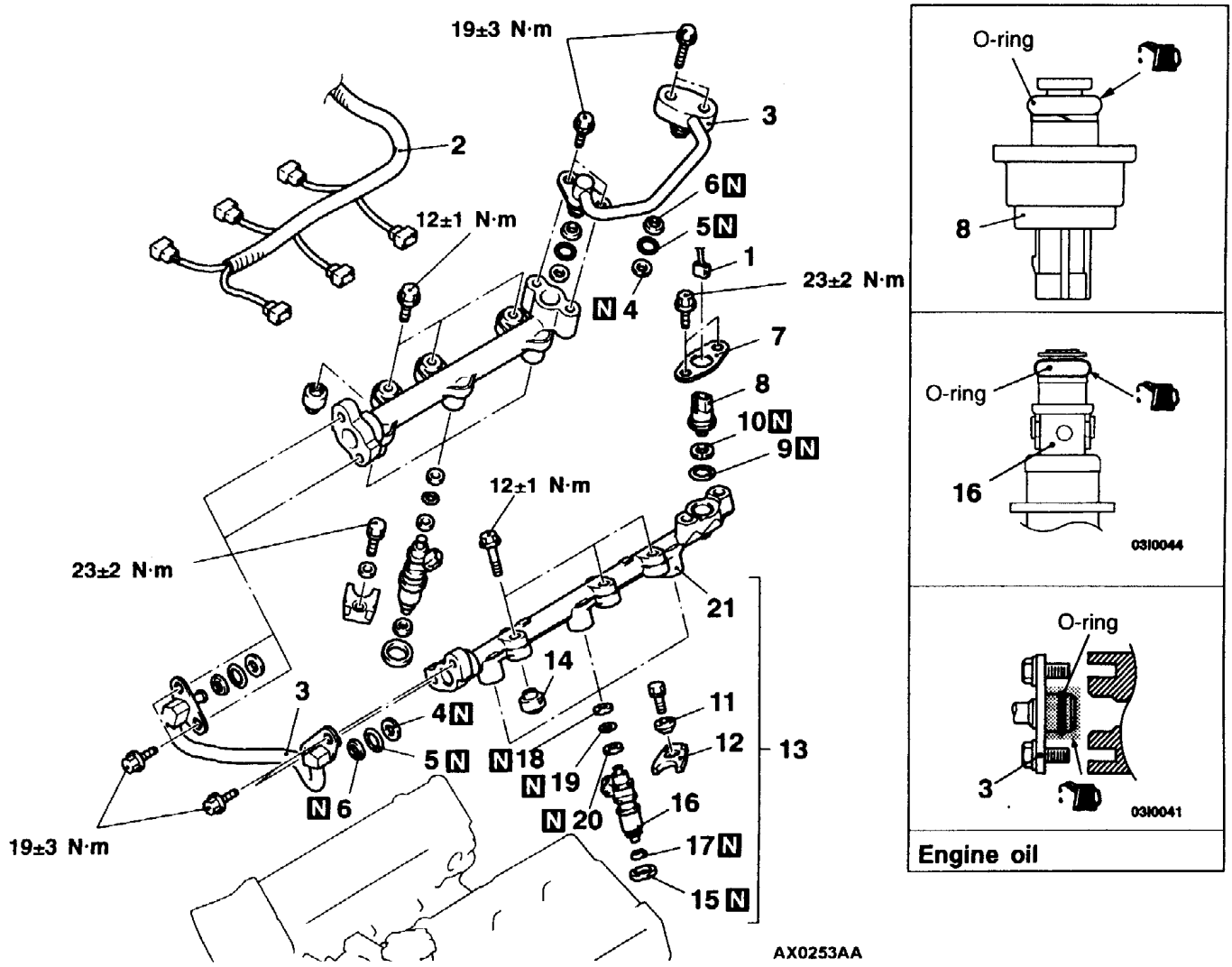
   Caution
   Clean the spark plug which corresponds to the disconnected ignition coil connector.

9. Remove the MUT-II.
10. Install the fuel pump relay.

INJECTOR

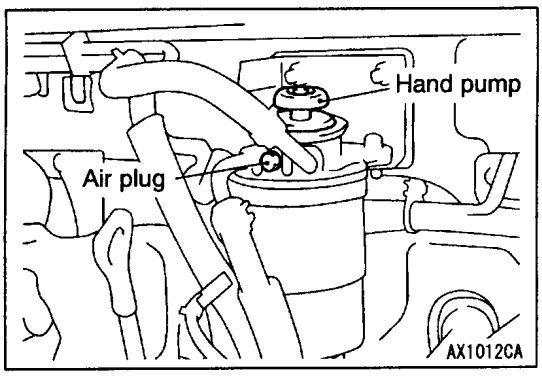
REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation
- Fuel Line Pressure Reduction <before removal only> (Refer to P.13A-219.)
- Engine Cover Removal and Installation
- Air Intake Hose Removal and Installation (Refer to GROUP 15 – Air Cleaner.)
- Intake Manifold Removal and Installation (Refer to GROUP 15 – Intake Manifold.)
- Fuel Leak Check <after installation only> (Refer to P.13A-225.)



Removal steps

▶F◀ • Air bleeding from high-pressure fuel line
1. Fuel pressure sensor connector
◀A▶ 2. Injector harness
▶E◀ 3. Fuel feed pipe
▶E◀ 4. Back-up ring A
▶E◀ 5. O-ring
▶E◀ 6. Back-up ring B
◀B▶ ▶D◀ 7. Flange
▶D◀ 8. Fuel pressure sensor
▶C◀ 9. O-ring
▶C◀ 10. Back-up ring
▶B◀ 11. Injector washer
▶B◀ 12. Injector holder
◀C▶ ▶B◀ 13. Delivery pipe assembly and Fuel injector assembly
▶B◀ 14. Insulator
▶B◀ 15. Injector gasket
16. Fuel injector assembly
▶A◀ 17. Corrugated washer
▶A◀ 18. Back-up ring A
▶A◀ 19. O-ring
▶A◀ 20. Back-up ring B
21. Delivery pipe



EVACUATION OF AIR FROM FUEL LINE

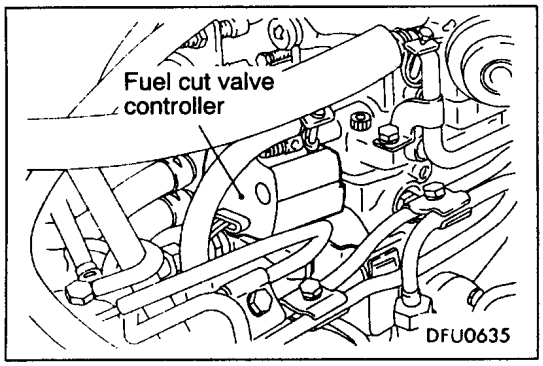
Bleed the air from the fuel line after refilling the fuel.

- When fuel is drained for service.
- When fuel filter is replaced.
- When main fuel line is removed.

1. Loosen fuel filter air plug.
2. Place rags around air plug hole. Operate hand pump repeatedly until no bubbles come from plug hole. Tighten air plug.
3. Repeat until hand pump operation becomes stiff.

FUEL FILTER CARTRIDGE REPLACEMENT

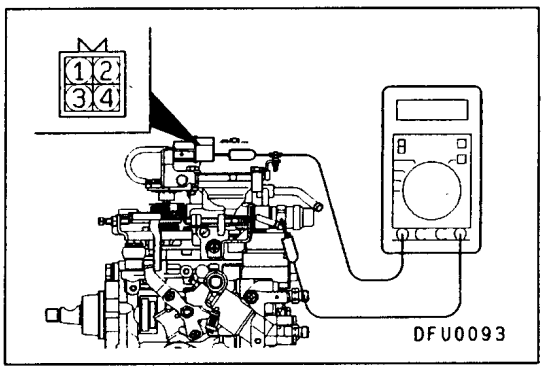
Refer to GROUP 13D.



FUEL INJECTION PUMP CHECK

FUEL CUT VALVE CONTROLLER OPERATION CHECK

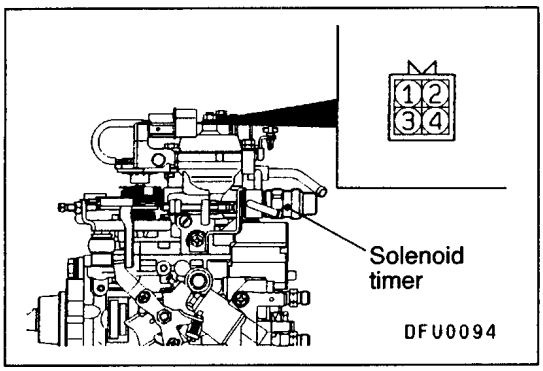
When a sound scope is held against the fuel cut valve controller and the ignition switch is turned to "ON", check that the sound of the valve operating can be heard.
If no operating sound can be heard, check the immobilizer system while referring to GROUP 54.



INJECTION TIMING CONTROL SOLENOID COIL RESISTANCE CHECK

Measure the resistance between the injection pump connector terminal No.4 (injection timing control solenoid terminal) and the injection pump body.

Standard value: 8 – 10 Ω (at 20 °C)



INJECTION TIMING CONTROL SOLENOID OPERATION CHECK

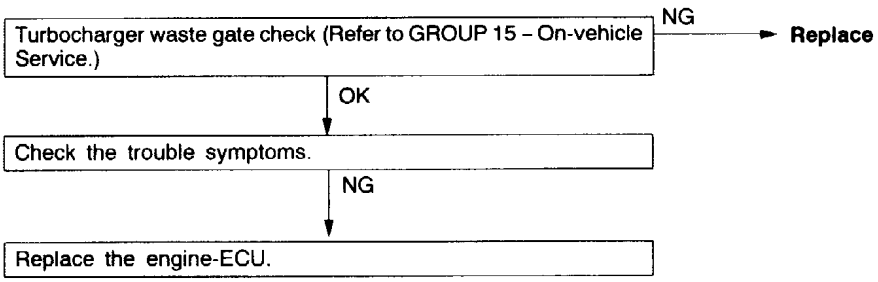
Check that operation sound of the injection timing control solenoid can be heard when connecting the injection pump connector terminal No.4 (injection timing control solenoid terminal) and the battery positive terminal.

INSPECTION CHART FOR DIAGNOSIS CODES

Code No.	Diagnosis item	Reference page
11	Accelerator pedal position sensor (main) system	13C-8
12*	Boost pressure sensor system	13C-9
13	Barometric pressure sensor (ECU built-in) system	13C-10
14	Fuel temperature sensor system	13C-10
15	Engine coolant temperature sensor system	13C-11
16	Boost air temperature sensor system	13C-11
17	Vehicle speed sensor system	13C-12
18	Engine speed sensor (backup) system	13C-13
21	Engine speed sensor system	13C-14
23	Idle switch (accelerator pedal position sensor built-in) system	13C-15
25*	Timer piston position sensor system	13C-16
26*	Control sleeve position sensor system	13C-17
27	Accelerator pedal position sensor (sub) system	13C-18
41*	Main throttle solenoid valve system	13C-19
43	Timing control valve system	13C-20
46	Injection correction ROM system	13C-21
48*	GE actuator (in the middle of control sleeve position sensor inoperative) system	13C-21
49*	Over boost (turbocharger waste gate malfunction)	13C-22
54	Immobilizer system	13C-22

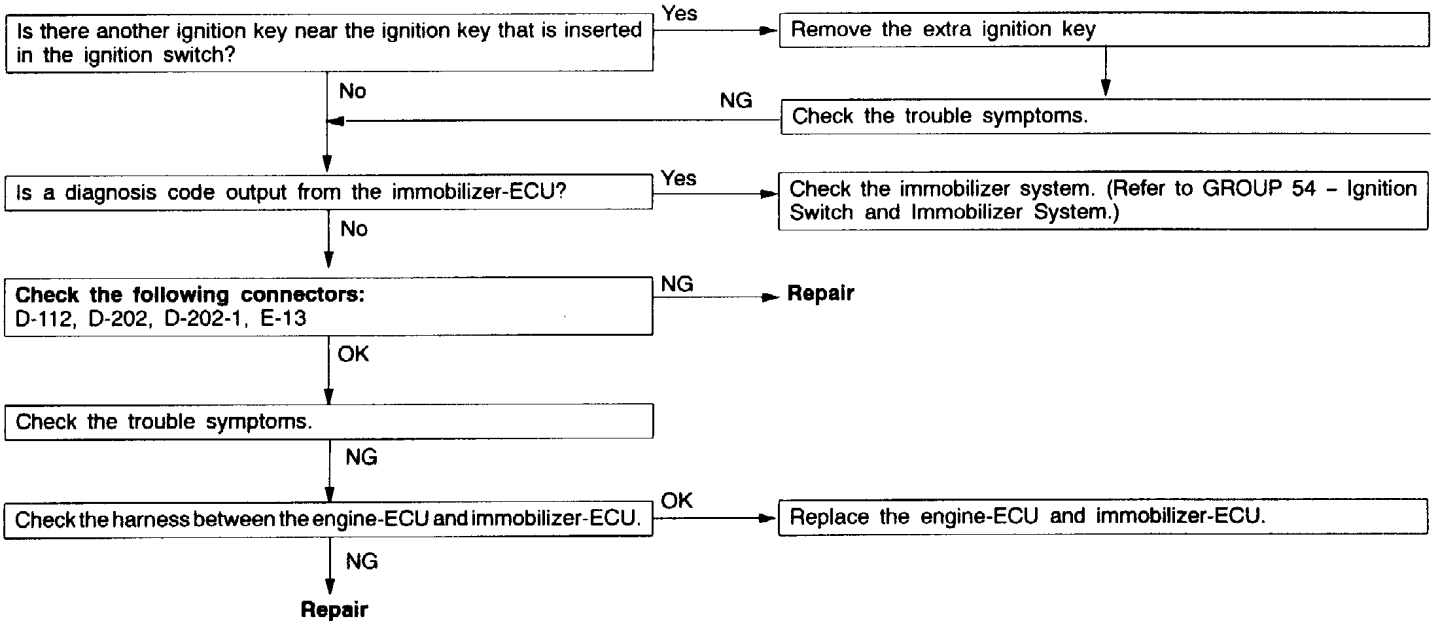
Caution
If the the above-mentioned diagnosis code number with the asterisks can be displayed along with another code number in parentheses simultaneously, check the other code number before replacing the engine-ECU.
12 (41, 49), 26 (48), 25 (43), 41 (12, 49), 48 (26), 49 (12, 41)

Code No. 49 Over boost	Probable cause
Range of Check • Ignition switch: ON, except during engine cranking Set Conditions • Boost pressure is higher than 305 kPa for 1 second.	• Malfunction of the turbocharger waste gate • Engine-ECU inoperative



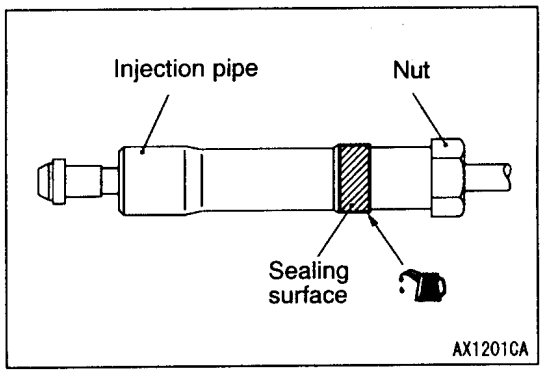
Code No. 54 Immobilizer system	Probable cause
Range of Check • Ignition switch: ON Set Conditions • Improper communication between the engine-ECU and immobilizer-ECU	• Radio interference of encrypted codes • Incorrect encrypted code • Malfunction of harness or connector • Malfunction of immobilizer-ECU • Engine-ECU inoperative

NOTE
(1) If the ignition switches are close each other when starting the engine, radio interference may cause this code to be displayed.
(2) This code may be displayed when registering the key encrypted code.



ACTUATOR TEST TABLE

Item No.	Check item	Drive Contents	Inspection conditions	Value to be determined as normal	Code No. or inspection procedure No.	Reference page
02	Glow plug relay	Turning the relay from OFF to ON or from ON to OFF	Ignition switch: ON	Battery charge is energized to the glow plug when the glow plug relay is ON.	–	–
03	A/C compressor relay	Turning the relay from OFF to ON or from ON to OFF	Ignition switch: ON	The A/C compressor clutch makes an audible sound.	–	–
11	Timing control valve	Turn the timing control valve to ON	• Ignition switch: ON • Engine: Idling • Timer piston position sensor: Normal	Makes an audible sound	Code No.43	13C-20
12		Turn the timing control valve to OFF				
15	Glow lamp	Turn the glow lamp on or off	Ignition switch: ON	The glow lamp turns on	–	–
16	Warning lamp	Turn the warning lamp on or off	Ignition switch: ON	The warning lamp turns on	Procedure No.3, 4	13C-25
22	Condenser fan relay	Turning the relay from OFF to ON or from ON to OFF	Ignition switch: ON	The condenser fan rotates.	–	–
23	Main throttle solenoid valve	Turn the solenoid valve from OFF to ON or from ON to OFF	• Ignition switch: ON • Vehicle speed: 0 km/h • Engine speed: 1,000 r/min or lower	Makes an audible sound	Code No.41	13C-19
24	Sub throttle solenoid valve	Turn the solenoid valve from OFF to ON or from ON to OFF	• Ignition switch: ON • Vehicle speed: 0 km/h • Engine speed: 1,000 r/min or lower	Makes an audible sound	–	–



▶C◀ INJECTION PIPE SEAL/INJECTION PIPE INSTALLATION

1. Apply a small amount of engine oil to a new injection pipe seal, and install it, being careful not to damage it.
2. Apply a small amount of engine oil to the injection pipe sealing surface, and then connect the injection pipes.
3. Secure the delivery holder at the injection pump side with a spanner in the same way as the removal procedure, then install the injection pipe nut.
4. Tighten the injection pipe nut to the specified torque.
   Tightening torque: 31 ± 1 N·m

REASSEMBLY SERVICE POINTS

▶A◀ O-RING/GROMMET INSTALLATION

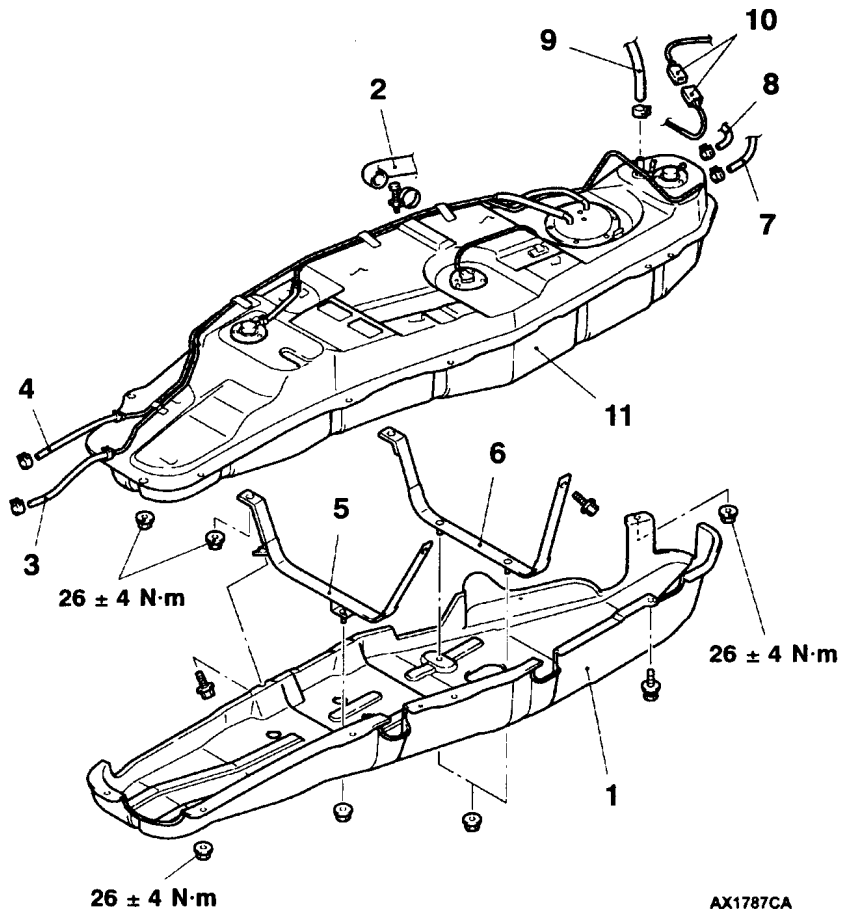
Apply a fuel to O-ring and grommet before installing them, to prevent them from being damaged or twisted.

FUEL TANK <4D5, 4M4>

REMOVAL AND INSTALLATION

Pre-removal Operation
- Draining Fuel
- Fuel Line Pressure Reduction (Refer to GROUP 13A – On-vehicle Service.)
- Transmission Mount Center Member Assembly (Refer to GROUP 32.)

Post-installation Operation
- Transmission Mount Center Member Assembly (Refer to GROUP 32.)
- Fuel Leakage Inspection
- Refilling Fuel



Removal steps

1. Fuel tank under protector
2. Fuel filler hose connection
3. Fuel return hose connection
4. Fuel main hose connection
5. Fuel tank band front
6. Fuel tank band rear

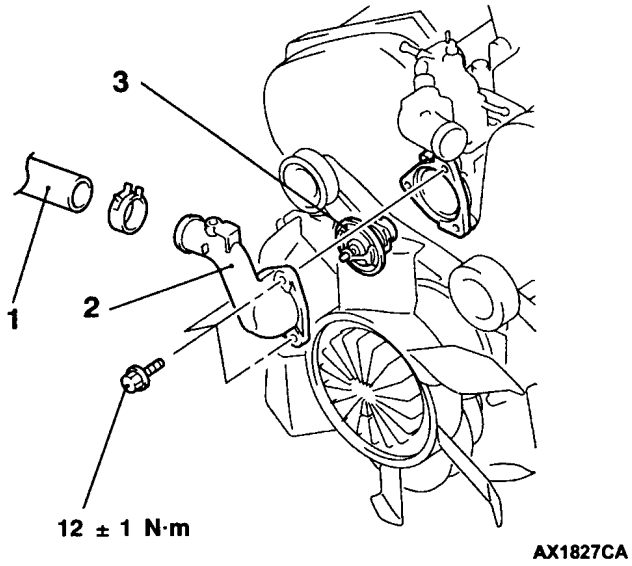
◀A▶
◀A▶

7. Fuel filler neck vapor hose (B) connection
8. Fuel filler neck vapor hose (A) connection
9. Fuel tank breather hose connection
10. Fuel tank harness connector connection
11. Fuel tank assembly

THERMOSTAT

REMOVAL AND INSTALLATION

<6G7>



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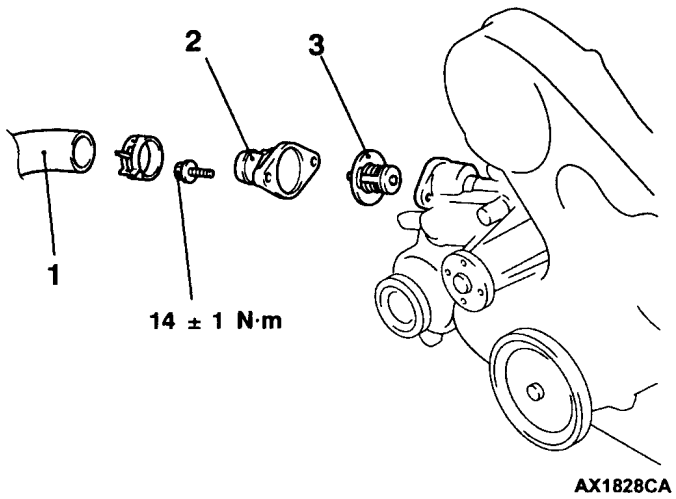
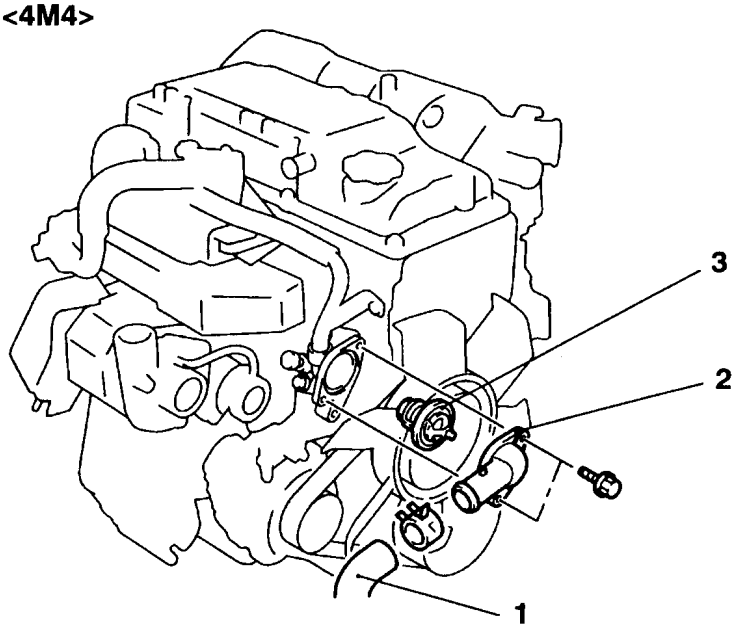


<4M4>



Removal steps

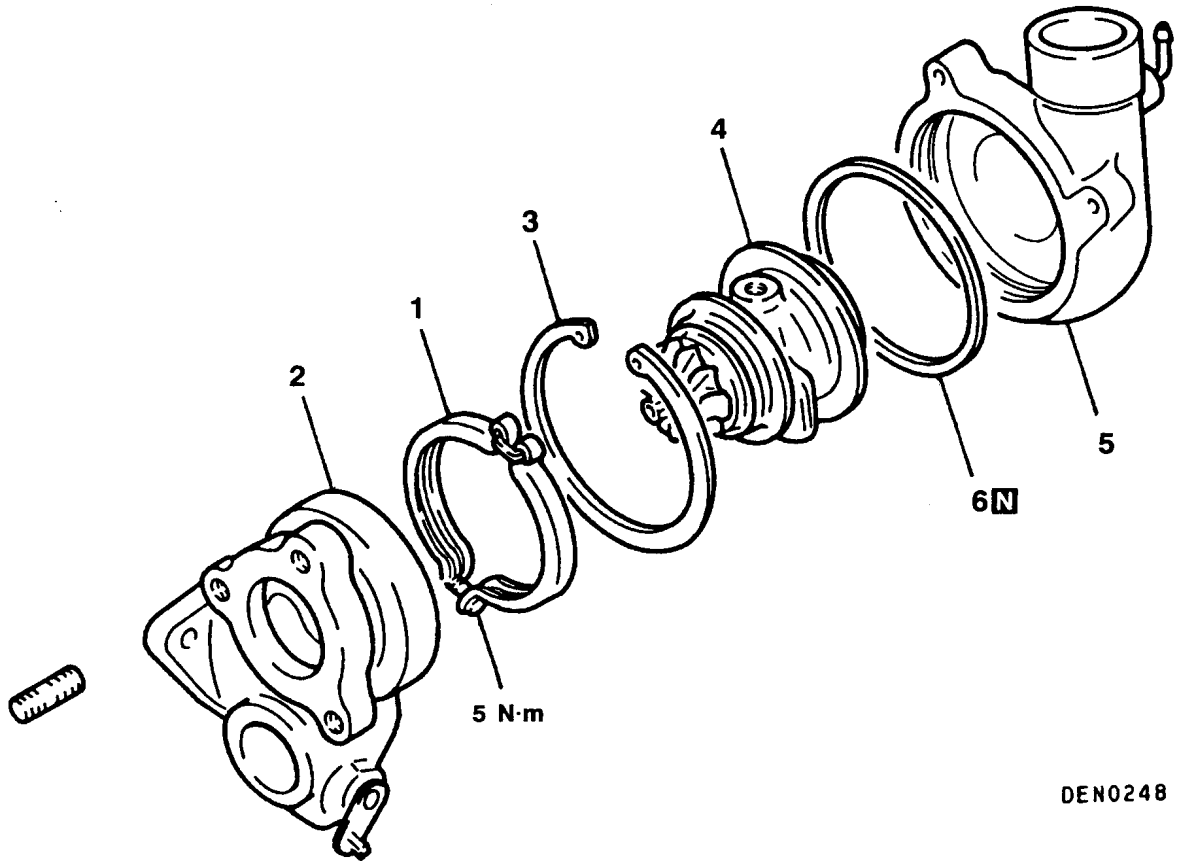
◀A▶ ▶B◀ 1. Radiator lower hose connection
2. Water inlet fitting
▶A◀ 3. Thermostat

INTAKE AND EXHAUST

CONTENTS

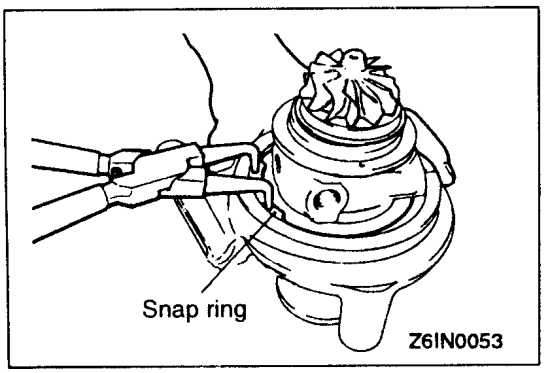
TURBOCHARGER <4D5>

DISASSEMBLY AND REASSEMBLY



Disassembly steps

	▶E◀	1. Coupling
	▶D◀	2. Turbine housing
◀A▶	▶C◀	3. Snap ring
◀B▶	▶B◀	4. Turbine wheel assembly
		5. Compressor cover
	▶A◀	6. O-ring



DISASSEMBLY SERVICE POINTS

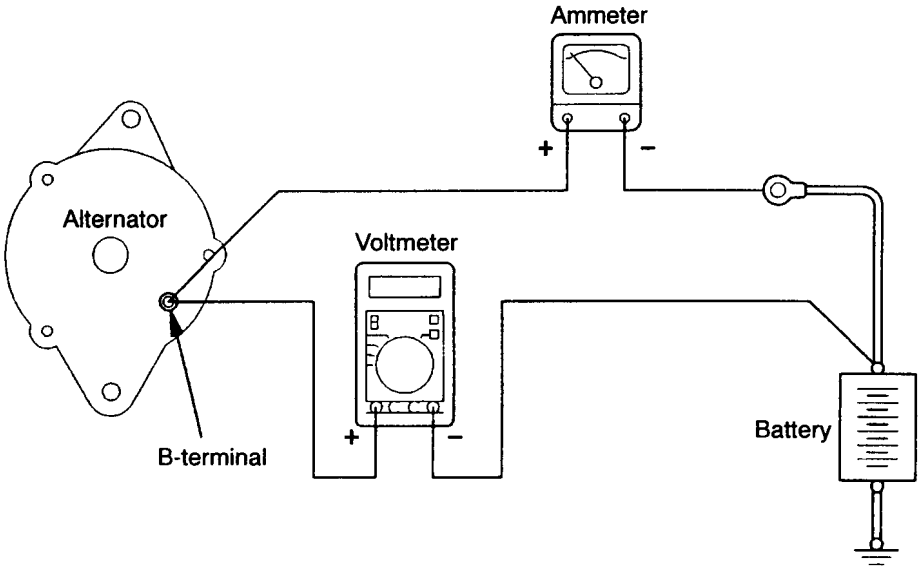
◀A▶ SNAP RING REMOVAL

Lay the unit with the compressor cover side facing down and using snap ring pliers, remove the compressor cover attaching snap ring.

Caution
When removing the snap ring, hold it with fingers to prevent it from springing away.

ON-VEHICLE SERVICE

ALTERNATOR OUTPUT LINE VOLTAGE DROP TEST

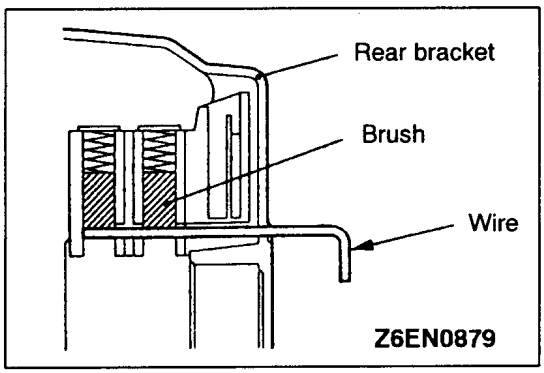


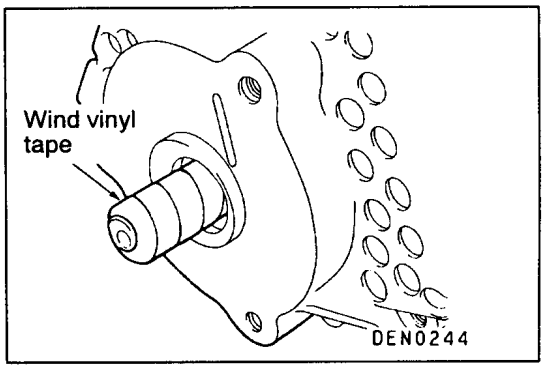
9EN0468

This test determines whether the wiring from the alternator "B" terminal to the battery (+) terminal (including the fusible line) is in a good condition or not.

1. Always be sure to check the following before the test.
   - Alternator installation
   - Alternator drive belt tension
   - Fusible link
   - Abnormal noise from the alternator while the engine is running
2. Turn the ignition switch off.
3. Disconnect the negative battery cable.
4. Disconnect the alternator output wire from the alternator "B" terminal and connect a DC test ammeter with a range of 0–150 A in series between the "B" terminal and the disconnected output wire. (Connect the (+) lead of the ammeter to the "B" terminal, and then connect the (–) lead of the ammeter to the disconnected output wire.)

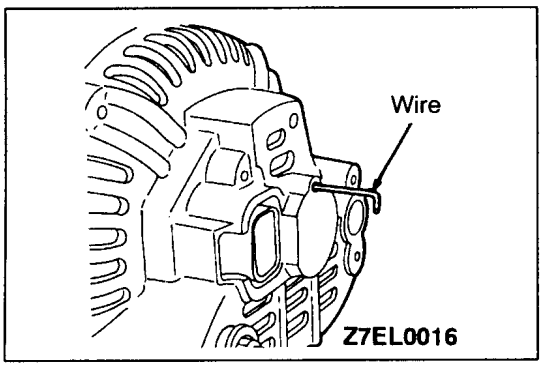
   NOTE
   An inductive-type ammeter which enables measurements to be taken without disconnecting the alternator output wire should be recommended. Using this equipment will lessen the possibility of a voltage drop caused by a loose "B" terminal connection.
5. Connect a digital-type voltmeter between the alternator "B" terminal and the battery (+) terminal. (Connect the (+) lead of the voltmeter to the "B" terminal and the connect the (–) lead of the voltmeter to the battery (+) cable.)



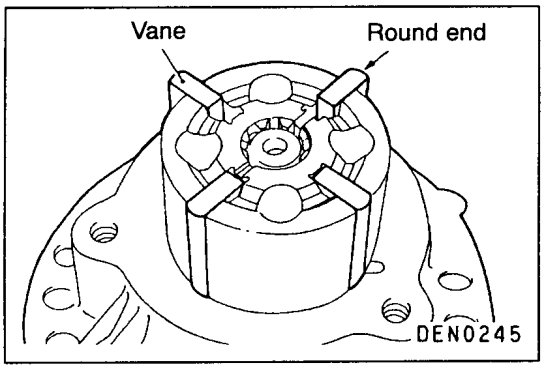


▶B◀ ROTOR INSTALLATION

1. When installing the rotor on the alternator rear bracket, wrap vinyl tape around the splined shaft to prevent damage to the oil seal. <4D5>

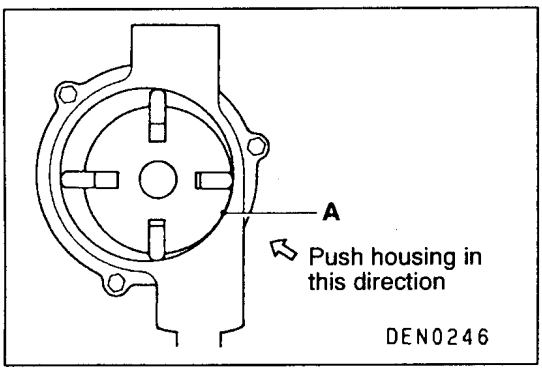


2. After rotor has been installed, remove the wire.



▶C◀ ROTOR/VANES INSTALLATION <4D5>

1. Carefully check the housing, rotor, etc. for chips and foreign matter. Then, apply engine oil and install.
2. Install the vanes with the round end facing outward.
3. Apply grease to the O-ring and fit in the housing groove so that it will not come out from the groove when the bolts are tightened.



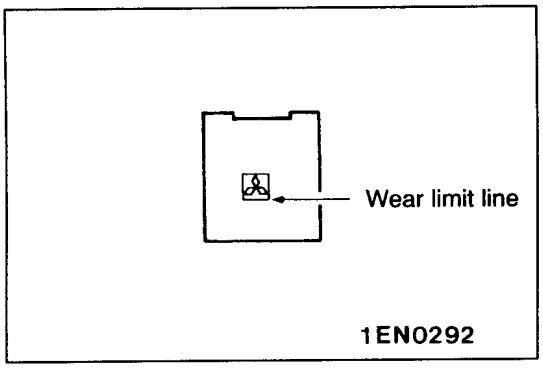
4. When tightening the housing, lightly push it in the direction of arrow so as to minimize the clearance at "A" and tighten the bolts uniformly.

   NOTE
   After assembly, be sure to conduct a performance test to check to see that the maximum vacuum is as specified below.

   Standard value of maximum vacuum:
   90.6 kPa or greater at 3,000 r/min

FRONT AND REAR BRACKET BUSHING CHECK

Inspect bushing for wear or burrs. If bushing is worn or burred, replace front bracket assembly or rear bracket assembly.



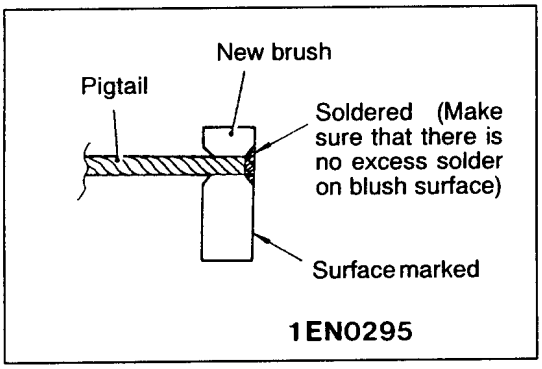
BRUSH AND SPRING REPLACEMENT

<6G7>

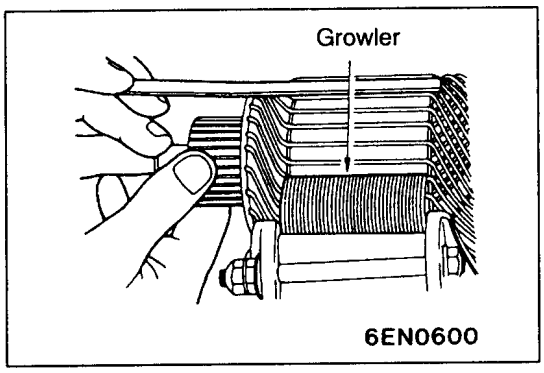
1. Brushes that are worn beyond wear limit line, or oil-soaked, should be replaced.
2. When replacing ground brush, slide the brush from brush holder by prying retaining spring back.

<4D5>

1. Brushes that are worn beyond wear limit line, or are oil-soaked, should be replaced.
2. When replacing field coil brushes, crush worn brush with pliers, taking care not to damage pigtail.



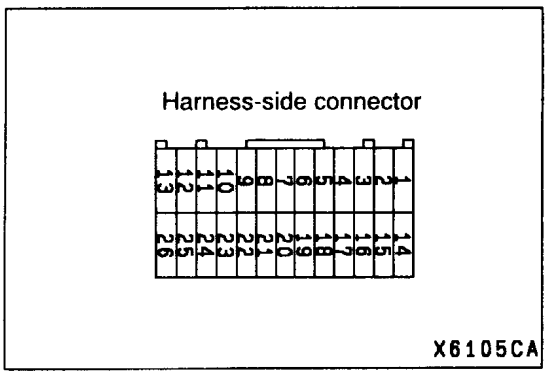
3. Sand pigtail end with sandpaper to ensure good soldering.
4. Insert pigtail into hole provided in new brush and solder it.
   Make sure that pigtail and excess solder do not come out onto brush surface.
5. When replacing ground brush, slide the brush from brush holder by prying retainer spring back.



ARMATURE TEST

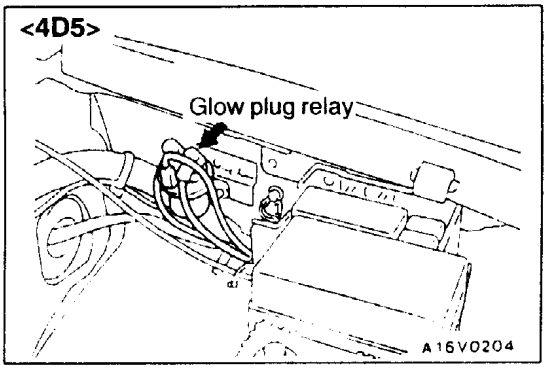
ARMATURE SHORT-CIRCUIT TEST

1. Place armature in a growler.
2. Hold a thin steel blade parallel and just above while rotating armature slowly in growler. A shorted armature will cause blade to vibrate and be attracted to the core. Replace shorted armature.



Remove the control unit connector and check the continuity between the harness-side connector terminals.

Inspection terminal	Inspection item	Continuity (resistance value)
13 - 16	Glow plug relay	Continuity (approx. 3Ω)

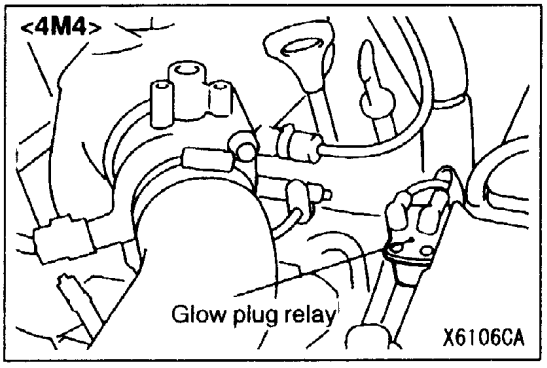


GLOW PLUG RELAY CHECK

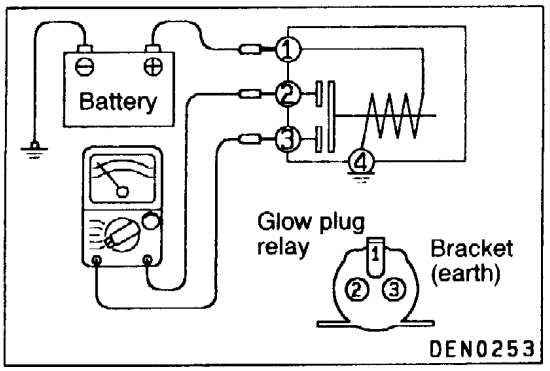
16400250032

1. Check to be sure that there is continuity (approx. 20 Ω) between glow plug relay terminal (1) and the bracket (earth).
2. Use jumper cables to connect terminal (1) of the glow plug relay to the battery (+) terminal and the bracket to the battery (–) terminal

   Caution
   (1) Always be sure to disconnect the harnesses connected to glow plug relay terminals (2) and (3) before using the jumper cables.
   (2) The terminals of the disconnected harnesses must not be shorted to earth.
   (3) When connecting the jumper cables, be very careful not to make a mistake in connecting the terminals, as this will cause damage to the relay.
3. Check the continuity between glow plug relay terminals (2) and (3) while disconnecting and connecting the jumper cable at the battery (+) terminal



Jumper cable at battery (+) terminal	Continuity between terminals (2) - (3)
Connected	Continuity (0.01 Ω or less)
Disconnected	No continuity (infinite resistance)

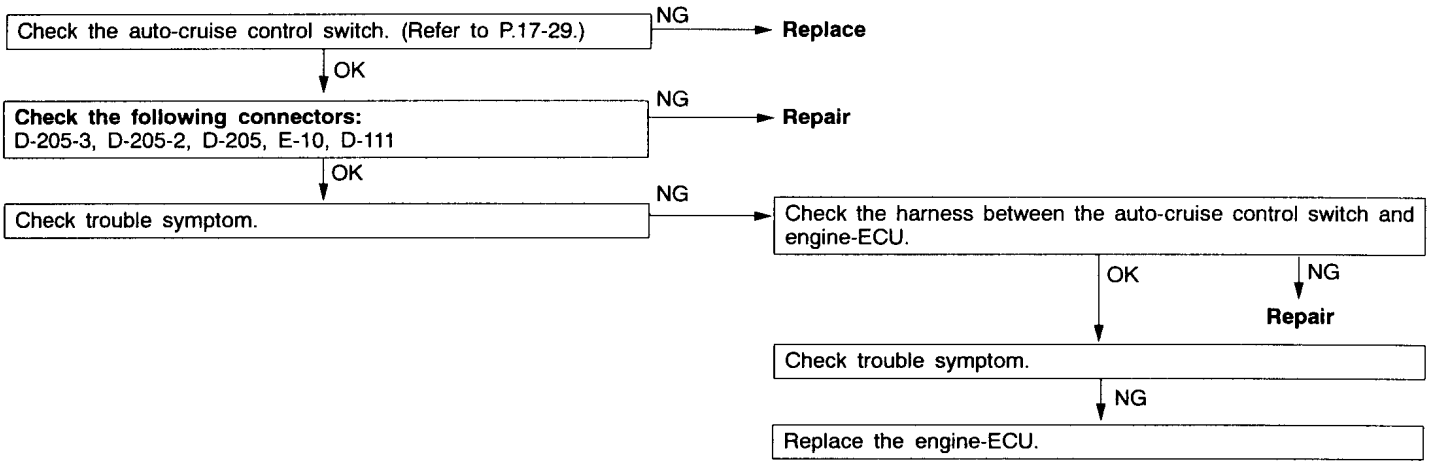


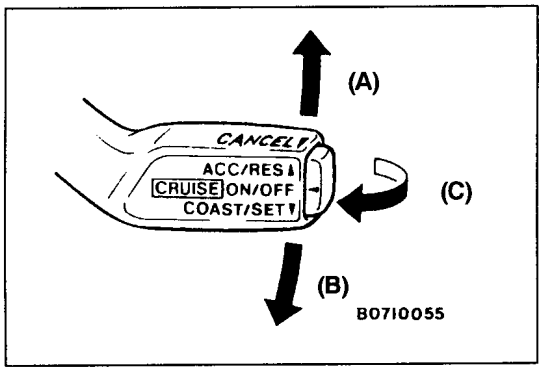
INSPECTION CHART FOR DIAGNOSIS CODES <4M4>

Code No.	Diagnosis item	Reference page
15	Auto-cruise control switch system	17-13
22	Stop lamp switch system	17-14
23	Engine-ECU system	17-14

INSPECTION PROCEDURE FOR DIAGNOSIS CODES <4M4>

Code No. 15 Auto-cruise control switch system	Probable cause
This diagnosis code is output if the RESUME and SET switches of the auto-cruise control switch remain on.	• Malfunction of the auto-cruise control switch • Malfunction of the connector • Malfunction of the harness • Malfunction of the engine-ECU





AUTO-CRUISE CONTROL SWITCH CHECK

AUTO-CRUISE CONTROL SETTING

1. Switch ON the MAIN switch.
2. Drive at the desired speed within the range of approximately 40–200 km/h.
3. Push the auto-cruise control switch in the direction of arrow (B).
4. Check to be sure that when the switch is released the speed is the desired constant speed.

NOTE
If the vehicles speed decreases to approximately 15 km/h below the set speed because of climbing a hill for example, the auto-cruise control will be cancelled.

SPEED-INCREASE SETTING

1. Set to the desired speed.
2. Push the auto-cruise control switch in the direction of arrow (A).
3. Check to be sure that acceleration continues while the switch is hold, and that when it is released the constant speed at the time when it was released becomes the driving speed.

NOTE
Acceleration can be continued even if the vehicle speed has passed the high-speed limit (approx. 200 km/h). But the speed when the auto-cruise control switch is released will be recorded as the high-speed limit.

SPEED-REDUCTION SETTING

1. Set to the desired speed.
2. Push the auto-cruise control switch in the direction of arrow (B).
3. Check to be sure that deceleration continues while the switch is pressed, and that when it is released the constant speed at the time when it was released becomes the driving speed.

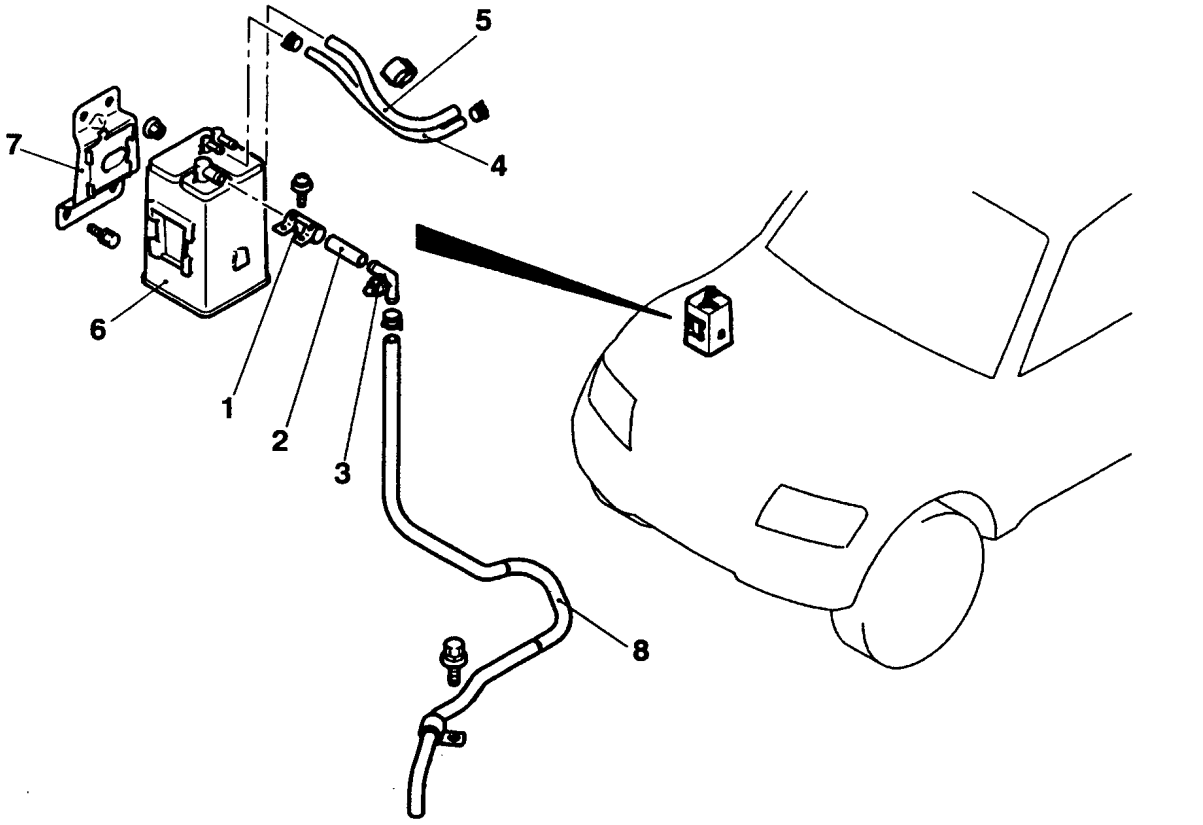
NOTE
When the vehicle speed reaches the low limit (approximately 40 km/h) during deceleration, the auto-cruise control will be cancelled.

RETURN TO THE SET SPEED BEFORE CANCELLATION AND AUTO-CRUISE CONTROL CANCELLATION

1. Set the auto-cruise speed control.
2. When any of the following operations are performed while at constant speed during auto-cruise control, check if normal driving is resumed and deceleration occurs.
   a. The auto-cruise control switch is pushed in the direction of arrow (C).
   b. The brake pedal is depressed.
   c. The clutch pedal is depressed. <M/T>
   d. The selector lever is moved to the "N" range. <A/T>
3. When the auto-cruise control switch is pushed in the direction of arrow (A) at a vehicle speed of 40 km/h or higher, check if the vehicle speed returns to the speed before auto-cruise control driving was cancelled, and constant speed driving occurs.
4. When the MAIN switch is turned to OFF while driving at constant speed, check if normal driving is resumed and deceleration occurs.

CANISTER

REMOVAL AND INSTALLATION

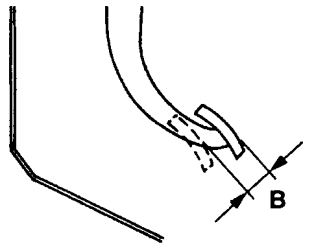


AY0296CA

Removal steps

1. Hose clip
2. Vapor hose
3. Breather valve
4. Vapor hose connection
5. Purge hose connection
6. Canister
7. Canister bracket

Clutch pedal clevis pin play

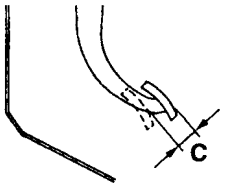


A14W0002

4. Measure the clutch pedal clevice pin play.
   Standard value (B): 1 - 3 mm
5. If the clutch pedal play is not within the standard value, loosen the setting nut to adjust the play to the standard value.

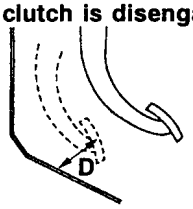
   Caution
   Do not push in the master cylinder push rod at this time, otherwise the clutch will not operate properly.

Clutch pedal free play



14W0002

Distance between the clutch pedal and the toeboard when the clutch is disengaged

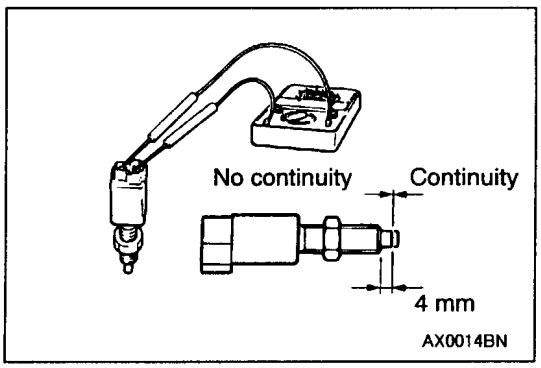


14W0003

00005683

6. After completing the adjustments, confirm that the clutch pedal free play (measured at the face of the pedal pad) and the distance between the clutch pedal (the face of the pedal pad) and the toeboard when the clutch is disengaged are within the standard value ranges.

   Standard value (C): 6 - 13 mm
   Standard value (D):
   75 mm or more <L.H. drive vehicles>
   70 mm or more <R.H. drive vehicles>
7. If the clutch pedal free play and the distance between the clutch pedal and the toeboard when the clutch is disengaged do not agree with the standard values, it is probably the result of either air in the hydraulic system or a faulty master cylinder, release cylinder or clutch. Bleed the air, or disassemble and inspect the master cylinder, release cylinder or clutch.
8. Turn back the carpet, etc.



AX0014BN

CLUTCH PEDAL POSITION SWITCH CONTINUITY CHECK

1. Adjust the clutch pedal. (Refer to P.21-2.)
2. Depress the clutch pedal, and check the continuity between the terminals.

Measurement Conditions	Terminal No. 1	Terminal No. 2
Clutch pedal depressed	○	○
Clutch pedal not depressed		

BLEEDING

Specified fluid: Brake fluid DOT 3 or DOT 4

Caution
Use the specified brake fluid. Avoid using a mixture of the specified fluid and other fluid.

TRANSMISSION ASSEMBLY

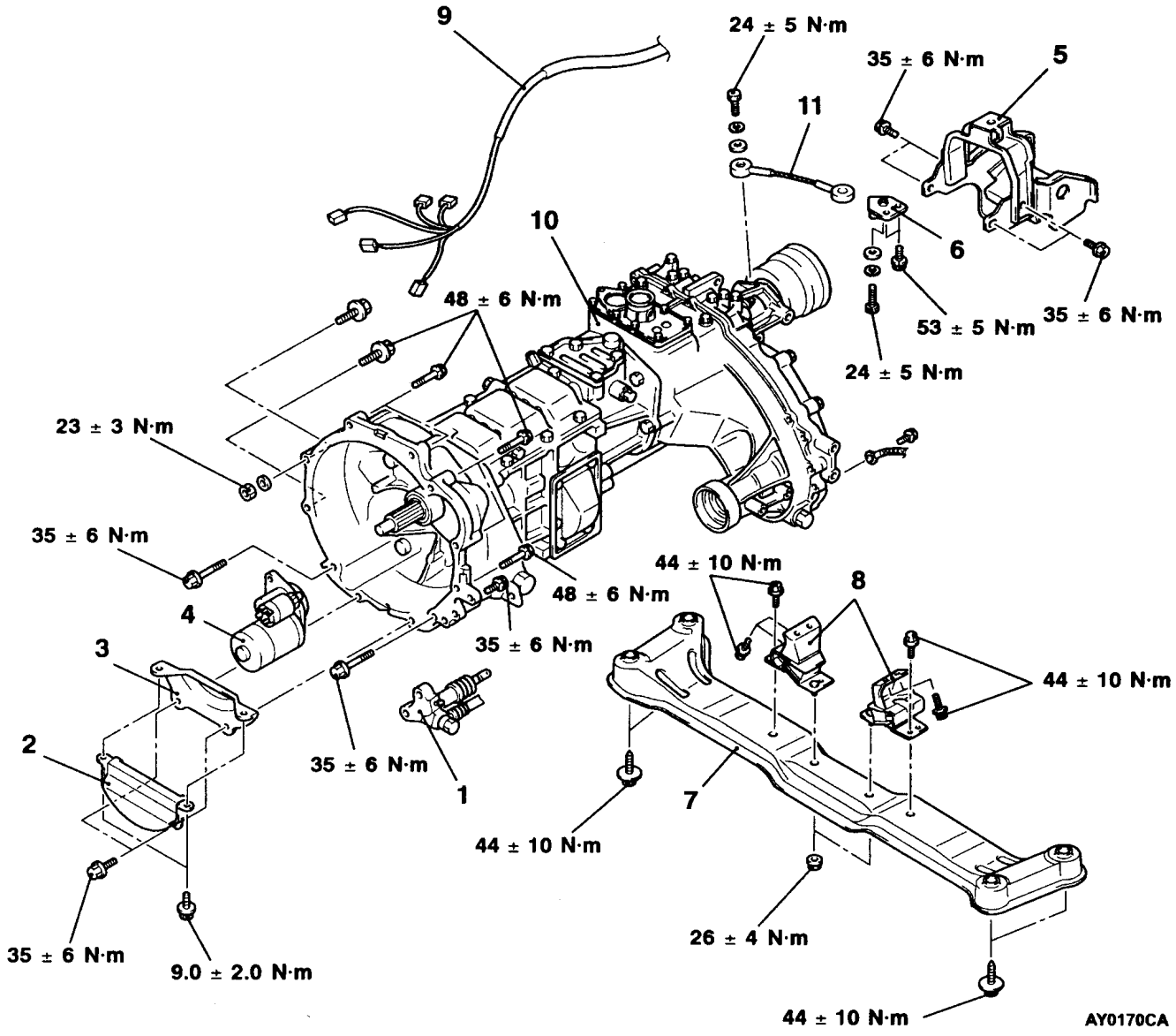
REMOVAL AND INSTALLATION

Caution
The rear propeller shaft is made of fiber-reinforced plastic tube, so always refer to GROUP 25 prior to its removal.

Pre-removal Operation
- Transmission and Transfer Control Lever Removal (Refer to P.22-8.)
- Transmission and Transfer Oil Draining (Refer to P.22-6.)
- Front and Rear Propeller Shaft Removal (Refer to GROUP 25 – Propeller Shaft.)
- Front and Center Exhaust Pipe Removal (Refer to GROUP 15 – Exhaust Pipe and Main Muffler)

Post-installation Operation
- Front and Center Exhaust Pipe Installation (Refer to GROUP 15 – Exhaust Pipe and Main Muffler)
- Front and Rear Propeller Shaft Installation (Refer to GROUP 25 – Propeller Shaft.)
- Transmission and Transfer Oil Filling (Refer to P.22-6.)
- Transmission and Transfer Control Lever Installation (Refer to P.22-8.)
- Transmission and Transfer Control Lever Operation Check

<4D5 with V5MT1>



No.	Pre-test/operation conditions	Test/operation	Judgment value	Check item	Diagnosis code No.	Inspection procedure if there is an abnormality
6	Selector lever position: Sports mode (Must be done on a level and straight road.)	Selector lever position and engine (1) Idling in 1st (Vehicle stopped) (2) Driving at a constant speed of 10 km/h in 1st (3) Driving at a constant speed of 30 km/h in 2nd (4) Driving at a constant speed of 50 km/h in 3rd (5) Driving at a constant speed of 50 km/h in 4th (6) Driving at a constant speed of 70 km/h in 5th (Each condition should be maintained for 10 seconds or more)	Data List No. 63 (2) 1st (3) 2nd (4) 3rd (5) 4th (6) 5th	Shift condition	–	–
			Data List No. 31 (2) 0% (3) 100% (4) 100% (5) 100% (6) 100%	Low & reverse solenoid valve (LR solenoid valve)	31	LR solenoid valve system
			Data List No. 32 (2) 0% (3) 0% (4) 0% (5) 0% (6) 100%	Underdrive solenoid valve (UD solenoid valve)	32	UD solenoid valve system
			Data List No. 33 (2) 100% (3) 0% (4) 100% (5) 100% (6) 0%	Second solenoid valve (2ND solenoid valve)	33	2nd solenoid valve system
			Data List No. 34 (2) 100% (5) 0% (3) 100% (6) 0% (4) 0%	Overdrive solenoid valve (OD solenoid valve)	34	OD solenoid valve system
			Data List No. 35 (2) 0% (5) 100% (3) 0% (6) 100% (4) 0%	Reduction solenoid valve (RED solenoid valve)	35	RED solenoid valve system
			Data List No. 29 (1) 0 km/h (5) 50 km/h	Vehicle speed sensor	–	Vehicle speed sensor system
			Data List No. 22 (5) 1,300 – 1,600 r/min	Input shaft speed sensor	22	Input shaft speed sensor system
			Data List No. 23 (5) 1,300 – 1,600 r/min	Output shaft speed sensor	23	Output shaft sensor system
		Selector lever position and engine (1) Driving at 30 km/h in 2 range, then fully close the accelerator. (2) Driving at a constant speed of 50 km/h in 4th	Data List No. 36 (1) 70% – 90% to 0% (2) 70% – 90%	Damper clutch control solenoid valve (DCC solenoid valve)	36 52	DCC solenoid valve system
			Data List No. 52 (1) –300 – –100 r/min or 100 – 300 r/min (2) –10 – 10 r/min			

Code No. 23 Output shaft speed sensor system	Probable cause
If the output from the output shaft speed sensor is 50% or less continuously for 1 second or more while the vehicle is driving at 30 km/h or more in 4th, it is judged that there is a short-circuit or open circuit in the output shaft speed sensor, and code No. 23 is output. If code No. 23 is output 4 times, the transmission is locked at 3rd gear (D) or 2nd gear (downshift operation in Sports mode) as a fail-safe measure, and the N range indicator lamp flashes at 1 Hz.	• Malfunction of output shaft speed sensor • Malfunction of direct planetary carrier • Malfunction of harness or connector • Malfunction of engine-A/T-ECU <6G7> • Malfunction of A/T-ECU <4M4>

★ Refer to the Transmission Workshop Manual.

MUT-II Data List
- No. 23 Output shaft speed sensor system
  OK: Refer to P.23-61 (Data List Chart).

OK → Transient malfunction (Refer to GROUP 00 – Points to Note for Transient Malfunctions.) NG → **Repair**

NG ↓

Measure at engine-A/T-ECU connector D-121 <6G7>, or at A/T-ECU connector D-107 <4M4>.
- Measure at the ECU terminals
- Ignition switch: ON
- <6G7>Voltage between terminals 81 and earth
- <4M4> Voltage between terminal 43 and earth
  OK: 0.5 V or less

NG → **Check the following connectors:** <6G7> D-122, <4M4> D-108 NG → **Repair**

OK → Check the trouble symptoms. NG → Replace the engine-A/T-ECU or A/T-ECU.

OK ↓

Measure at engine-A/T-ECU connector D-122 <6G7>, or at A/T-ECU connector D-108 <4M4>.
- Measure at the ECU terminals
- Disconnect C-02
- Ignition switch: ON
- <6G7>Voltage between terminals 104 and earth
- <4M4> Voltage between terminal 32 and earth
  OK: 4.8 – 5.2 V

NG → **Check the following connectors:** <6G7> D-122, <4M4> D-108 NG → **Repair**

OK → Check the trouble symptoms. NG → Replace the engine-A/T-ECU or A/T-ECU.

OK ↓

Measure the output wave pattern of the output shaft speed sensor at engine-A/T-ECU connectors D-121 and D-122 <6G7>, or at A/T-ECU connector D-108 <4M4> (using an oscilloscope).
- Vehicle speed: approx. 50 km/h
- Shift range: 4th
- <6G7> Voltage between terminal 81 of D-121 and terminal 104 of D-122
- <4M4> Voltage between terminal 32 of D-108 and terminal 43 of D-108
  OK: A wave pattern such as the one shown on P.23-69 (Check Procedure Using an Oscilloscope) should be output, and the maximum value should be 4.8 V or more and the minimum value should be 0.8 V or less. There should be no noise in the output wave pattern.

OK → **Check the following connectors:** <6G7> D-121, D-122, <4M4> D-108 NG → **Repair**

OK → Check the trouble symptoms. NG → Replace the engine-A/T-ECU or A/T-ECU.

NG ↓

To the next page

To the next page

OK

Measure the output wave pattern of the output shaft speed sensor at engine-A/T-ECU connectors D-121 and D-122 <6G7>, or at A/T-ECU connector D-108 <4M4> (using an oscilloscope).
- Vehicle speed: approx. 50 km/h
- Shift range: 4th
  <6G7>Voltage between No.81 (D-121) and No.104 (D-122)
  <4M4> Voltage between No.32 (D-108) and No.43 (D-108)
  OK: A wave pattern such as the one shown on P.23-69 (Check Procedure Using an Oscilloscope) should be output, and with the maximum value should be 4.8 V or more and the minimum value should be 0.8 V or less. There should be no noise in the output wave pattern.

NG →
- Check the harness between the output shaft speed sensor and the engine-A/T-ECU. <6G7>
- Check the harness between the output shaft speed sensor and the A/T-ECU. <4M4>

OK ↓ / NG ↓ **Repair**

Replace the output shaft speed sensor. ★

Check the trouble symptoms.

NG ↓

Overhaul the A/T. ★
- Replace the direct planetary carrier.

Check the trouble symptoms.

NG ↓

Eliminate the cause of the noise.

OK ↓

Replace the valve body assembly. ★

Check the trouble symptoms.

NG ↓

Replace the engine-A/T-ECU or A/T-ECU.

Check the trouble symptoms.

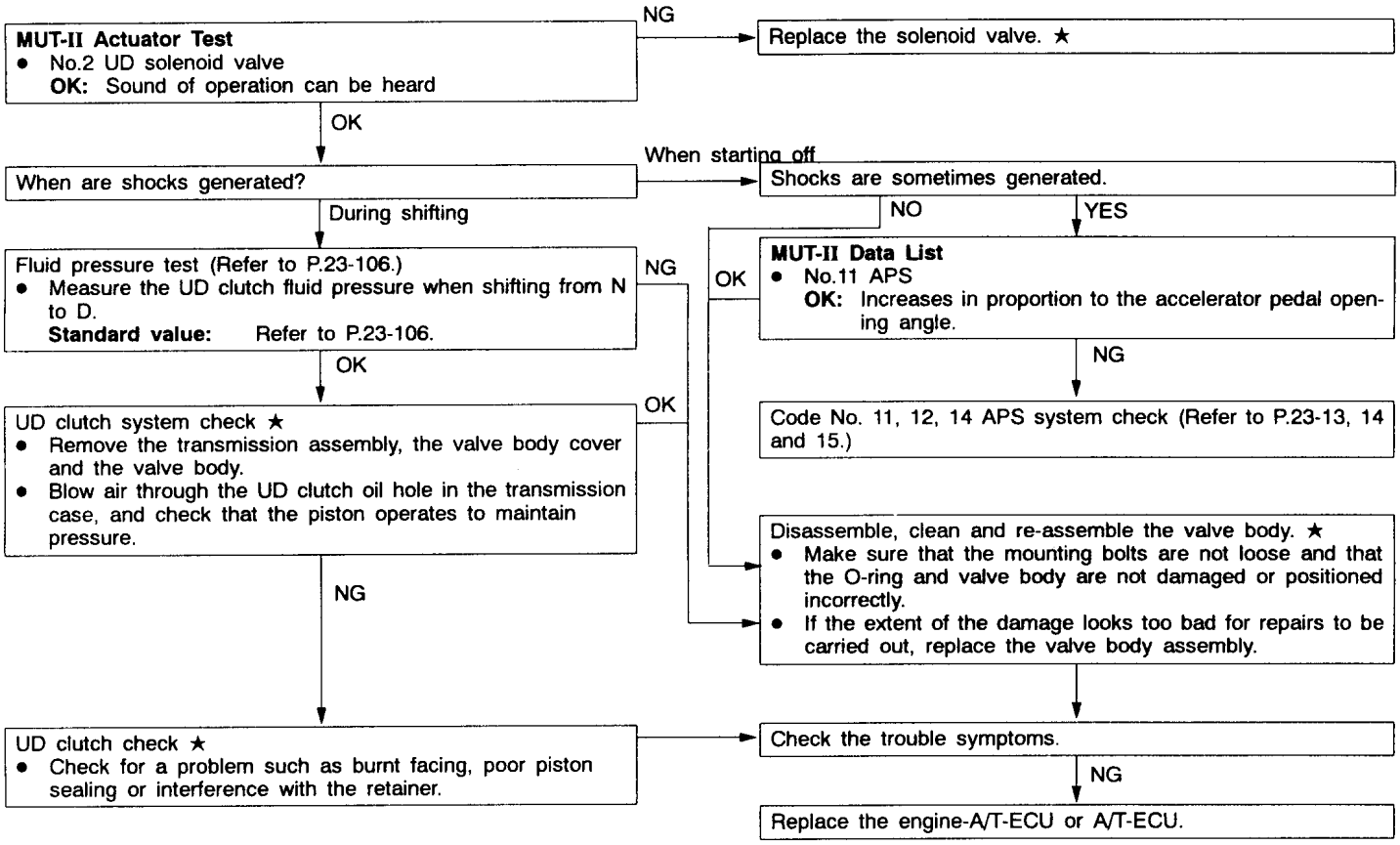
NG ↓

Overhaul the A/T. ★
- Replace the UD clutch. (Code No. 41, 42 or No. 44 is output, or no other codes are output.)
- Replace the OD clutch. (Code No. 44 or No. 45 is output, or no other codes are output.)
- Replace the RED brake. (Code No. 41, 42 or No. 46 is output, or no other codes are output.)
- Replace the one-way clutch (OWC-D). (Code No. 41 or No. 42 is output, or no other codes are output.)

Inspection procedure 7

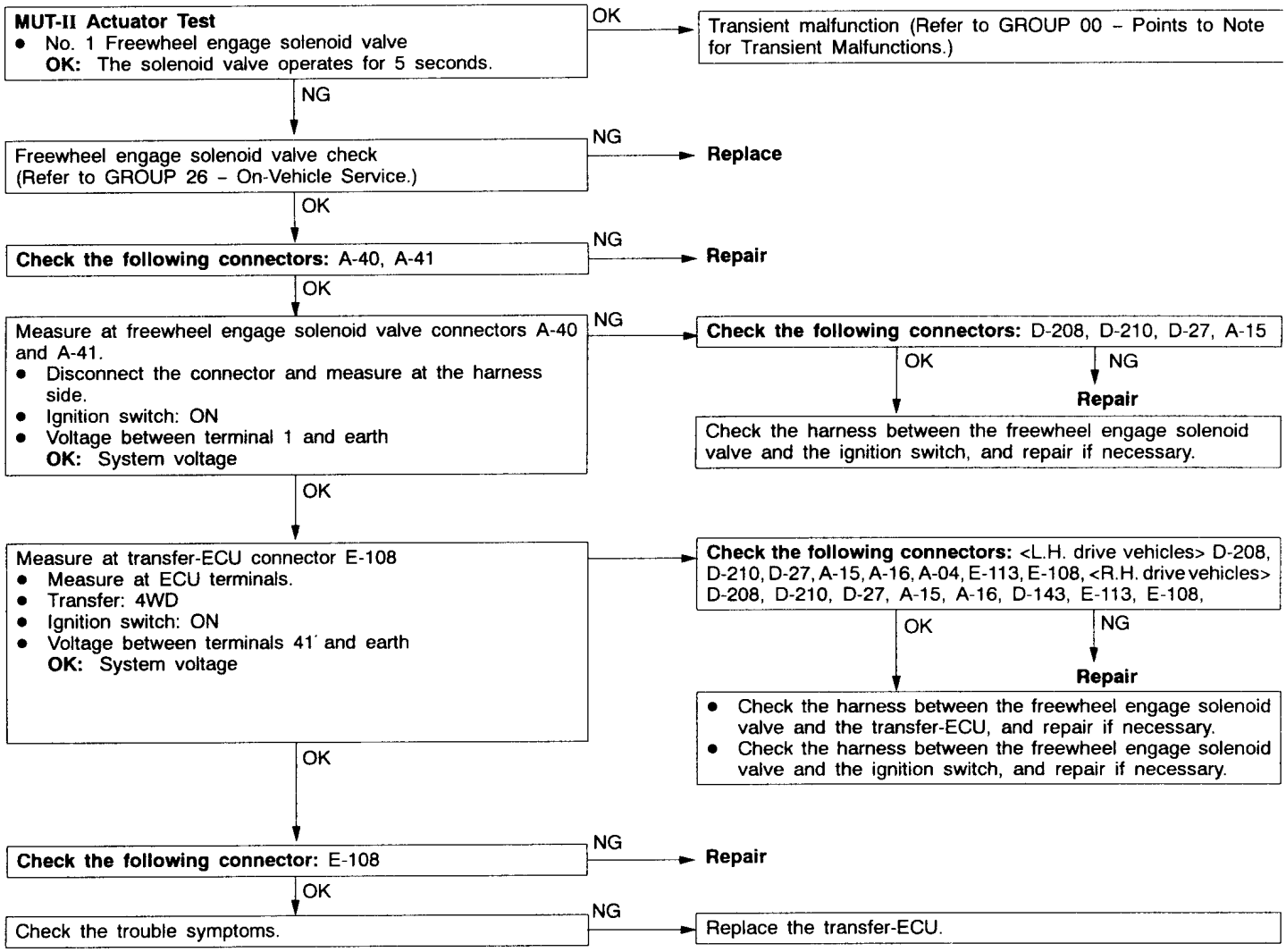
N-to-D shocks, large time lag	Probable cause
If abnormal shocks or a time lag of 2 seconds or more occurs when the selector lever is moved from N to D while the engine is idling, the cause is probably abnormal UD clutch pressure, or a malfunction of the UD clutch, valve body or APS.	• Abnormal UD clutch pressure • Malfunction of UD solenoid valve • Malfunction of UD clutch system • Malfunction of valve body • Malfunction of APS • Malfunction of engine-A/T-ECU <6G7> • Malfunction of A/T-ECU <4M4>

★ Refer to the Transmission Workshop Manual.



Terminal No.	Check item	Inspection conditions	Standard value
10	A/C compressor load signal	A/C switch: OFF	0 V
		A/C switch: ON	System voltage
11	Power supply	Ignition switch: OFF	0 V
		Ignition switch: ON	System voltage
12	Earth	At all times	0 V
13	Earth	At all times	0 V
14	OD solenoid valve	Engine: Idling Shift range: 3rd	System voltage
		Engine: Idling Shift range: Park	7 – 9 V
15	DCC solenoid valve	Engine: Idling Shift range: 1st	System voltage
16	2nd solenoid valve	Engine: Idling Shift range: 2nd	System voltage
		Engine: Idling Shift range: Park	7 – 9 V
17	2nd shift indicator lamp	Shift range: 2nd	System voltage
		Shift range: Other than the above	0 V
18	4th shift indicator lamp	Shift range: 4th	System voltage
		Shift range: Other than the above	0 V
24	Power supply	Ignition switch: OFF	0 V
		Ignition switch: ON	System voltage
25	Earth	At all times	0 V
26	Earth	At all times	0 V
31	Input shaft speed sensor	Measure between terminals (31) and (43) using an oscilloscope. Engine: 2 000 r/min Shift range: 4th	Check Procedure using an Oscilloscope (Refer to P.23-69.)
32	Output shaft speed sensor	Measure between terminals (32) and (43) using an oscilloscope. Engine: 2 000 r/min Shift range: 4th	Check Procedure using an Oscilloscope (Refer to P.23-69.)
33	Engine speed sensor	Engine: Idling	2.0 – 2.4 V
38	Backup power supply	At all times	System voltage
43	Sensor earth	At all times	0 V
44	A/T fluid temperature sensor	A/T fluid temperature 20°C	3.8 – 4.0 V
		A/T fluid temperature 40°C	3.2 – 3.4 V
		A/T fluid temperature 80°C	1.7 – 1.9 V
45	Accelerator pedal position sensor (APS)	Accelerator pedal: Fully closed (engine stopped)	0.985 – 1.085 V
		Accelerator pedal: Fully open (engine stopped)	4.0 V or higher
51	RED solenoid valve	Engine: Idling Shift range: 5th	System voltage
		Engine: Idling Shift range: Park	7 – 9 V
53	Output communication with engine-ECU	Engine: Idling Selector lever position: D	Other than 0 V

Code No. 34 Freewheel engage solenoid valve system	Probable cause
Code No. 34 is output to indicate an open circuit or short-circuit in the freewheel engage solenoid valve when the transfer-ECU terminal voltages are not the same while current is being supplied to the freewheel engage solenoid valve.	• Malfunction of freewheel engage solenoid valve • Malfunction of harness or connector • Malfunction of transfer-ECU



NOTE
Stop pouring in the ATF once 4.0 litre has been poured in.

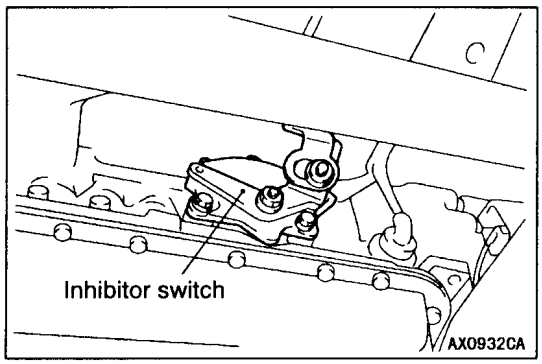
4. Repeat the operation in step 2.

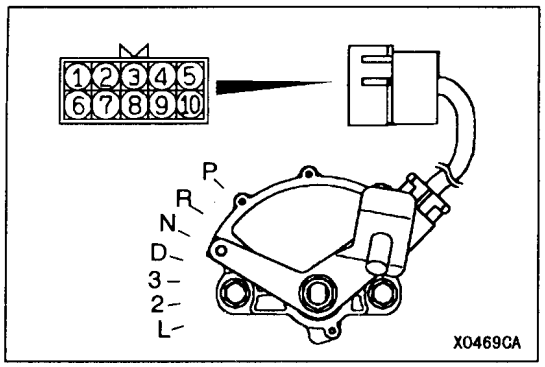
NOTE
Carry out steps 2 and 6 so that at least 8.0 L has been discharged from the cooler hose.After this, discharge a small quantity of ATF and check for contamination.If the ATF is contaminated, repeat steps 3 and 4.

5. Carry out the procedure in "Automatic Transmission Fluid (ATF) Replacement" from step 3 onwards.

ACCELERATOR PEDAL POSITION SENSOR (APS) ADJUSTMENT

Refer to GROUP 13 – On-vehicle Service.





INHIBITOR SWITCH CONTINUITY CHECK

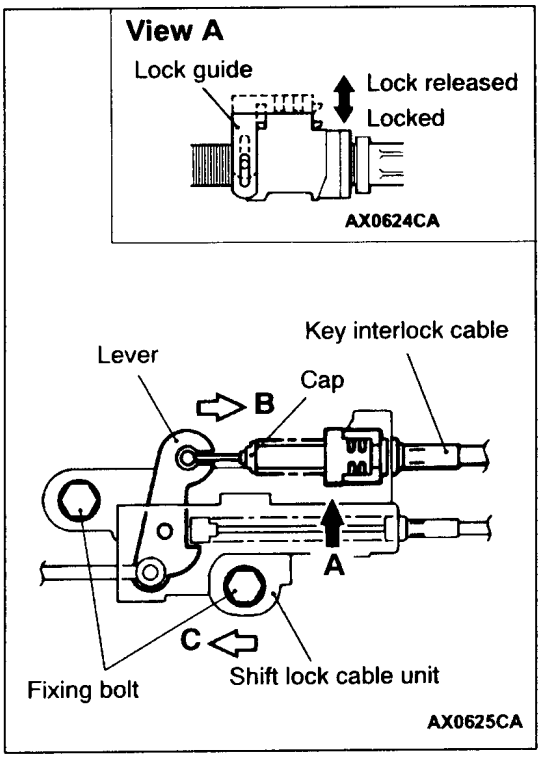
Item	Terminal No.						
	1	2	3	7	8	9	10
P	○			○		○	○
R				○	○		
N		○		○		○	○
D			○	○			

NOTE
The inhibitor switch has 7 positions, but only four positions (P, R, N and D) are used.

KEY INTERLOCK MECHANISM CHECK

1. Carry out the following check.

Inspection procedure	Inspection conditions		Check details (Normal condition)
1	Brake pedal: Depressed	Ignition switch position: LOCK (OFF) or pulled out	The selector lever cannot be moved from the P position to any other position when the pushbutton on the selector lever is not being pressed.
2		Ignition switch position: Other than "LOCK (OFF) or pulled out"	The selector lever can easily be moved from the P position to some other position when the pushbutton on the selector lever is being pressed.
3	Brake pedal: Released	Selector lever position: Other than "P"	The ignition switch will not turn to the LOCK position.
4		Selector lever position: "P"	The ignition switch can turn smoothly to the LOCK (OFF) position.



2. If the above operations do not occur correctly, adjust the shift lock cable unit by the following procedure.
   (1) Remove the front floor console, and then provisionally install the selector lever knob. (Refer to GROUP 52A.)
   (2) Move the selector lever to the P position and turn the ignition switch to the LOCK (OFF) position.
   (3) Loosen the shift lock cable unit fixing bolt, and then while pushing the lever in the direction of B and the unit in direction of C, tighten the bolt to the specified torque of 5.0 ± 1.0 N·m.
   (4) Lift the lock guide to unlock the key interlock cable.
   (5) While pushing the cap of the key interlock cable in the direction of B, lower the lock guide to lock the cable.

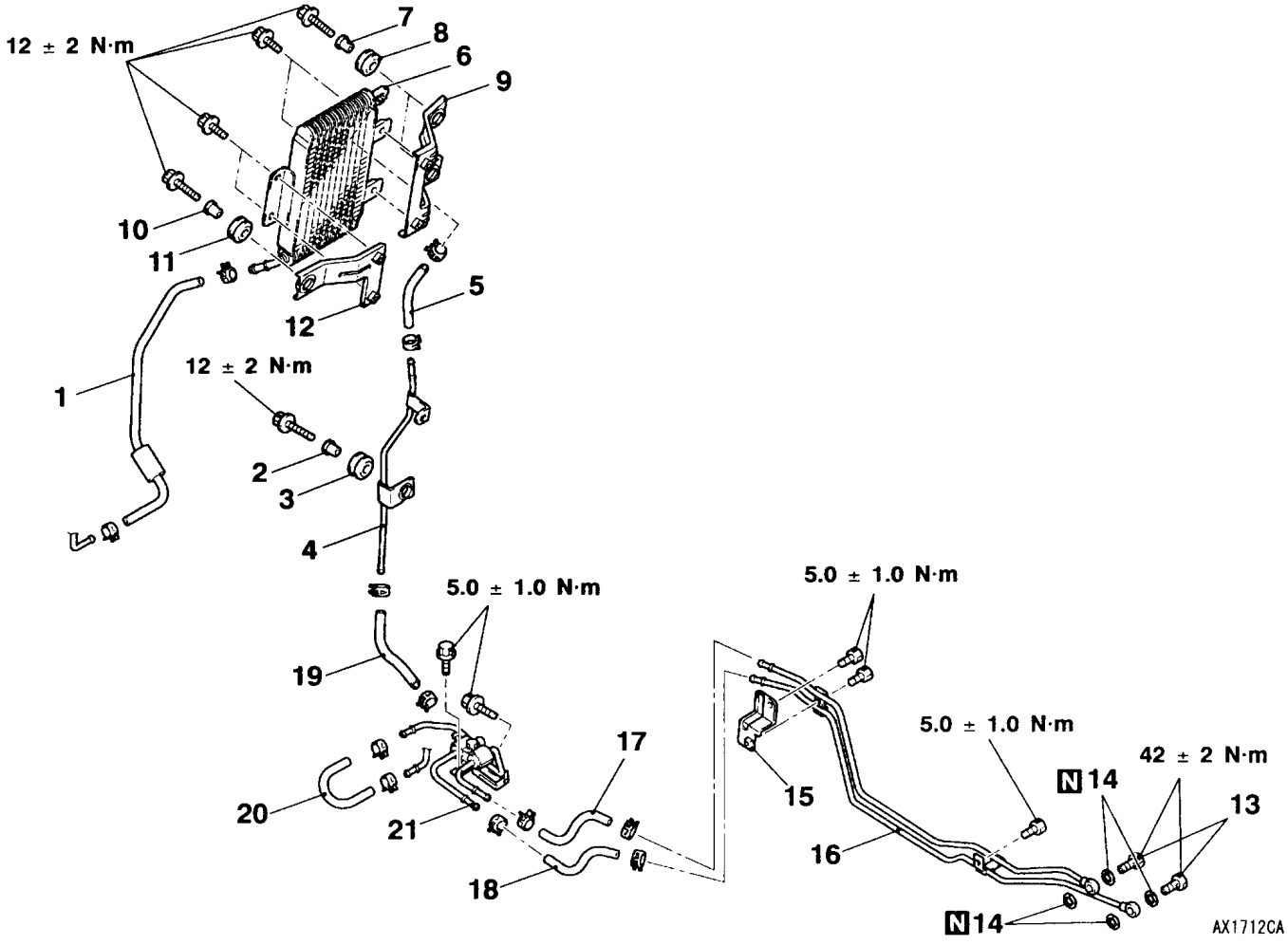
   NOTE
   The lock position at this time (the amount by which the cap is pushed) represents the amount of adjustment for the key interlock cable. If the key interlock cable does not operate correctly, adjust the lock position.
3. After adjusting, check the operation once more. If the operation is still incorrect, replace the shift lock cable unit. (Refer to P.23-120)

TRANSMISSION OIL COOLER

REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operations
- Transmission Fluid Draining and Filling (Refer to P.23-95 and P.23-99.)
- Skid Plate and Under Cover Removal and Installation

<6G7>



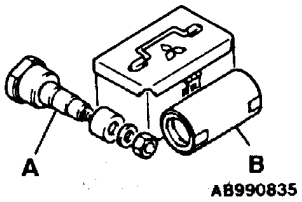
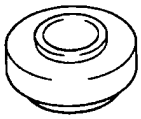
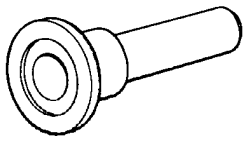
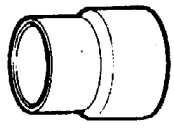
Transmission oil cooler removal steps
1. Hose
2. Distance piece
3. Bushing
4. Transmission oil return tube
5. Hose
6. Distance piece
- Headlight assembly (Refer to GROUP 54A.)

7. Bushing
8. Transmission oil cooler bracket
9. Distance piece
10. Bushing
11. Transmission oil cooler bracket
12. Transmission oil cooler

Transmission oil cooler tube assembly removal steps
- ▶B◀ 13. Eye bolt
- ▶B◀ 14. Gasket
- 15. Transmission oil cooler tube bracket
- ▶B◀ 16. Transmission oil cooler tube assembly
- ▶A◀ 17. Return hose
- ▶A◀ 18. Feed hose
- 19. Hose
- 20. Hose
- 21. Transmission oil cooler tube assembly

PROPELLER SHAFT

CONTENTS

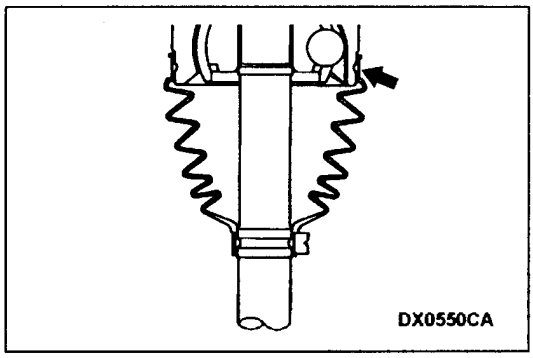
Tool	Number	Name	Use
 AB990835	MB991171 A: MB990819 B: MB991170	Pinion height gauge set A: Drive pinion gauge assembly B: Cylinder gauge	• Inspection of drive pinion rotation starting torque • Measurement of drive pinion height
	MB990685	Torque wrench	• Inspection of hub rotation starting torque • Measurement of drive pinion rotation starting torque
	MB990326	Preload socket	
 B990802	MB990802	Bearing installer	• Press-fitting of drive pinion front bearing inner race • Press-fitting of side bearing inner race
	MB990031 or MB990699	Drive pinion oil seal installer	Press-fitting of drive pinion oil seal
	MB990813	Tap	Removal of adhesive
	MB990799	Ball joint remover and installer	Installation of freewheel clutch bearing
	MB991168	Differential oil seal installer	Installation of freewheel clutch oil seal

<If the crimping amount is smaller than 2.4 mm>
Remove the U.J. boot band, readjust the value of (W) in step (4) according to the following formula, and then repeat the operations in steps (5) and (6) using a new B.J. boot band.
W = 5.5 mm – A
Example: If A = 2.3, then W = 3.2 mm.

8. Check that the U.J. boot band is not sticking out past the place where it has been installed.
   If the U.J. boot band is sticking out, remove it and then repeat the operations in steps (4) to (7) using a new U.J. boot band.
9. Fill the inside of the U.J. boot with the specified amount of the specified grease.

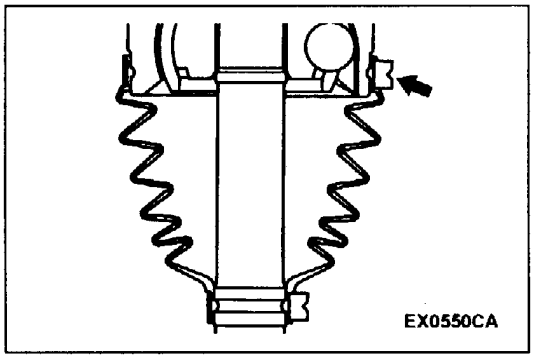
   Specified grease: Repair kit grease

   Amount to use:
   Vehicles with 4M41-M/T: 180 ± 10 g
   (90 ± 5 g inside joint, 90 ± 5 g inside boot)
   Vehicles with 4M41-A/T, 4D5 6G7: 135 ± 10 g
   (65 ± 5 g inside joint, 70 ± 5 g inside boot)

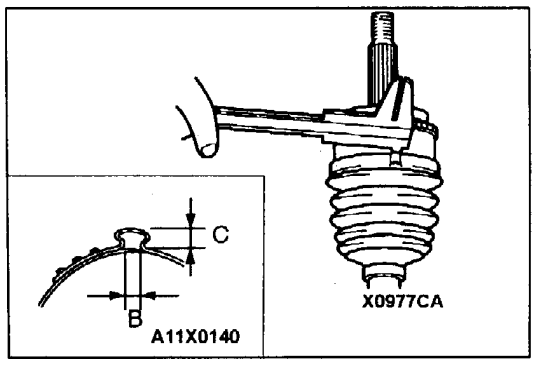


10. Install the large diameter part on the plastic boot alighning the groove of the shaft.
11. Follow the same procedure as in step (4) to adjust the size of the opening (W) on the special tool so that it is at the standard value.

    Standard value (W): 3.2 mm



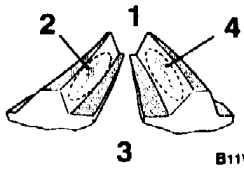
12. Install the U.J. boot band (large) to the U.J. boot.
13. Use the special tool to crimp the U.J. boot band (large) in the same way as in step (6).

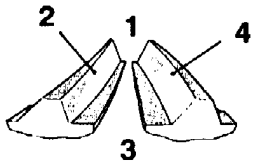


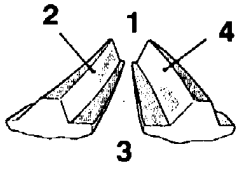
14. Check that the crimping amount (B) of the U.J. boot band is at the standard value and that the crimping amount (C) of the U.J. boot band is at the limited value

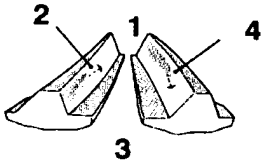
    Standard value (B): 2.4 – 2.8 mm

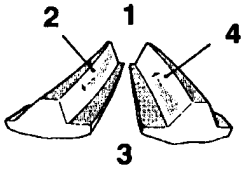
    Limit (C): 9.5 mm

<table>
<tr>
<th>Standard tooth contact pattern</th>
<th>Problem</th>
<th>Solution</th>
</tr>
<tr>
<td rowspan="2">1 Narrow tooth side
2 Drive-side tooth surface (the side applying power during forward movement)
3 Wide tooth side
4 Coast-side tooth surface (the side applying power during reverse movement)
 

B11W0115</td>
<td>Tooth contact pattern resulting from excessive pinion height
 

B11W0116
The drive pinion is positioned too far from the centre of the drive gear.</td>
<td> 

B11W0118
Increase the thickness of the drive pinion rear shim, and position the drive pinion closer to the centre of the drive gear. Also, for backlash adjustment, position the drive gear farther from the drive pinion.</td>
</tr>
<tr>
<td>Tooth contact pattern resulting from insufficient pinion height
 

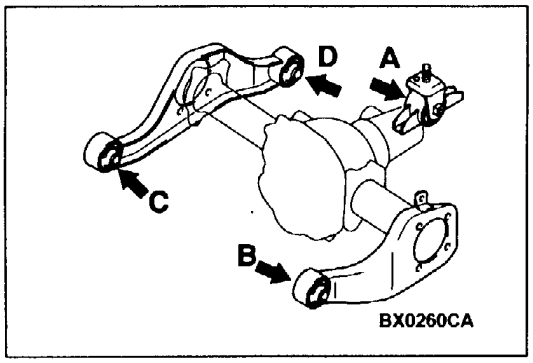
B11W0117
The drive pinion is positioned too close to the centre of the drive gear.</td>
<td> 

B11W0119
Decrease the thickness of the drive pinion rear shim, and position the drive pinion farther from the centre of the drive gear. Also, for backlash adjustment, position the drive gear closer to the drive pinion.</td>
</tr>
</table>

NOTE

Checking the tooth contact pattern is the way to confirm that the adjustments of the pinion height and backlash have been done properly. Continue to adjust the pinion height and backlash until the tooth contact pattern resembles the standard pattern.

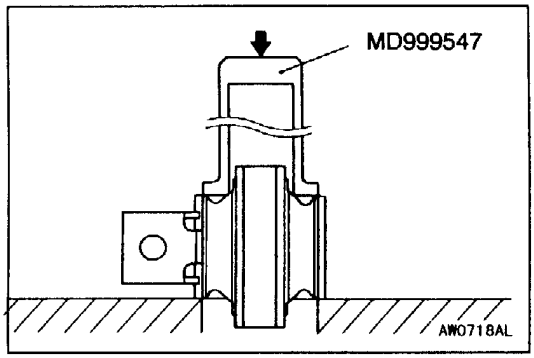
If, even after adjustments have been made, the correct tooth contact pattern cannot be obtained, it means that the drive gear and the drive pinion have become worn beyond the allowable limit. Replace the gear set.



INSTALLATION SERVICE POINT

▶A◀ DIFFERENTIAL MOUNT BRACKET ASSEMBLY INSTALLATION

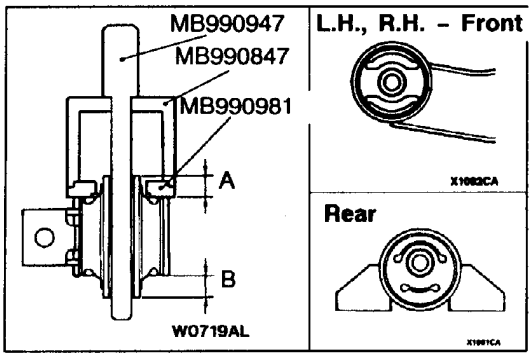
Tighten the bolts shown in the diagram with the specified torque in the order of A, B, C, D or A, C, B, D.



DIFFERENTIAL MOUNTING INSULATOR REPLACEMENT

DIFFERENTIAL MOUNTING BRACKET <L.H., R.H.-FRONT, REAR>

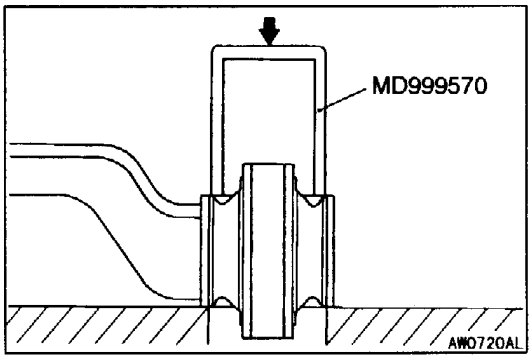
1. Remove insulator with special tools.

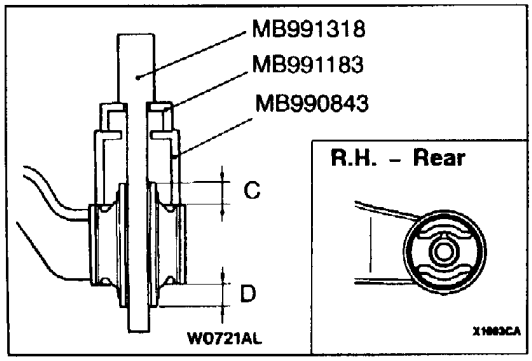


2. By using special tools along with a hydraulic press, press fit each insulator to adjust until the hollow part faces as shown and the difference between dimensions A, B should be within 0.7 mm.

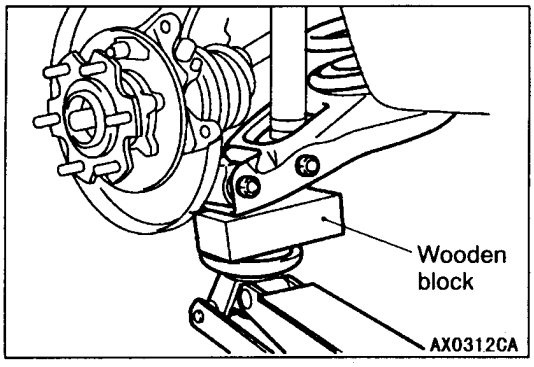
DIFFERENTIAL MOUNT BRACKET <R.H.-REAR>

1. Remove the insulator with the special tool.





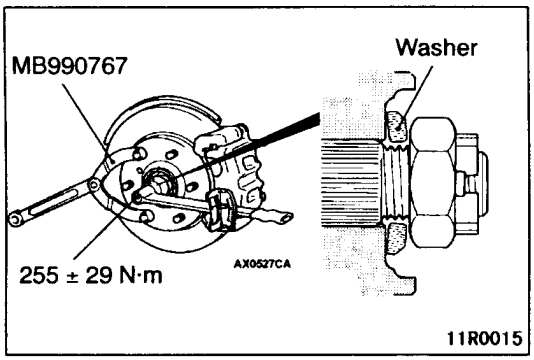
2. By using special tools along with a hydraulic press, press fit each insulator to adjust until the hollow part faces as shown and the difference between dimensions C, D should be within 0.7 mm.



INSTALLATION SERVICE POINTS

▶A◀ LOWER ARM AND KNUCKLE CONNECTION

Attach wooden block to the lower arm as shown in the illustration and use the floor jack to install the lower arm mounting bolt by compressing the coil spring.



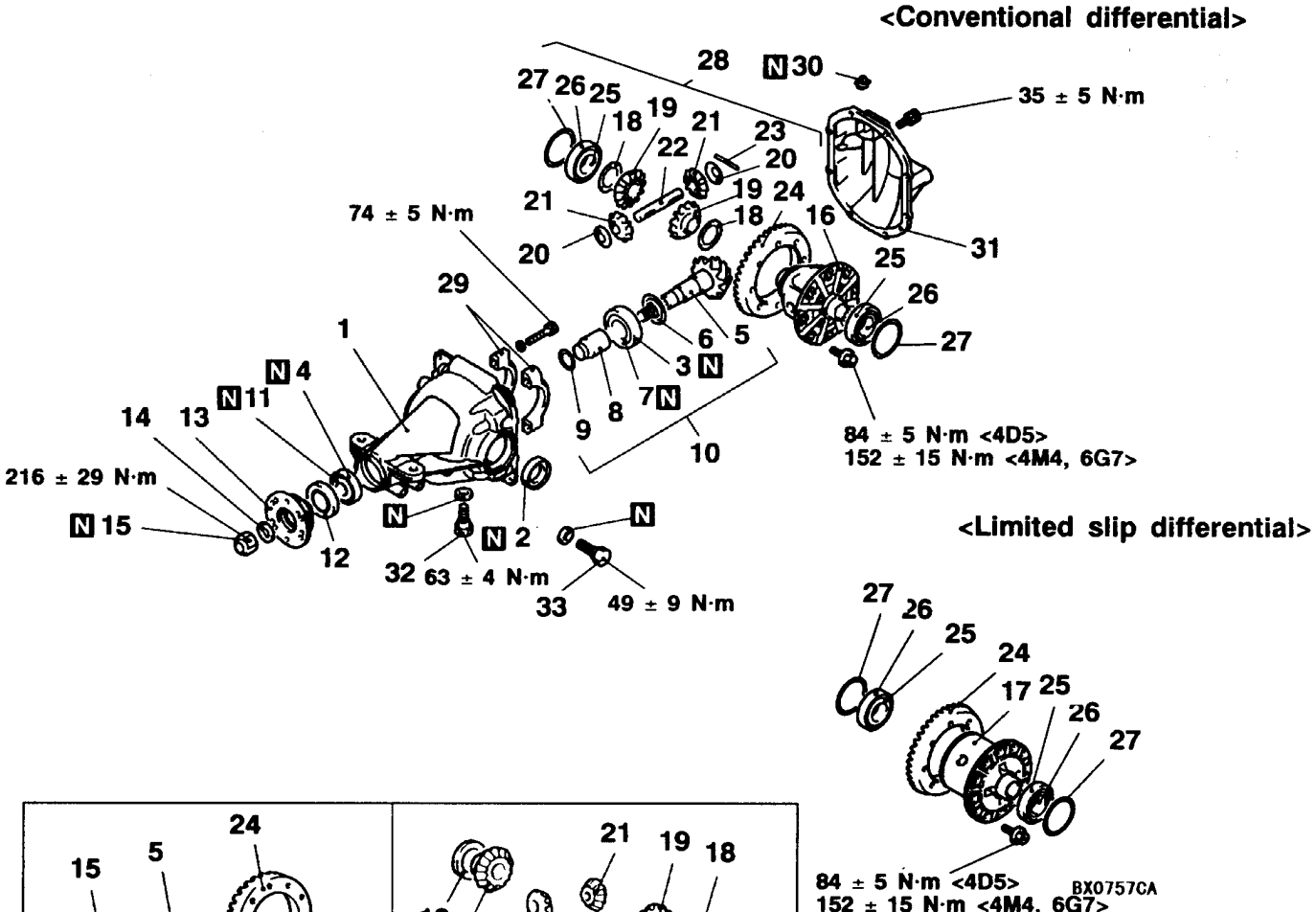
▶B◀ DRIVE SHAFT NUT INSTALLATION

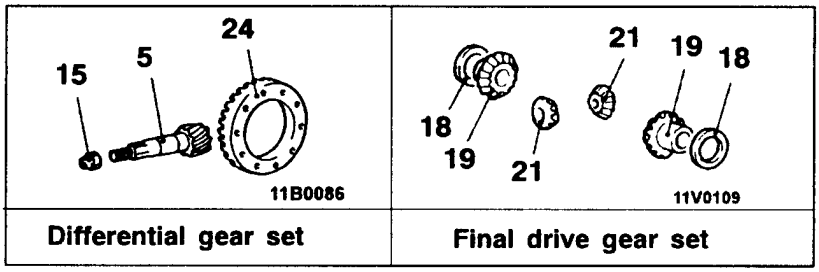
1. Assemble the drive shaft washer in the illustrated direction.
2. Tighten the drive shaft nut fully with special tools.

   Caution
   Do not apply pressure to wheel bearing by the vehicle weight to avoid possible damage to wheel bearing before tightening drive shaft nut fully.

3. If the pin hole does not align with another, tighten the drive shaft nut (less than 284 N·m) and find the nearest hole then bend the split pin to fit in.

REASSEMBLY



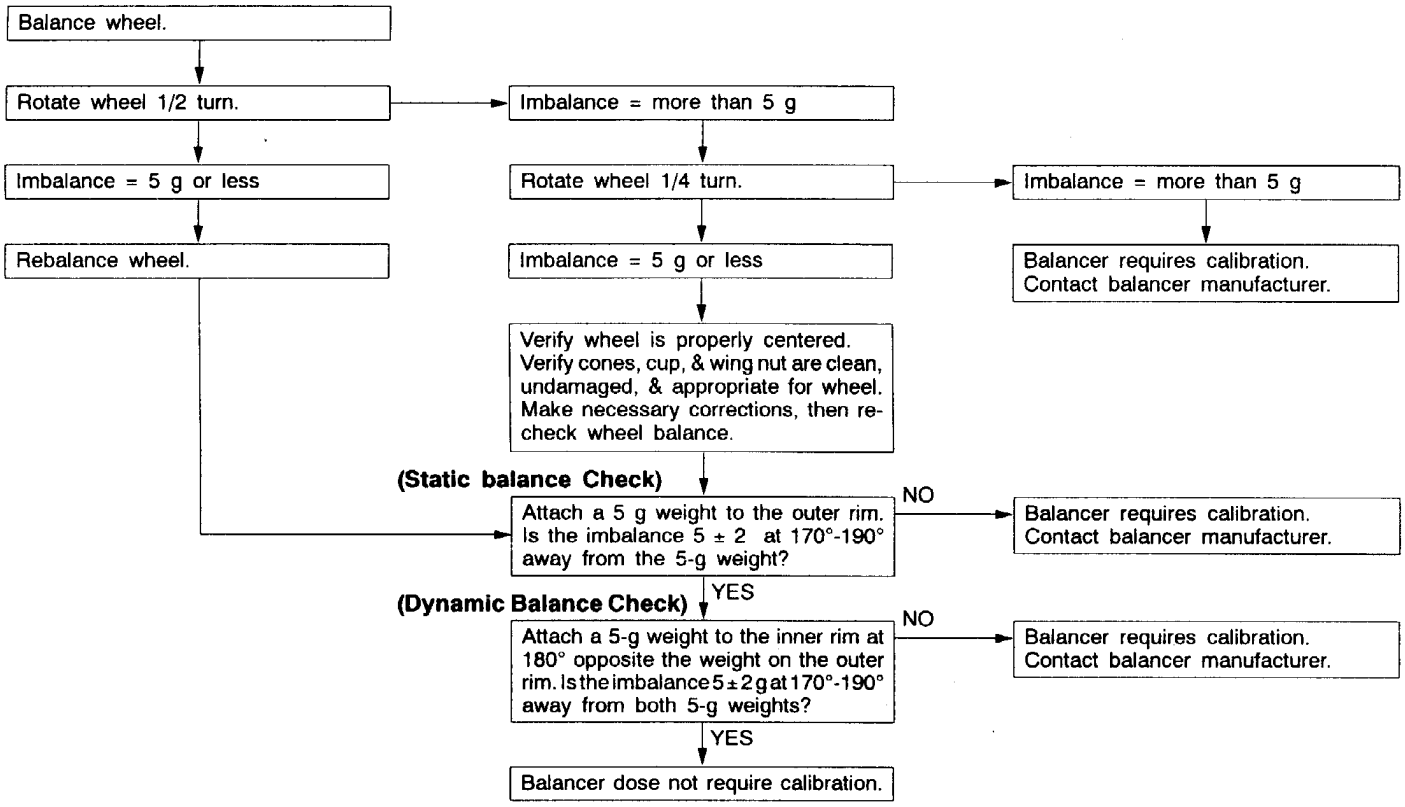


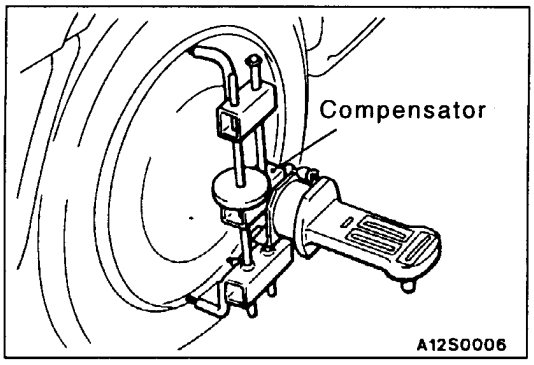
Differential gear set	Final drive gear set

Reassembly steps

1. Differential carrier
▶A◀ 2. Oil seal
▶B◀ 3. Drive pinion rear bearing outer race
▶C◀ 4. Drive pinion front bearing outer race
▶C◀ D Drive pinion height adjustment
5. Drive pinion
6. Drive pinion rear shim (For adjusting drive pinion height)
7. Drive pinion rear bearing inner race
8. Drive pinion spacer
▶E◀ D Drive pinion turning torque adjustment
9. Drive pinion front shim (For adjusting drive pinion preload)
10. Drive pinion assembly
11. Drive pinion front bearing inner race
▶E◀ 12. Oil seal
13. Companion flange
14. Washer
15. Self-locking nut
16. Differential case
17. Limited slip differential case assembly
▶F◀ • Differential gear backlash adjustment
18. Side gear thrust spacer
19. Side gear
20. Pinion washer
21. Pinion gear
22. Pinion shaft
▶G◀ 23. Lock pin
▶H◀ 24. Drive gear
▶I◀ 25. Side bearing inner race
26. Side bearing outer race
27. Side bearing shim
28. Differential case assembly
▶J◀ 29. Bearing cap
30. Vent plug
31. Differential cover
32. Drain plug
33. Filler plug
▶J◀ • Final drive gear backlash adjustment

WHEEL BALANCER CALIBRATION CHECKING FLOW CHART



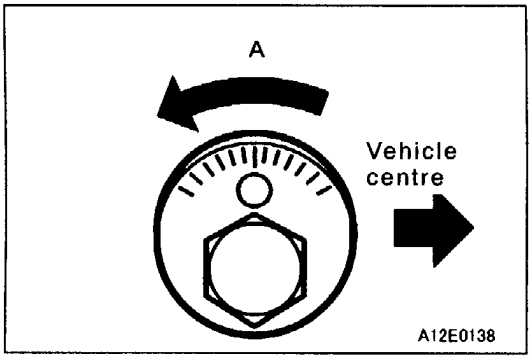


CAMBER, CASTER AND KINGPIN INCLINATION

Standard value:

Camber 0°30' ± 30' (difference between right and left wheel: less than 30')

Caster 3°50' ± 1°(difference between right and left wheel: less than 30')



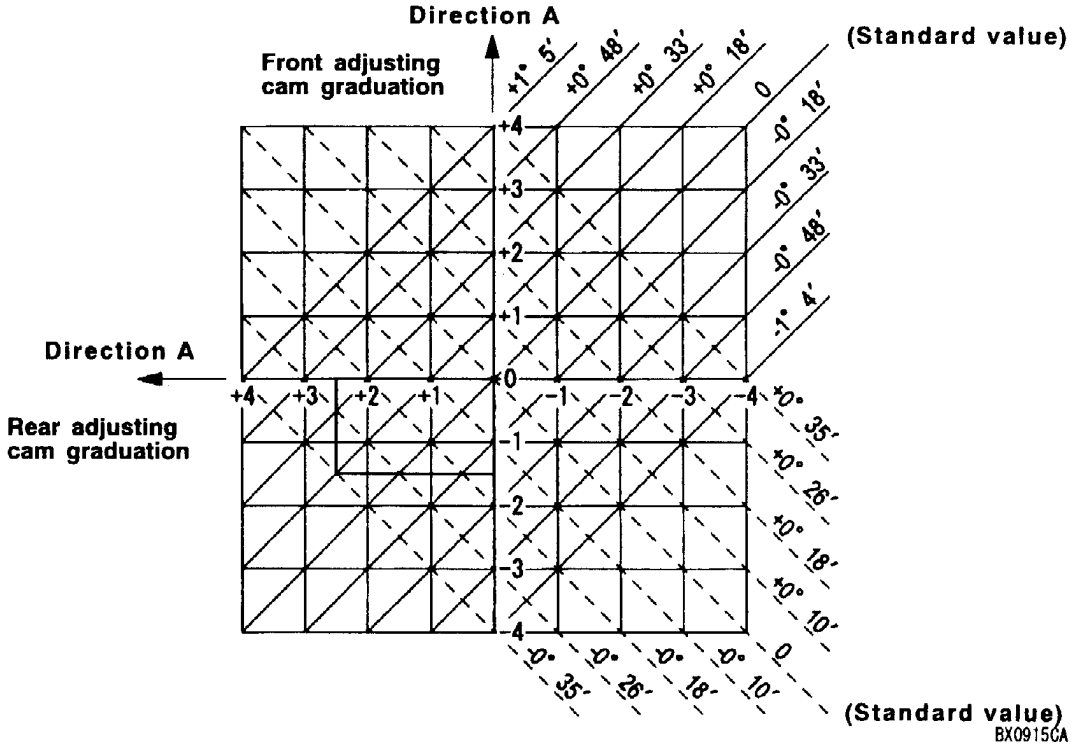
If camber or caster are not within the standard value, adjust by following procedures.

1. Adjust the camber and caster by turning the camber adjusting bolt of the lower arm. For the standard value, refer to the camber and caster adjusting table (P.33A-5).
2. After adjusting the camber, the toe should be adjusted.

Camber And Caster Adjusting Table

HOW TO READ
(EXAMPLE)
Compare the measurement value with the standard value. When the camber is –0°35' and caster is 0°18', turn the front adjusting cam by 1.5 graduations to the direction opposite to "A" and the rear adjusting cam by 2.5 graduations to the "A" direction.

NOTE
Solid lines show caster, broken lines shows camber.

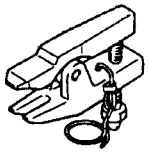
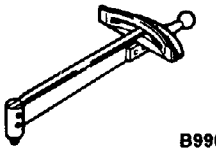
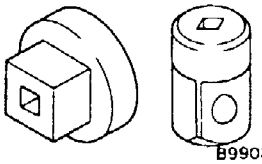
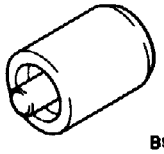
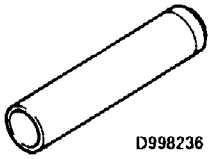
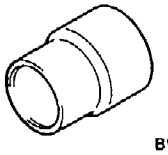


SERVICE SPECIFICATIONS

Items		Standard value
Toe-in	At the centre of tyre tread mm	3 ± 3
	Toe-angle (per wheel)	0° 06' ± 0° 06'
Camber		0° ± 30'*
Thrust angle		0° ± 9'
Upper arm ball joint rotation torque N·m		0.5 – 3.0
Stabilizer link ball joint turning torque N·m		0.5 – 2.0
Toe control arm ball joint turning torque N·m		1.0 – 2.5

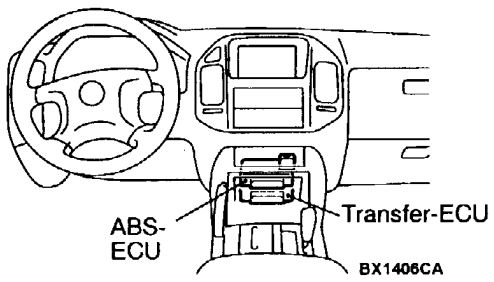
NOTE
*: difference between right and left wheels: less than 30'

SPECIAL TOOLS

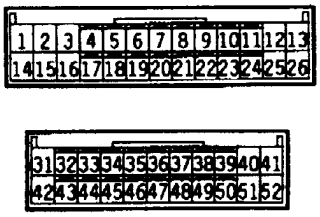
Tool	Number	Name	Use
 B991113	MB990635, MB991113 or MB991406	Steering linkage puller	Ball joint and knuckle disconnection
 B990968	MB990968	Torque wrench	Upper arm ball joint, lower arm ball joint and stabilizer link ball joint rotation starting torque measurement
 B990326	MB990326	Preload socket	
 B990880	MB990881	Rear suspension bushing arbor	Lower arm bushing removal and press-fitting
 D998236	MD998236	Output shaft bearing installer	Trailing arm bushing removal and press-fitting
 B990799	MB990799	Ball joint remover and installer	Upper arm ball joint dust cover press-in

BASIC BRAKE SYSTEM

CONTENTS



ABS-ECU side connector



CHECK AT ABS-ECU

NOTE
The two same ECUs are installed behind the floor console. The upper ECU is the ABS-ECU and has a blue connector. The lower ECU is the transfer-ECU and has a green connector.

TERMINAL VOLTAGE CHECK CHART

1. Measure the voltage between each terminal and the earth.
2. The terminal layout is shown in the illustration.

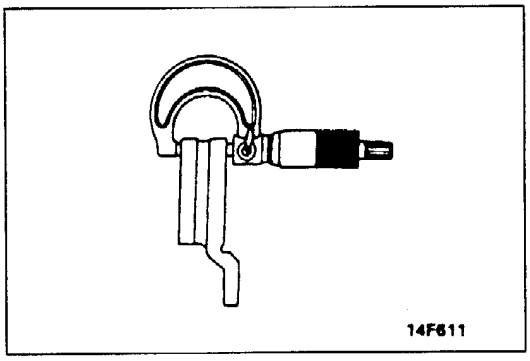
Terminal No.	Check item	Check requirements		Normal condition
36	MUT-II	When the MUT-II is connected		Serial communication with the MUT-II
		When the MUT-II is not connected		1 V or less
13, 31	ABS-ECU power supply	Ignition switch: ON		System voltage
		Ignition switch: START		0 V
47	Diagnosis changeover input	When the MUT-II is connected		1 V or less
		When the MUT-II is not connected		Approximately 12 V
39	Output to brake warning lamp	Ignition switch: ON	When the lamp is off	2 V or less
			When the lamp is on	System voltage
44	Output to the HBB buzzer	Ignition switch: ON	When the HBB buzzer does not sound	System voltage
			When the HBB buzzer sounds	2 V or less
6, 38	Output to the motor relay	Ignition switch: ON	When the pump motor is not operating	System voltage
			When the pump motor is operating	2 V or less
17	Output to the pressure switch (for low pressure warning)	Ignition switch: ON	When the brake fluid pressure is low (When the HBB buzzer sounds)	Approximately 9 V
			When the brake fluid pressure is normal (When the HBB buzzer does not sound)	Approximately 4 V

DISC BRAKE ROTOR CHECK

Caution
When servicing disc brakes, it is necessary to exercise caution to keep the disc brakes within the allowable service values in order to maintain normal brake operation.

Before re-finishing or re-processing the brake disc surface, the following conditions should be checked.

Inspection items	Remarks
Scratches, rust, saturated lining materials and wear	• If the vehicle is not driven for a certain period, the sections of the discs that are not in contact with lining will become rusty, causing noise and shuddering. • If grooves resulting from excessive disc wear and scratches are not removed prior to installing a new pad assembly, there will momentarily be inappropriate contact between the disc and the lining (pad).
Run-out or drift	Excessive run-out or drift of the discs will increase the pedal depression resistance due to piston knock-back.
Change in thickness (parallelism)	If the thickness of the disc changes, this will cause pedal pulsation, shuddering and surging.
Inset or warping (flatness)	Overheating and improper handling while servicing will cause inset or warping.



BRAKE DISC THICKNESS CHECK

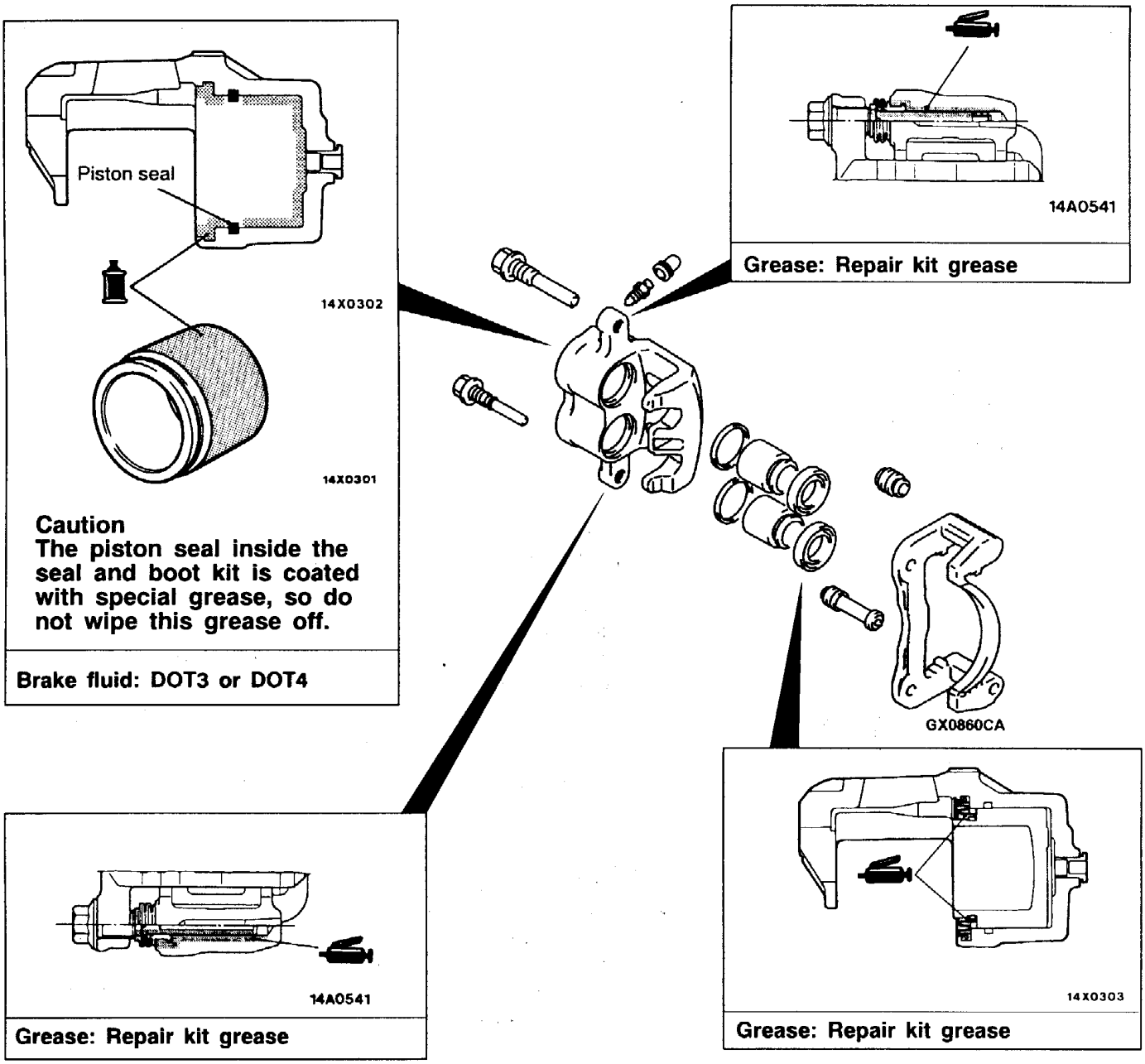
1. Using a micrometer, measure disc thickness at eight positions, approximately 45° apart and 10 mm in from the outer edge of the disc.

   Brake disc thickness

Item	Standard value	Limit
Front	26.0	24.4
Rear	22.0	20.4

   Thickness variation (at least 8 positions)
   The difference between any thickness measurements should not be more than 0.015 mm.
2. If the disc is beyond the limits for thickness, remove it and install a new one. If thickness variation exceeds the specification, replace the brake disc or grind it with on-the-car type brake lathe ("MAD, DL-8700PF" or equivalent).

LUBRICATION POINTS



Caution
The piston seal inside the seal and boot kit is coated with special grease, so do not wipe this grease off.

Brake fluid: DOT3 or DOT4

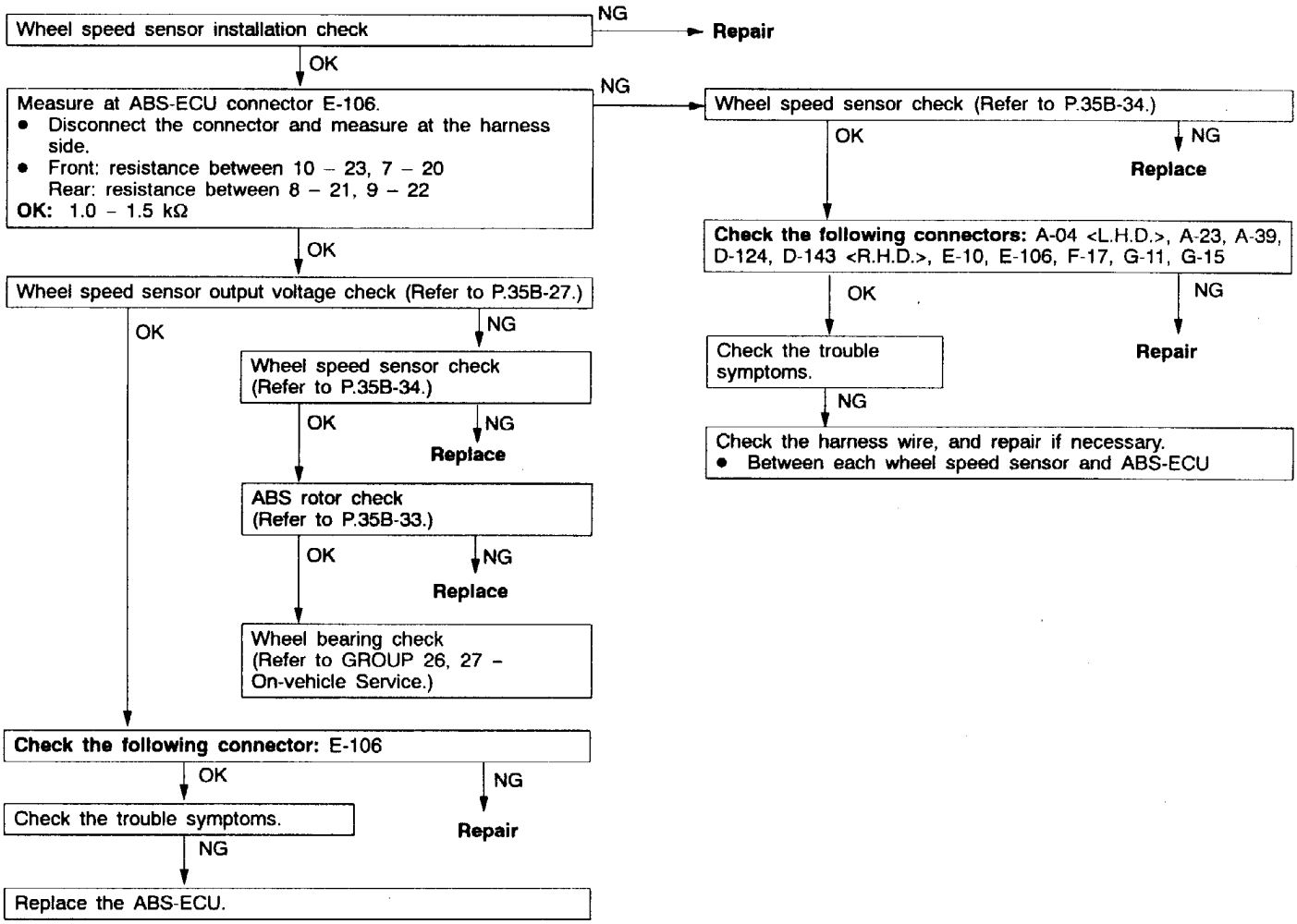
Grease: Repair kit grease

Grease: Repair kit grease

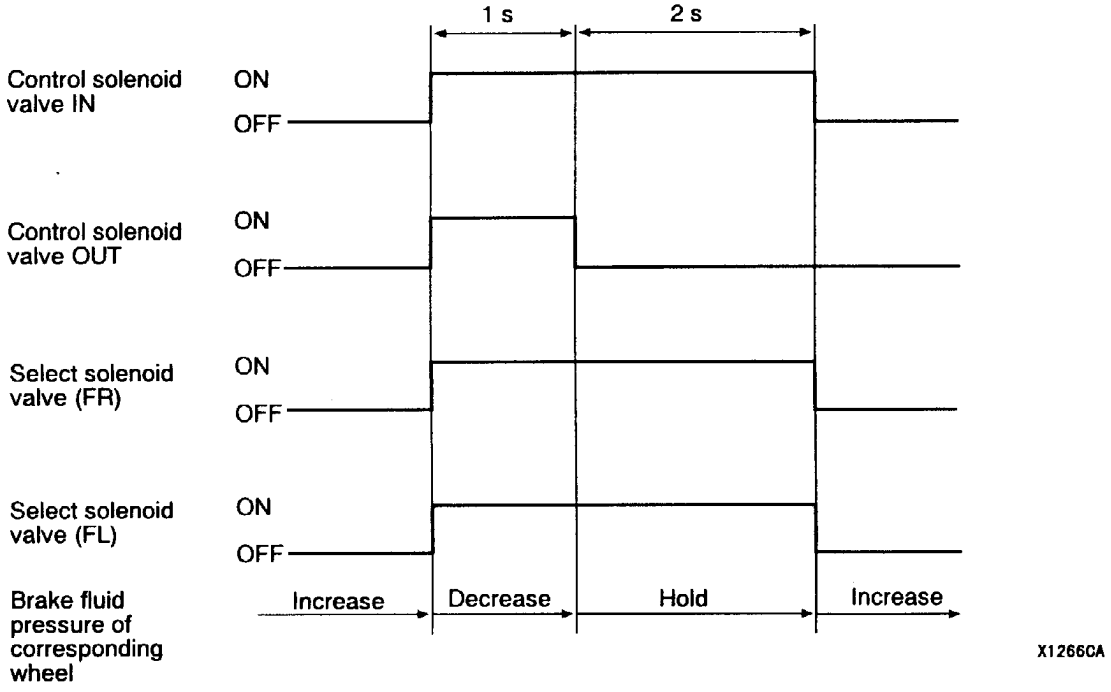
Grease: Repair kit grease

INSPECTION PROCEDURE CLASSIFIED BY DIAGNOSIS CODE

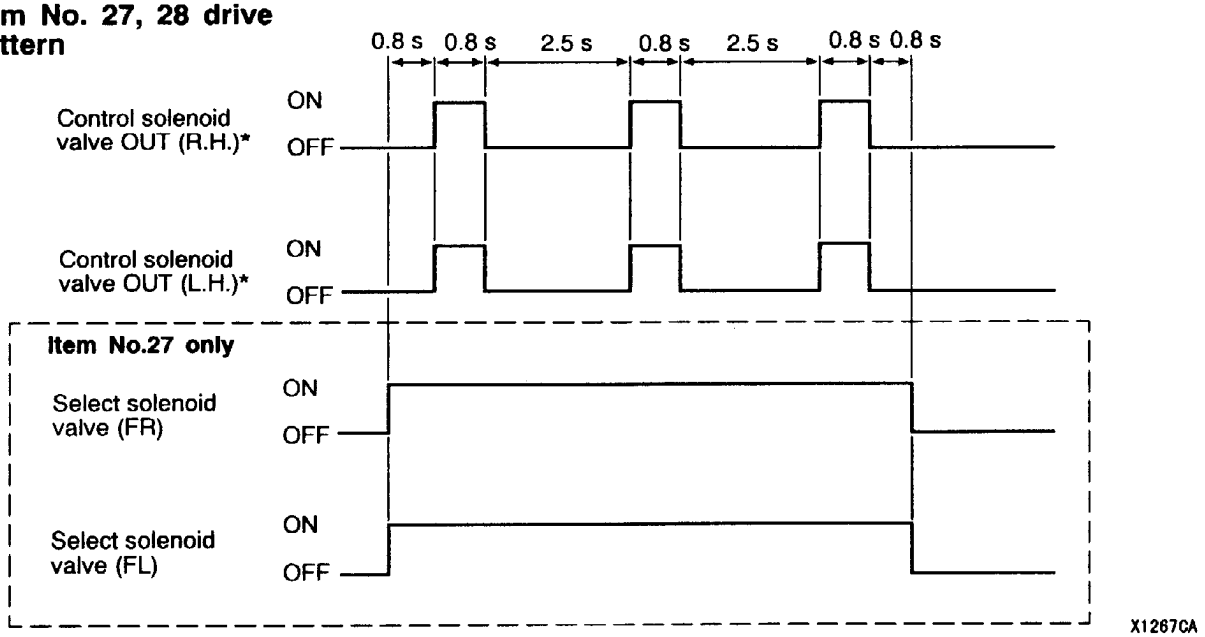
Code No. 11, 12, 13, 14 Wheel speed sensor system (open circuit or short-circuit) Code No. 21, 22, 23, 24 Wheel speed sensor system	Probable cause
Code Nos. 11, 12, 13, 14 are output when the open circuit or short-circuit detection carried out by the ABS-ECU hardware circuit detects that there is an open circuit or short-circuit in the (+) or (–) wire in one of the four wheel speed sensors and signals are consequently not being input.	• Malfunction of wheel speed sensor • Malfunction of harness or connector • Malfunction of the ABS-ECU
Code No. 21, 22, 23, 24 are output at the following times: • If an open circuit cannot be verified, but one or more of the wheel speed sensors does not output any signal when the vehicle speed is a certain number of km/h or higher. • When a problem such as chipped or plugged-up rotor tooth is detected, or if the sensor output drops and anti-skid control is continuously carried out due to a malfunctioning sensor or a warped ABS rotor.	• Malfunction of wheel speed sensor • Malfunction of harness or connector • Malfunction of ABS rotor • Excessive clearance between sensor and ABS rotor • Malfunction of the ABS-ECU • Malfunction of wheel bearing



Item No. 01 – 04 drive pattern



Item No. 27, 28 drive pattern

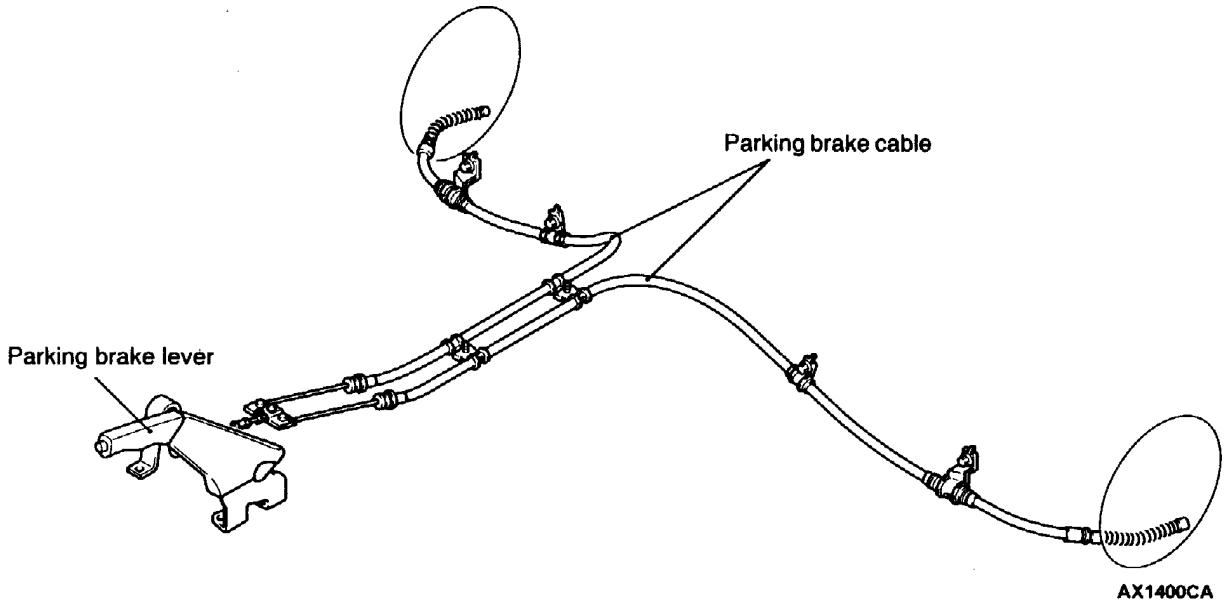


NOTE
*: When carrying out item No. 27, the front wheels are driven, and when carrying out item No. 28, the rear wheels are driven.

GENERAL INFORMATION

The parking brake is of a mechanical control type acting on the rear wheels. A lever is used to apply the parking brake.

CONSTRUCTION DIAGRAM

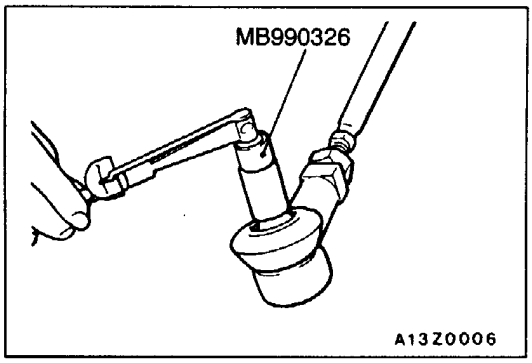


SERVICE SPECIFICATIONS

Items	Standard value	Limit
Parking brake lever stroke	5 – 7 notches	–
Rear brake lining thickness mm	3.0	1.0
Rear drum inside diameter mm	199.0	200.0

LUBRICANTS

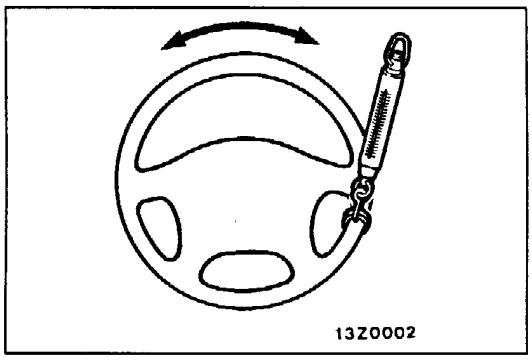
Items	Specified lubricants
Backing plate	Multipurpose grease
Shoe and lining assembly	
Adjuster	



2. After swinging the ball joint stud several times, install the nut on the stud. Then, measure ball joint turning torque with the special tool.

   Standard value: 0.49 – 2.45 N·m

3. When the torque is over the standard value, replace the tie rod end.
4. When the torque is below the standard value, check the ball joint for looseness or ratcheting. If none of these found, the ball joint is still serviceable.



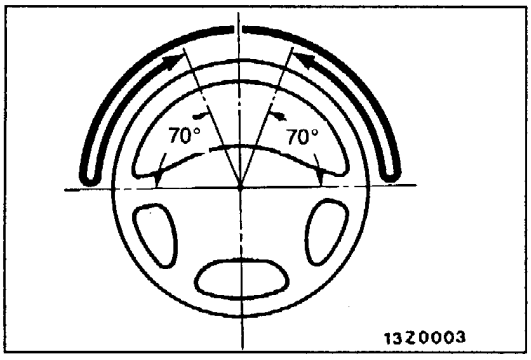
STATIONARY STEERING EFFORT CHECK

1. With the vehicle stopped on a flat, paved surface, put the steering wheel in straight-ahead position.
2. Start the engine and keep it at 1,000±100 r/min.
3. Attach a spring balance to the steering wheel outer bar. Measure steering effort required to turn the steering wheel from the straight-ahead position to the left and right (within a range of 1.5 turns). Also see that no significant fluctuation is present in the steering effort.

   Standard value:

Steering effort	39.2 N or less
Fluctuation	5.9 N or less

4. If the standard values are not met, check and adjust the related parts.



STEERING WHEEL RETURNABILITY CHECK

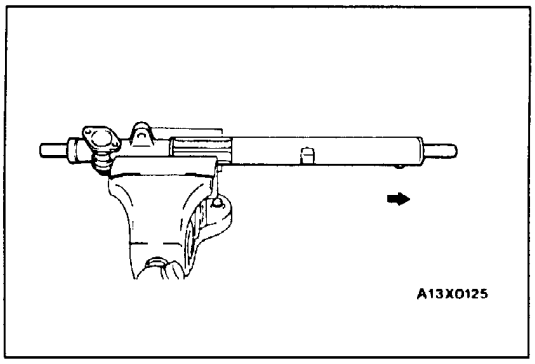
Check returnability as follows on road test:

1. Make both gradual and sudden turns and see by your own feeling that the steering effort and returnability have no difference between the left and right turns.
2. At a speed of about 35 km/h, turn the steering wheel 90°, keep it there for 1 to 2 seconds and release. When the steering wheel returns more than 70°, it has a good returnability.

   NOTE
   You may have momentary increase in effort when turning the steering wheel quickly, which is normal. This happens due to insufficient job of the oil pump when the engine is running at low speed such as idling.

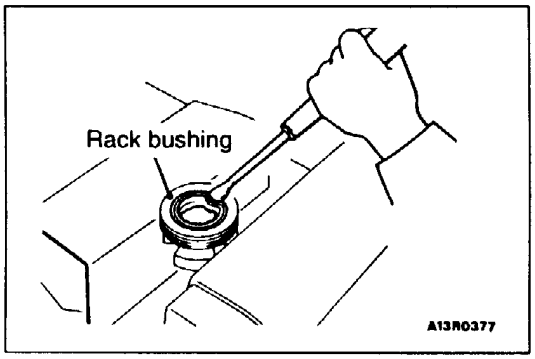
OIL PUMP BELT TENSION CHECK <6G7, 4D5>

Refer to GROUP 11A/11B – On-vehicle Service.



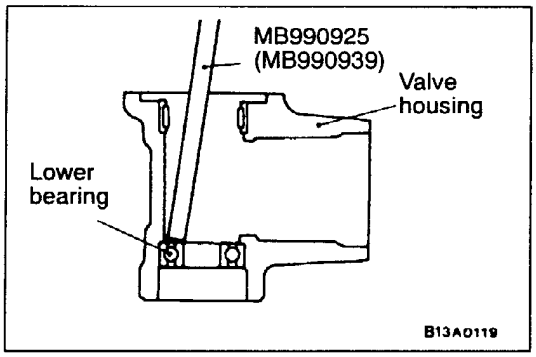
◀F▶ RACK STOPPER/RACK BUSHING/OIL SEAL/O-RING/RACK ASSEMBLY REMOVAL

1. Remove the rack stopper, rack bushing, oil seal and O-ring together by pulling out the rack gently.

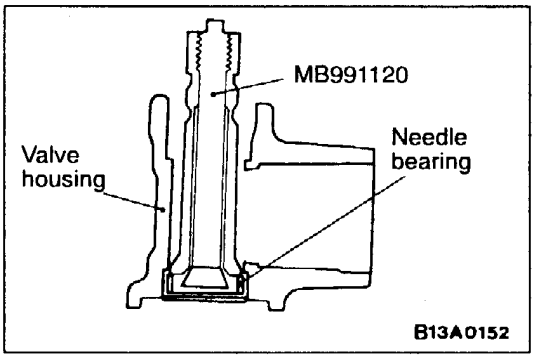


2. Partially bend the oil seal to remove from the rack bushing.

Caution
Use care not to damage the oil seal press-fitting surface of the rack bushing.

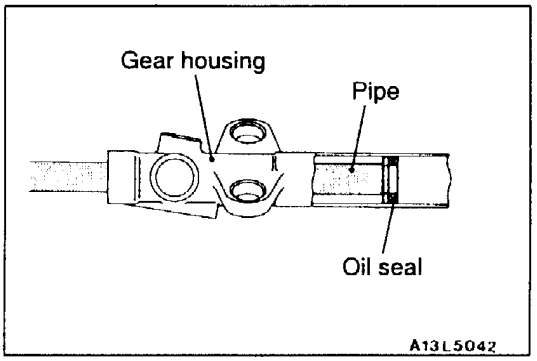


◀G▶ LOWER BEARING REMOVAL



◀H▶ NEEDLE BEARING REMOVAL

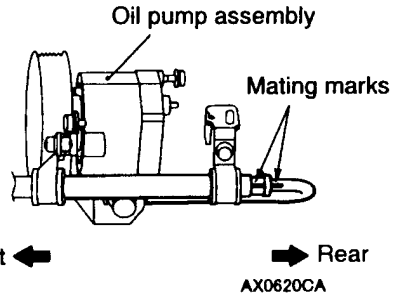
Caution
Do not twist the special tool too much, otherwise it may damage the inside surface of the valve housing.



◀I▶ OIL SEAL REMOVAL

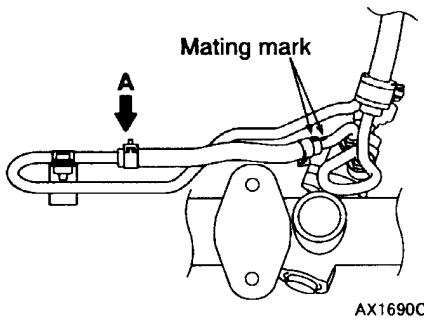
Use a pipe or the like to pull out the oil seal.

<6G7>

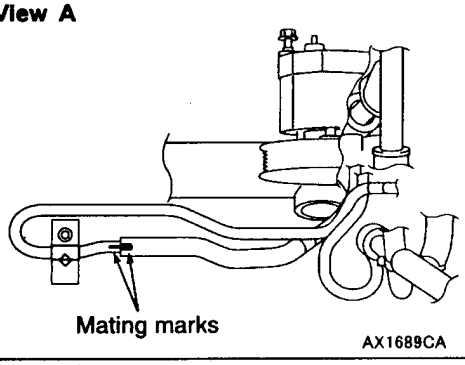


2. Install the pressure hose assembly and the pressure tubes so that the mating marks are facing upwards <6G7>.

<L.H. drive vehicles – 6G7, 4M4>



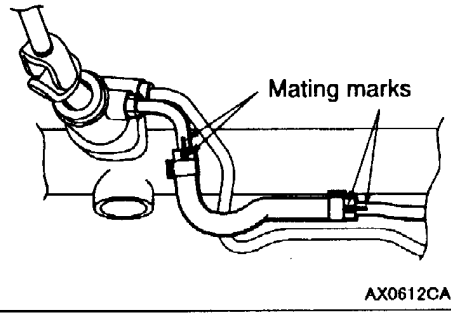
View A



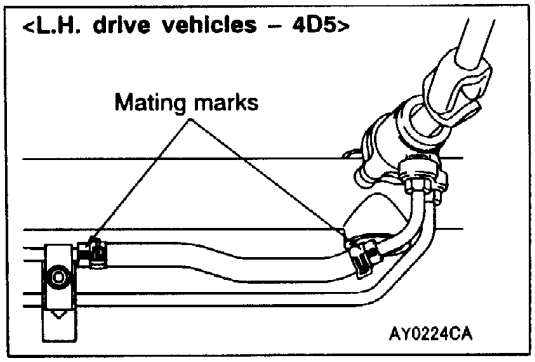
▶B◀ RETURN HOSE A/COOLER TUBE INSTALLATION

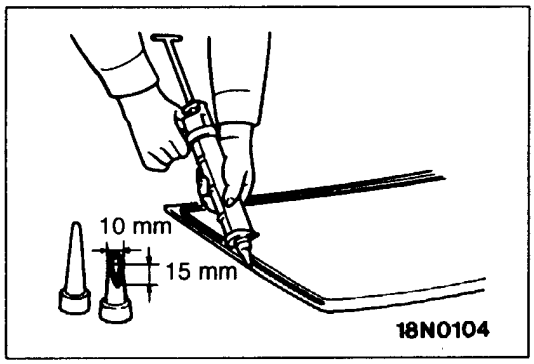
Install so that the mating marks are facing upwards.

<R.H. drive vehicles – 6G7, 4M4>



<L.H. drive vehicles – 4D5>

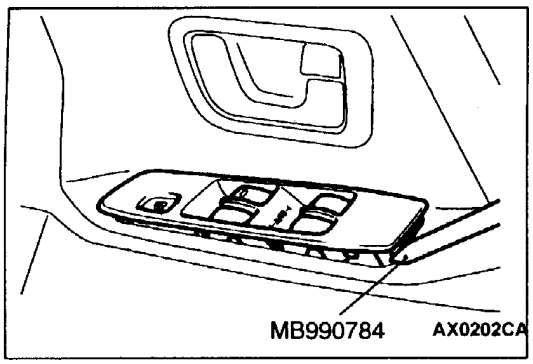




7. Within thirty minutes after the primer application, fill a sealant gun with adhesive, and then apply the adhesive evenly around the windshield.

   NOTE
   Cut the tip of the sealant gun nozzle into a V shape to simplify adhesive application.
8. Align the mating marks on the windshield and the body, and lightly press the windshield evenly so that it adheres completely.
9. Use a spatula or the like to remove any excessive adhesive. Install the windshield moulding before the adhesive sets. After the windshield is installed, wait until the adhesive sets.(Refer to P.42-9.)
10. Wait thirty minutes or more, and then test for water leakage.

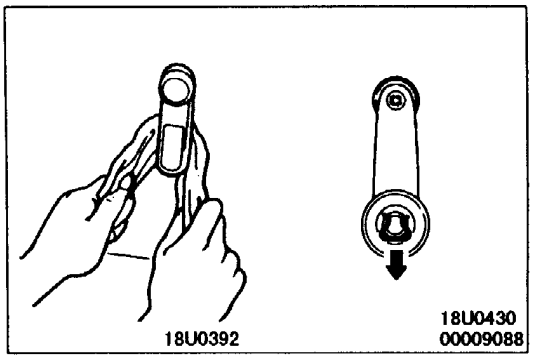
    Caution
    (1) Do not move the vehicle unless absolutely necessary.
    (2) When testing for water leakage, do not pinch the end of the hose to spray the water.



REMOVAL SERVICE POINTS

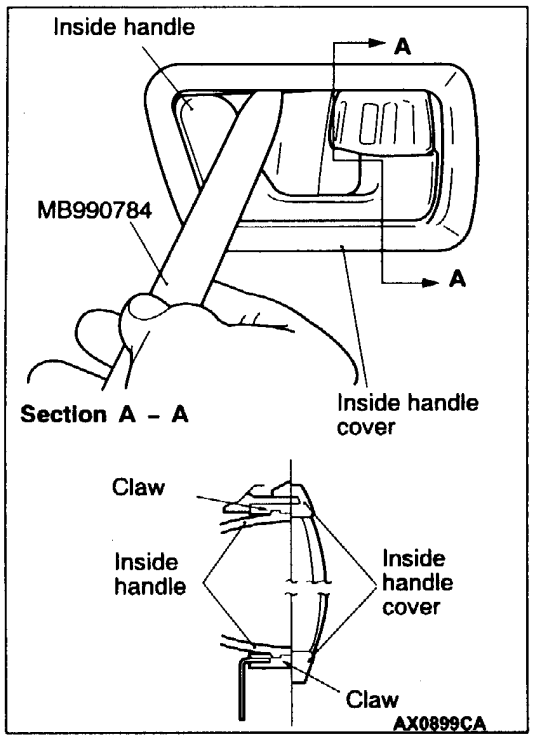
◀A▶ POWER WINDOW SWITCH AND POWER WINDOW SWITCH PANEL ASSEMBLY REMOVAL

Use the special tool to twist the front and rear of the power window switch and panel assembly to remove it. (Refer to P.42-26, 27, Clip and claw positions.)



◀B▶ CLIP REMOVAL

Use a cloth to remove the clip as shown in the illustration.

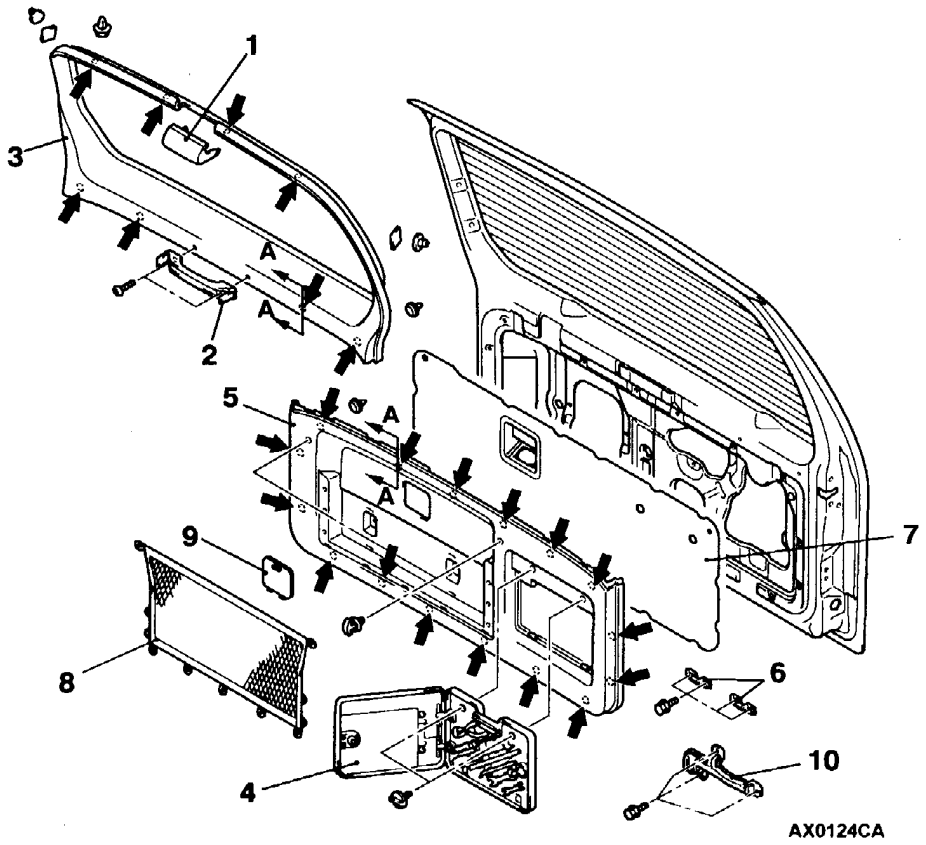


◀C▶ DOOR INSIDE HANDLE COVER REMOVAL

1. Insert the special tool between the inside handle upper part and the inside handle cover, and then disengage the upper claw of the inside handle.
2. Disengage the lower claw of the inside handle in the same manner as for the upper claw.
3. Remove the door trim.
4. Remove the inside handle cover from the door trim.

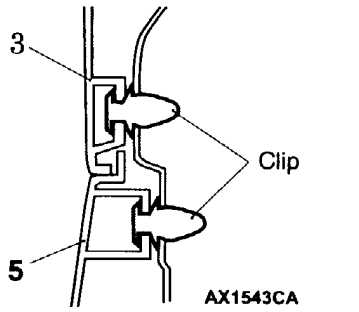
BACK DOOR TRIM AND WATERPROOF FILM

REMOVAL AND INSTALLATION

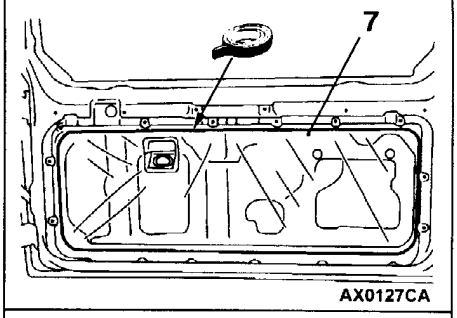


AX0124CA

Section A – A



AX1543CA



AX0127CA

Sealant:
3M ATD Part No. 8625 or equivalent

⬅ : Clip positions

Removal steps

1. High-mounted stop lamp cover
   • High-mounted stop lamp (Refer to GROUP 54A.)
▶A◀ 2. Door pull handle
3. Back door upper trim
4. Toolbox assembly
5. Back door lower trim
6. Toolbox bracket, lower
7. Waterproof film
8. Back door lid
9. Washer tank lid
10. Toolbox bracket, upper

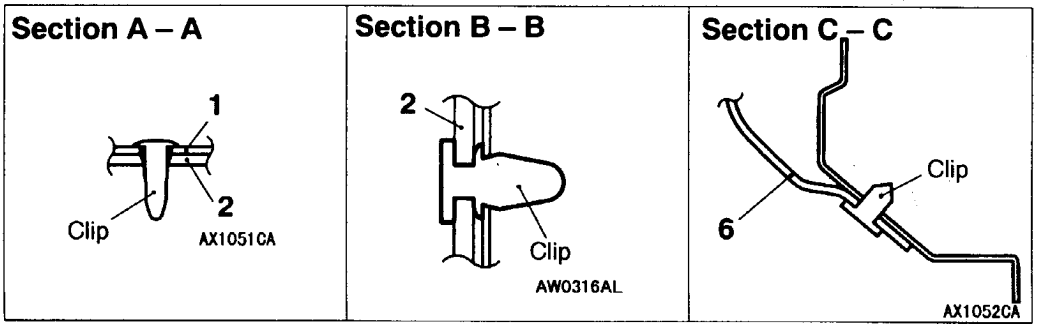
INSTALLATION SERVICE POINT

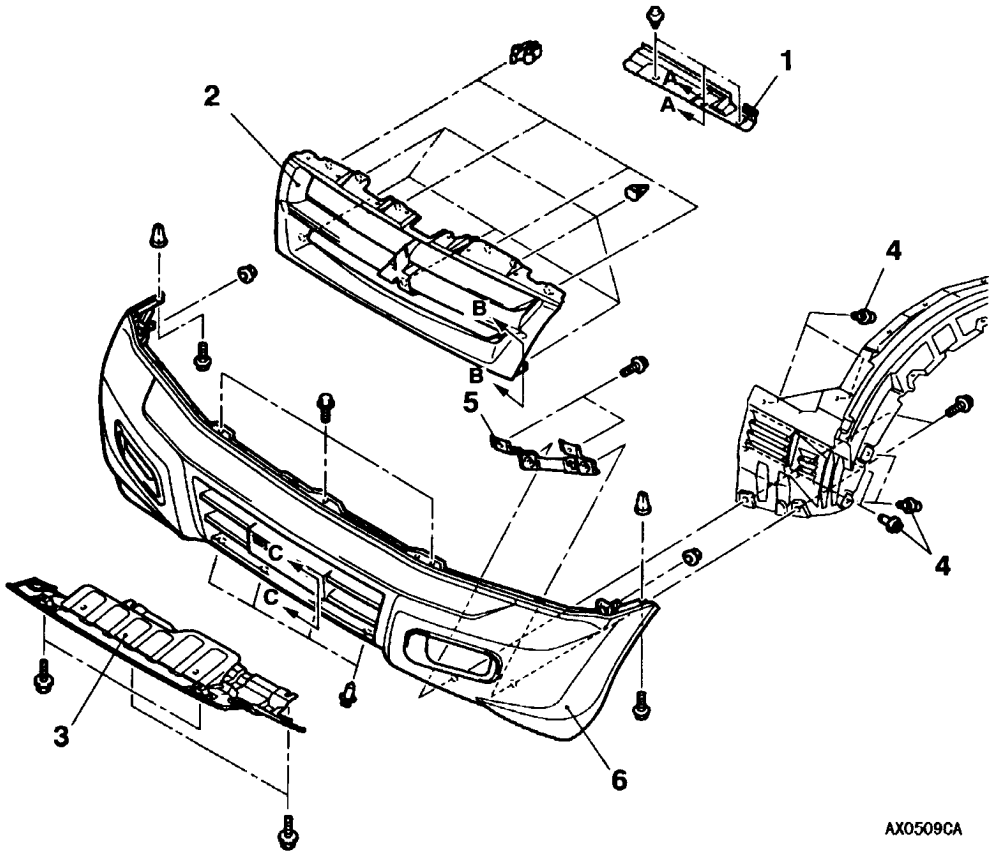
▶A◀ DOOR PULL HANDLE INSTALLATION

Install so that the arrow on the underside is pointing upwards.

FRONT BUMPER

REMOVAL AND INSTALLATION





Removal steps

1. Radiator cover
◀A▶ 2. Radiator grille
3. Skid plate
4. Splash shield mounting clip
5. Front bumper lower stay
• Fog lamp connector connection
6. Front bumper face assembly

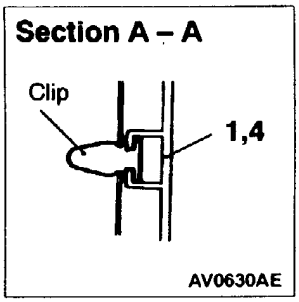
MUDGUARD

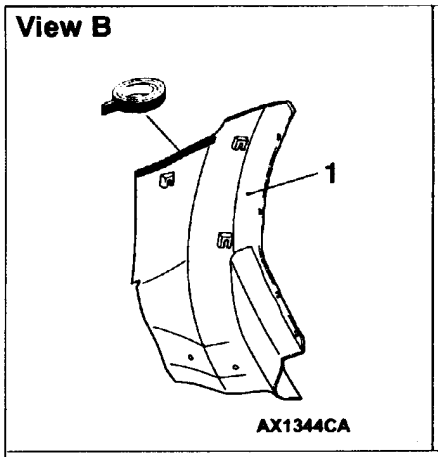
ADHESIVE

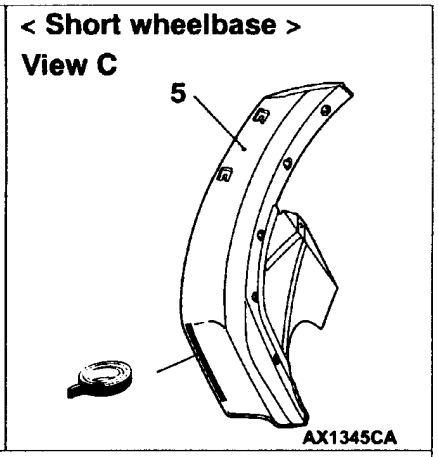
Items	Specified sealant and adhesive
Front mudguard	Double-sided tape [5 mm wide and 0.8mm thick]
Rear mudguard <Short wheelbase>	

MUDGUARD

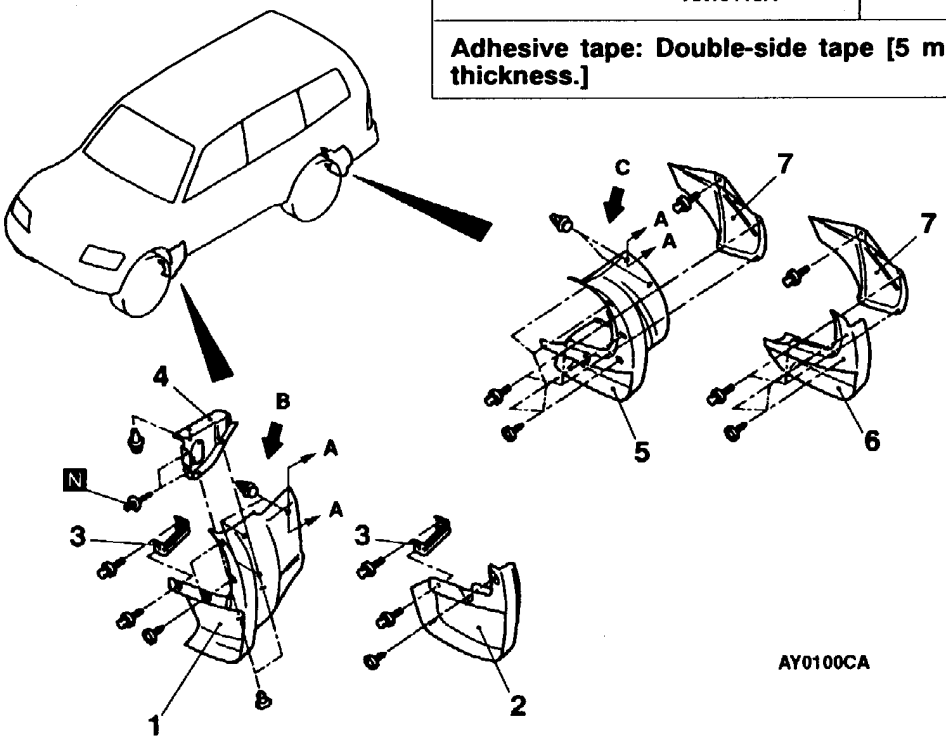
REMOVAL AND INSTALLATION







Adhesive tape: Double-side tape [5 mm width and 0.8 mm thickness.]

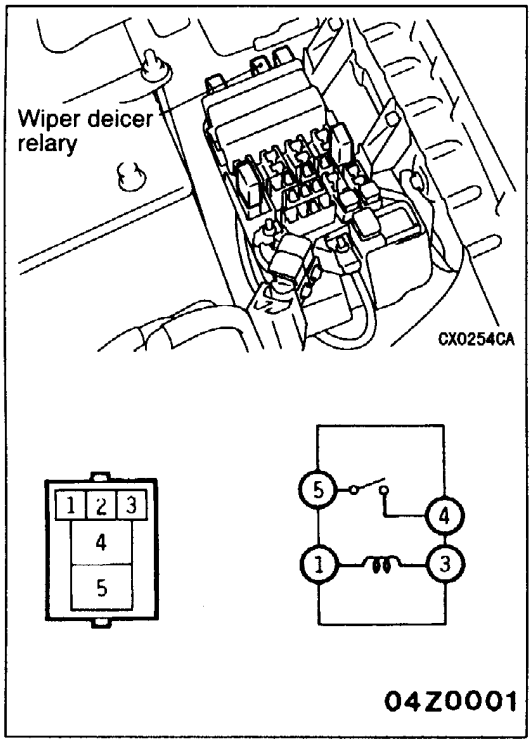


Front mudguard removal steps

◀A▶ ▶A◀ 1. Front mudguard (wide type)
2. Front mudguard (standard type)
3. Front mudguard bracket
◀B▶ ▶B◀ 4. Front mudguard cover

Rear mudguard removal steps

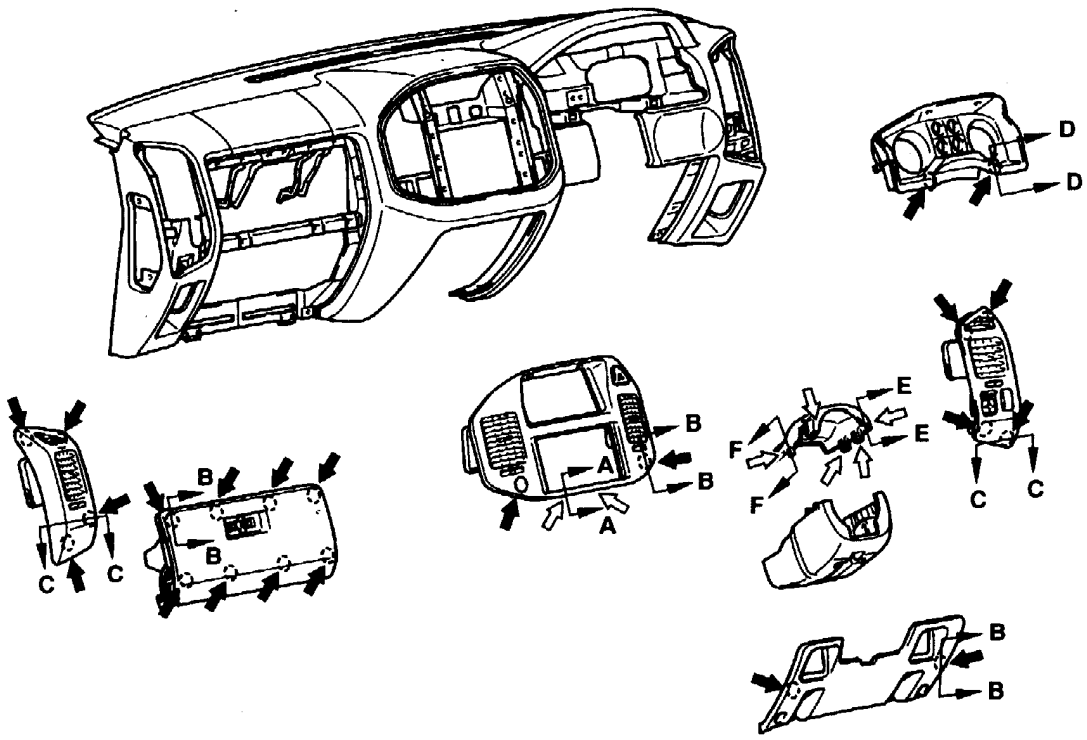
◀A▶ ▶A◀ 5. Rear mudguard (wide type)
6. Rear mudguard (standard type)
7. Rear mudguard protector



WIPER DEICER RELAY CHECK

System voltage	Terminal No.			
	1	3	4	5
When current is not flowing	○	○		
When current is flowing	⊖	⊕	○	○

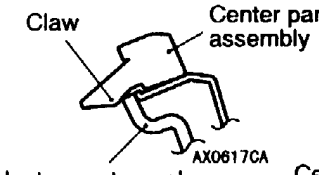
CLIP AND CLAW POSITION



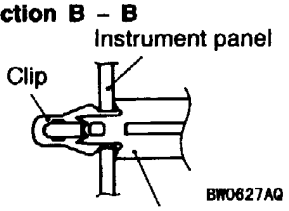
NOTE
⬅ : Clip position
⇦ : Claw position

AX0873CA

Section A - A

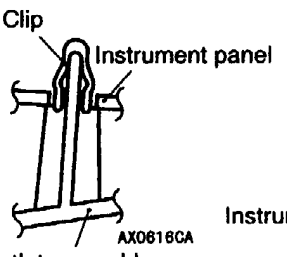


Section B - B



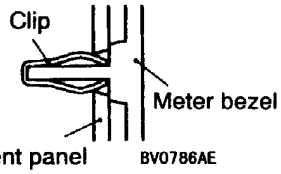
Center panel assembly and upper glove box assembly and lower panel

Section C - C

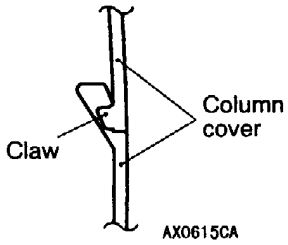


Air outlet assembly

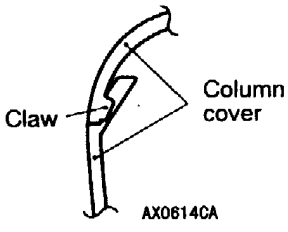
Section D - D



Section E - E



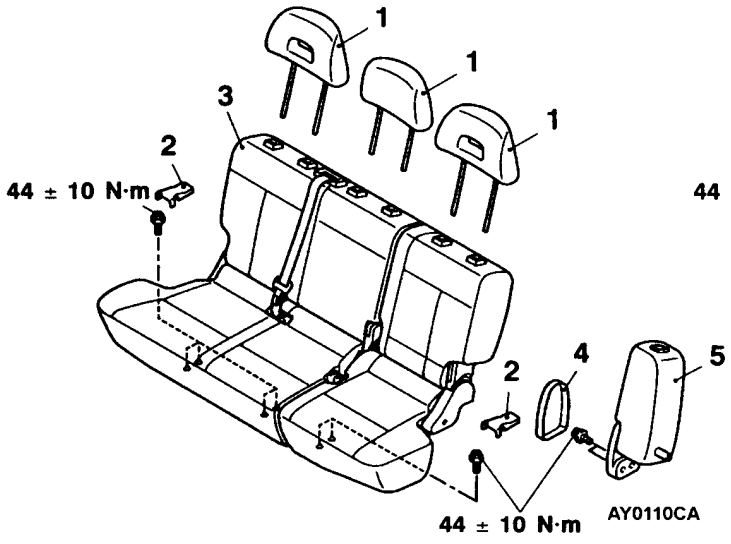
Section F - F



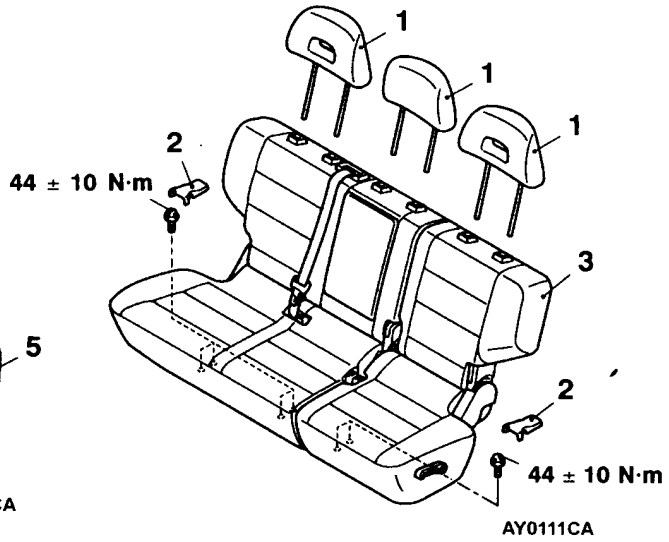
REAR/SECOND SEAT

REMOVAL AND INSTALLATION

<Short wheelbase>



<Long wheelbase>



1. Headrestraint

Rear/second seat assembly removal steps

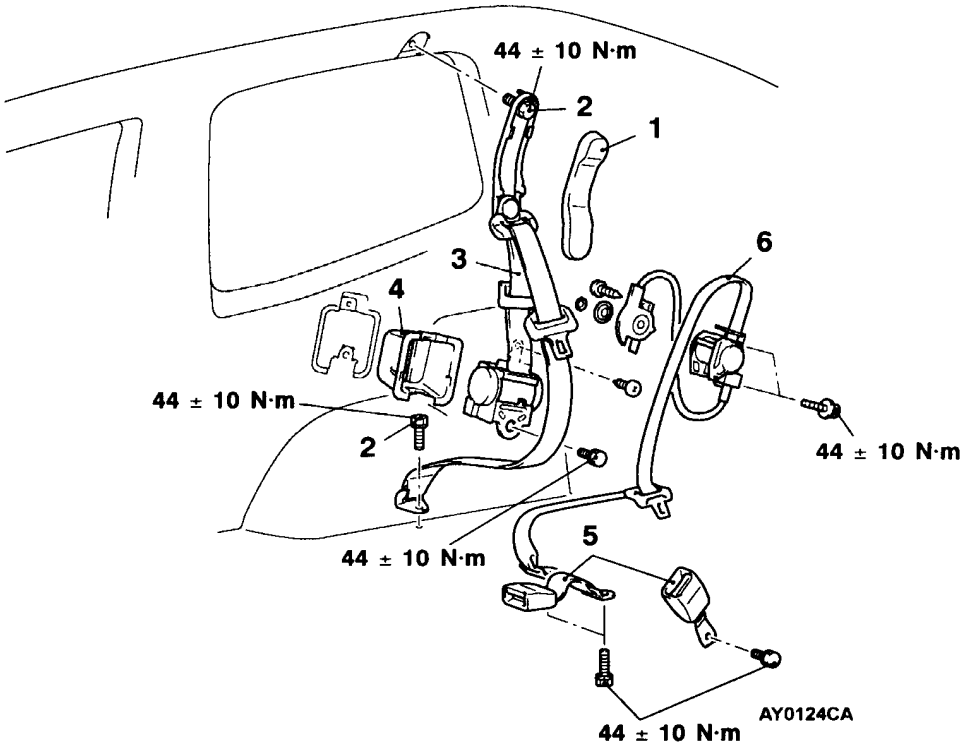
2. Seat anchor cover
3. Rear/second seat assembly

Seat side back assembly removal steps

4. Seat hinge cover
5. Seat side back assembly

REAR SEAT BELT<SHORT WHEELBASE>

REMOVAL AND INSTALLATION



Outer seat belt removal steps

- Rear seat assembly (Refer to P.52A-25.)
- Upper quarter trim (Refer to P.52A-13.)

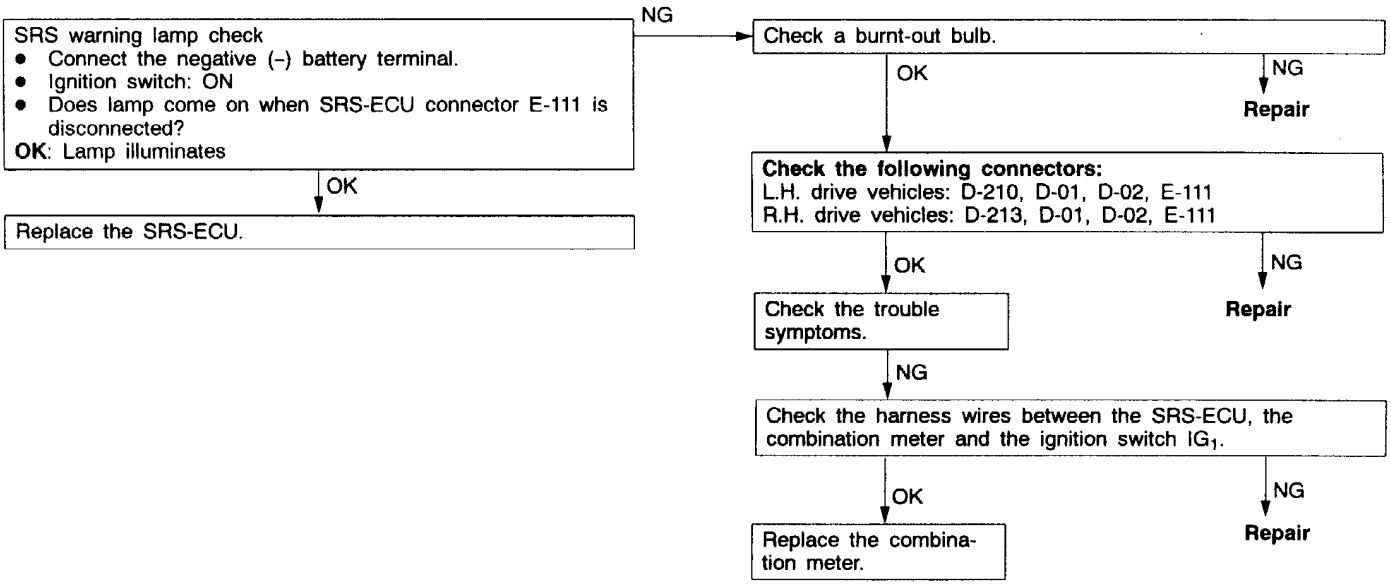
1. Sash guide cover
2. Outer seat belt connection
3. Outer seat belt
4. ELR cover

Inner seat belt and center seat belt removal steps

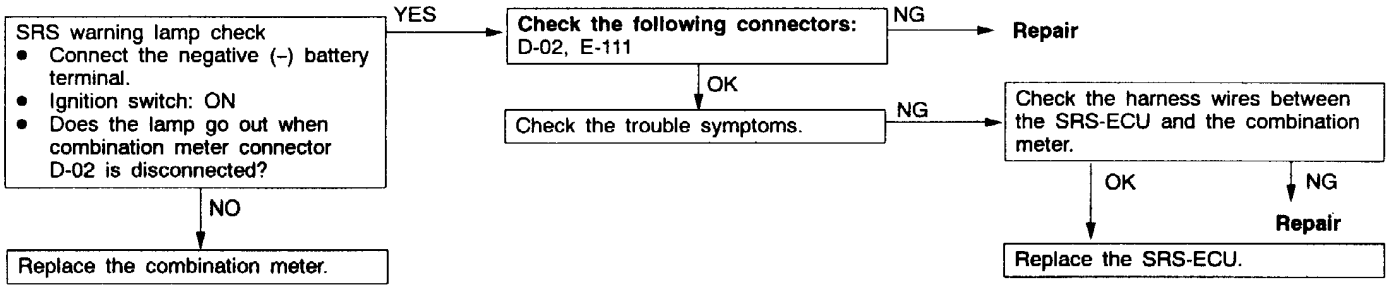
- Rear seat assembly (Refer to P.52A-25.)

5. Inner seat belt (Refer to P.52A-27,29.)
6. Center seat belt (Refer to P.52A-29.)

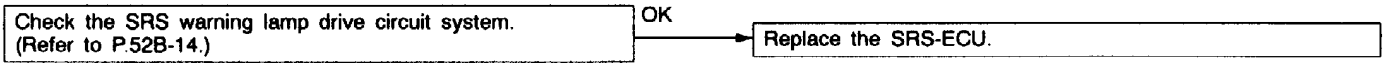
Code No.43 SRS warning lamp drive circuit system (Lamp does not come on.)	Probable cause
This diagnosis code is output when a open circuit is present for5 successive seconds or more in SRS warning lamp drive circuit. However, the vehicle condition return to normal condition, this code, if displayed due to open circuit, will be automatically erased.	• Malfunction of harness or connector • Blown bulb • Malfunction of SRS-ECU • Malfunction of combination meter



Code No.43 SRS warning lamp drive circuit system (Lamp does not go out.)	Probable cause
This diagnosis code is output when a short to earth occurs in the harness between the SRS warning lamp and the SRS-ECU. However, the vehicle condition returns to normal condition, this code will be automatically erased, and SRS warning lamp will go out.	• Malfunction of harness or connector • Malfunction of SRS-ECU • Malfunction of combination meter



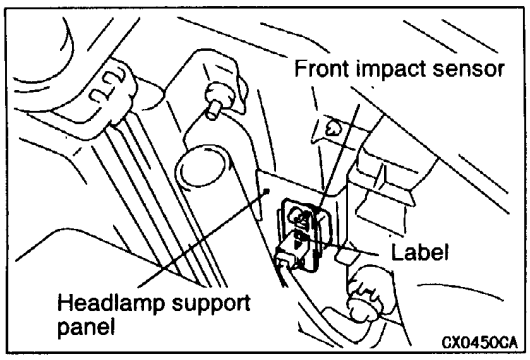
Code No.44 SRS warning lamp drive circuit system	Probable cause
This diagnosis code is output when a short occurs in the lamp drive circuit or a malfunction of the output transistor inside the SRS-ECU is detected while the SRS-ECU is monitoring the SRS warning lamp drive circuit. However, when vehicle condition returns to normal, these codes will be automatically erased, and the SRS warning lamp will go out.	• Malfunction of harness or connector • Malfunction of SRS-ECU



INSTALLATION SERVICE POINTS

▶A◀ PRE-INSTALLATION INSPECTION

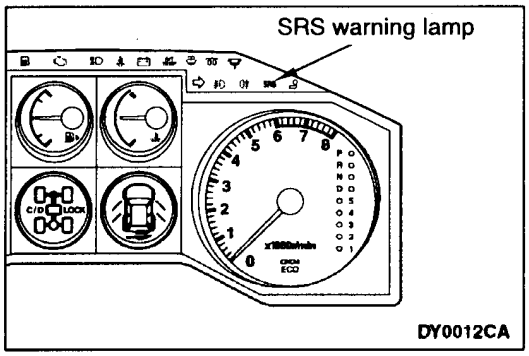
To mount the new front impact sensor, visually check it and measure the resistance between the terminals.(Refer to the previous item "INSPECTION".)



▶B◀ FRONT IMPACT SENSOR INSTALLATION

1. Securely connect the connector.
2. Position the front impact sensor facing toward the front of the vehicle as shown by the arrow on the label and install it securely.

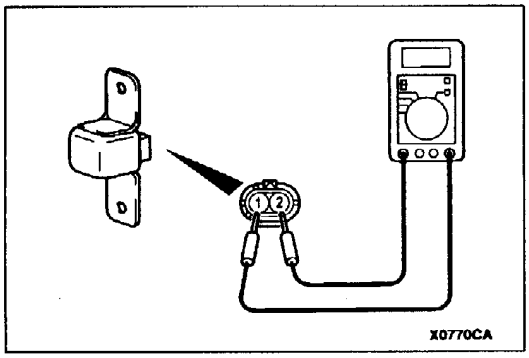
Caution
The SRS may not activate properly if a front impact sensor is not installed properly.



▶C◀ POST-INSTALLATION INSPECTION

1. Turn the ignition key to the ON position.
2. Does the SRS warning lamp illuminate for about 7 seconds, and then remain extinguished for at least 5 seconds after turning OFF?
3. If no, refer to troubleshooting. (Refer to P.52B-7)

INSPECTION



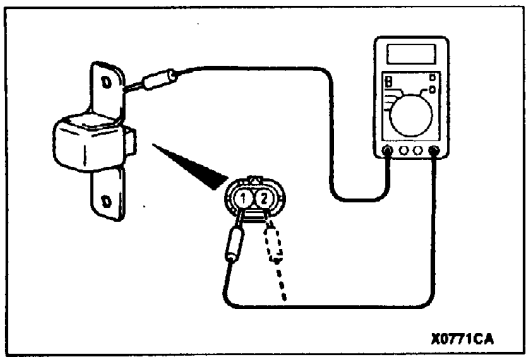
1. Check the front impact sensor for dents, cracks, deformation or rust.

Caution
If a dent, crack, deformation or rust is found, replace the sensor with a new one.

2. Check short or open circuit between the terminals of the front impact sensor.

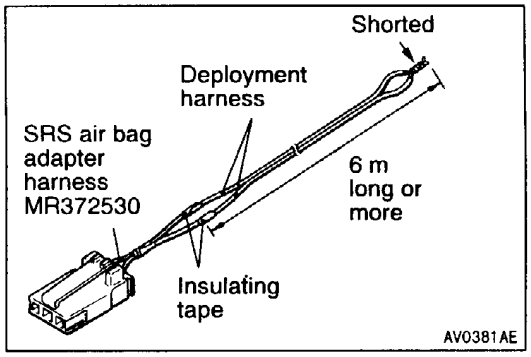
Short circuit: 1 Ω or less
Open circuit: 1 MΩ or more

Caution
Always replace the sensor with a new one if the resistance shows a short or open circuit.

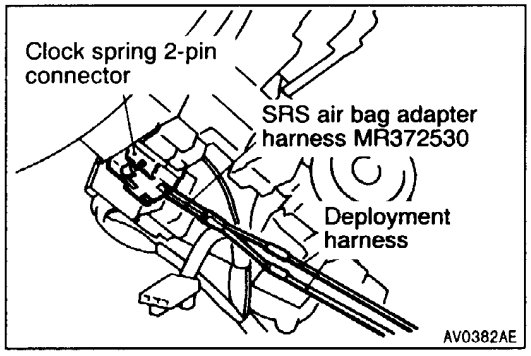


3. Check the continuity between the terminal and bracket. If there is a continuity, the insulation is malfunctioned, and replace the sensor with a new one.
4. Check the headlamp support panel for deformation and rust.

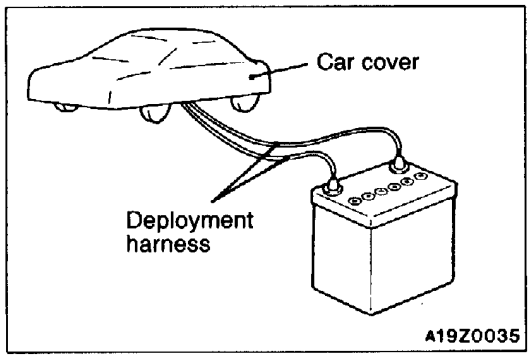
NOTE
Once disconnected from the instrument panel wiring harness, both electrodes of the clock spring connector short automatically. This prevents the driver's air bag from accidental deployment caused by static, etc.



(3) Connect deployment harnesses longer than 6 m to each SRS air bag adapter harness and insulate the connections with plastic tape.
Also, connect the deployment harnesses in the other ends to short, thereby preventing the driver's air bag from accidental deployment caused by static etc.



(4) Connect the SRS air bag adapter harness to the clock spring 2-pin connector and route the deployment harnesses out of the vehicle.



(5) Close all the doors with the windows fully closed and put a cover over the vehicle to minimize report.

Caution
The cover is required as the glass, if already damaged, may break.

(6) Separate the deployment harnesses as far from the vehicle as possible and connect to the terminals of the battery removed from the vehicle. Then deploy the passenger's air bag module.

Caution
1) **Before deploying the air bag, see that no one is in and near the vehicle.**
2) **The deployment makes the inflator of the driver's air bag very hot. Before handling the inflator, wait more than 30 minutes for cooling.**
3) **If the air bag module fails to deploy although the procedure is respected, do not go near the module. Contact your distributor.**

(7) After deployment of the air bag module, discard as specified in the procedure. (Refer to P.52B-52)

DIAGNOSIS CODE MEMORY ERASING PROCEDURE

Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points.

INSPECTION USING SIMPLE CHECK DIAGNOSIS MODE

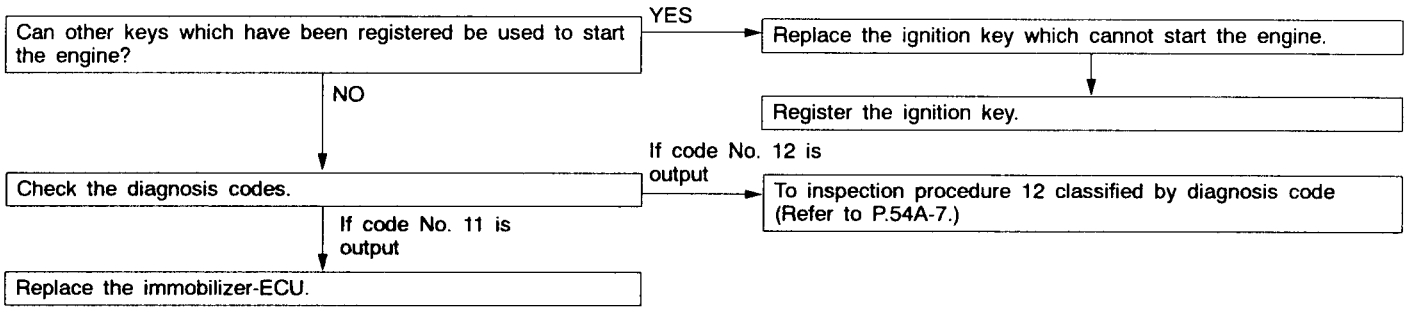
1. Change to Simple Check Diagnosis mode and activate switch diagnosis mode. (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points.)
2. In this condition, the input signals for the following switches can be checked.

CHART CLASSIFIED BY DIAGNOSIS CODES

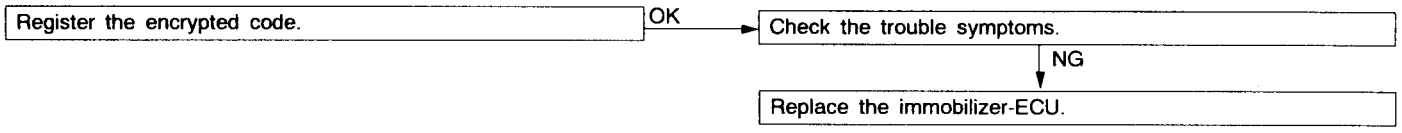
Code No.	Diagnosis contents	Reference page
11	Problem related to communication with the ignition key	54A-7
12	Ignition key is not registered, or encrypted code from ignition key does not match.	54A-7

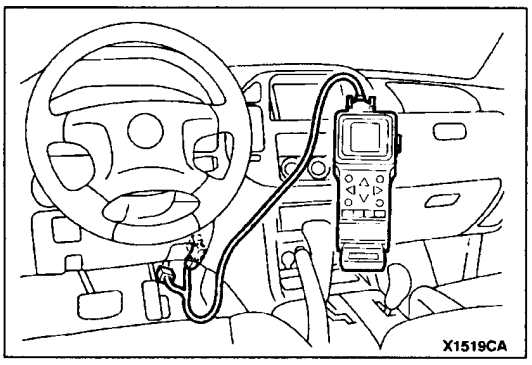
INSPECTION PROCEDURES FOR EACH DIAGNOSIS CODE

Code No. 11 Problem related to communication with the ignition key	**Probable cause**
When the ignition switch is at the ON position, the encrypted codes are not transmitted from the ignition key to the immobilizer-ECU.	• Malfunction of ignition key • Malfunction of immobilizer-ECU



Code No. 12 Ignition key is not registered, or encrypted code from ignition key does not match.	**Probable cause**
The ignition key has not been registered with the immobilizer-ECU.	• The ignition key has not been registered with the immobilizer-ECU. • Malfunction of immobilizer-ECU



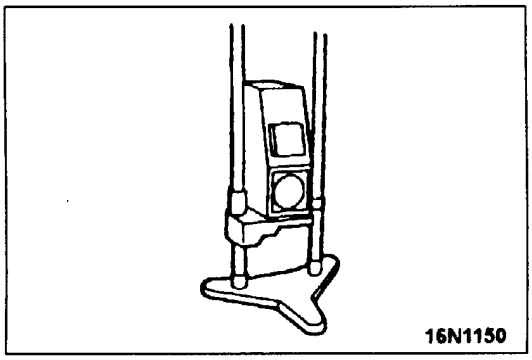


1. Connect the MUT-II to the diagnosis connector.

   Caution
   Turn the ignition switch to the LOCK (OFF) before connecting or disconnecting of the MUT-II.

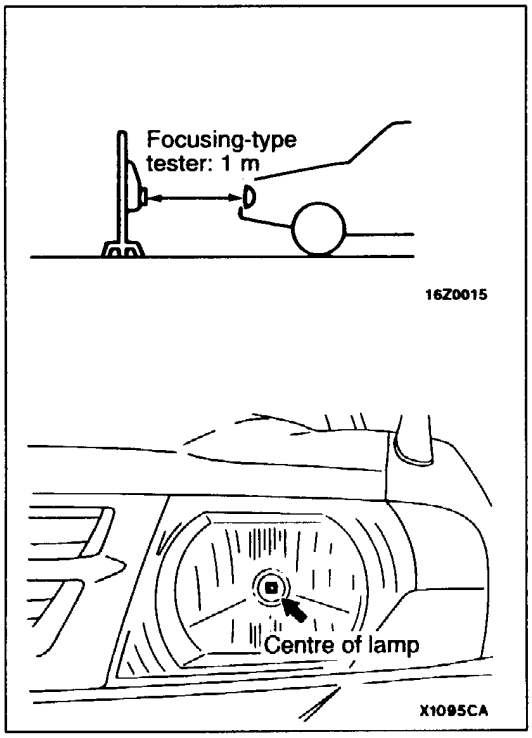
2. Check that diagnosis code No.54 is not set by the engine-ECU. If it is set, check according to the Troubleshooting Procedures. (Refer to GROUP 13A – Troubleshooting.)
3. Use the ignition key that is to be registered to turn on the ignition switch.
4. Use the MUT-II to register the encrypted code. If you are registering two or more codes, use the next key to the registered to turn on the ignition switch without disconnecting the MUT-II.
5. Turn the ignition switch to the LOCK (OFF) position.
6. Check that the engine can be started with each of the ignition keys.
7. Check the diagnosis output from the engine-ECU, and erase code No.54 if it appears. (Refer to GROUP 13A – Troubleshooting.)
8. Disconnect the MUT-II. This completes the registration operation.

- Run the engine at a speed of 2000 r/min to fully charge the battery.
- Turn the headlamp level control switch to position "0".

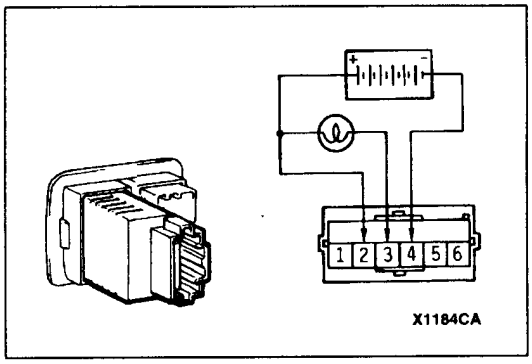


LOW BEAM ADJUSTMENT

1. Adjust the low-beam light axis by following the procedure given for the focusing-type headlamp tester which you are using.



2. Set the tester so that the centre of the focusing lens is 1 m directly in front of the centre of the headlamp.



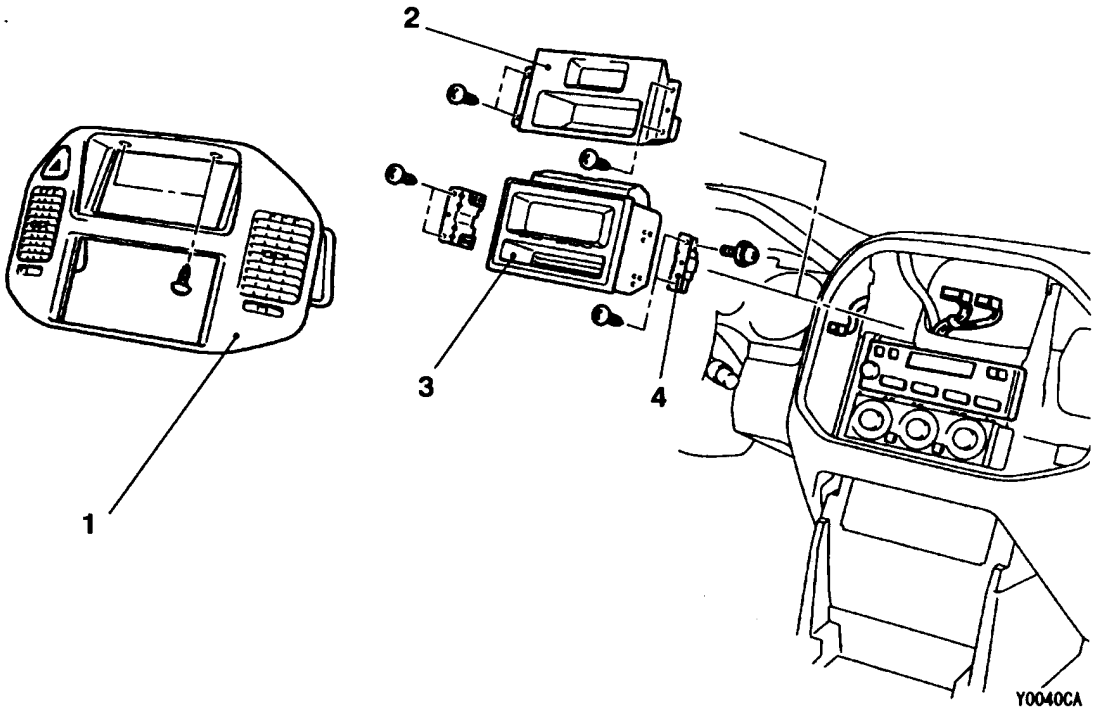
RHEOSTAT

INSPECTION

1. Connect a test lamp (40 W) to the battery as shown in the illustration.
2. Operate the rheostat. If the luminance of the lamp changes steadily with no flashing, the rheostat is functioning normally.

CLOCK OR CENTER DISPLAY

REMOVAL AND INSTALLATION

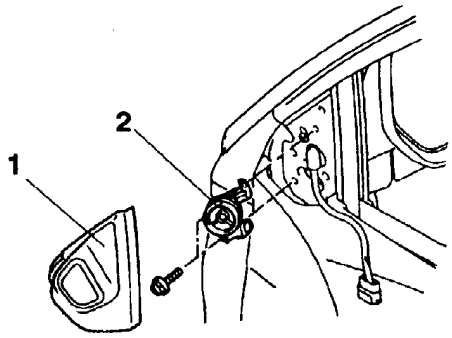


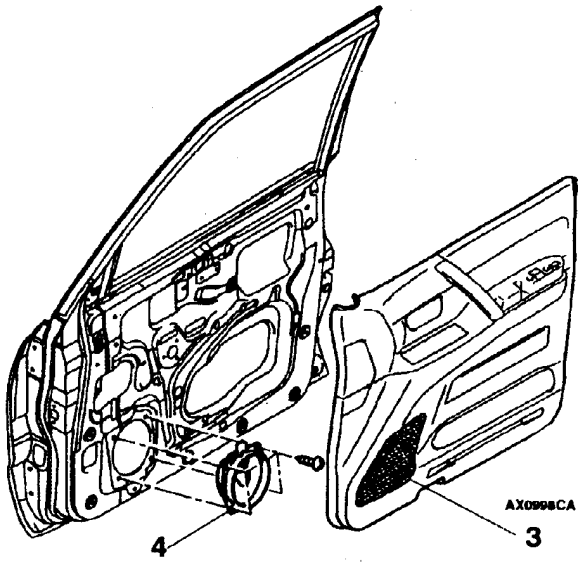
Removal steps

1. Center panel
   (Refer to GROUP 52A – Instrument Panel.)
2. Clock
3. Center display
4. Bracket

FRONT SPEAKERS

REMOVAL AND INSTALLATION





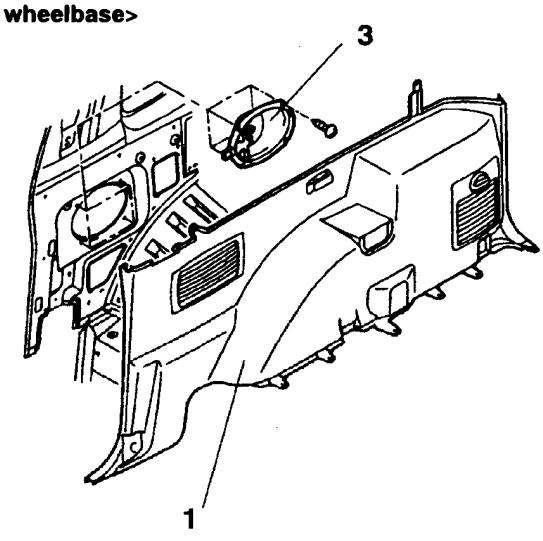
Tweeter removal steps
1. Delta inner cover
2. Tweeter

Front door speaker removal steps
3. Front door trim (Refer to GROUP 42.)
4. Front door speaker

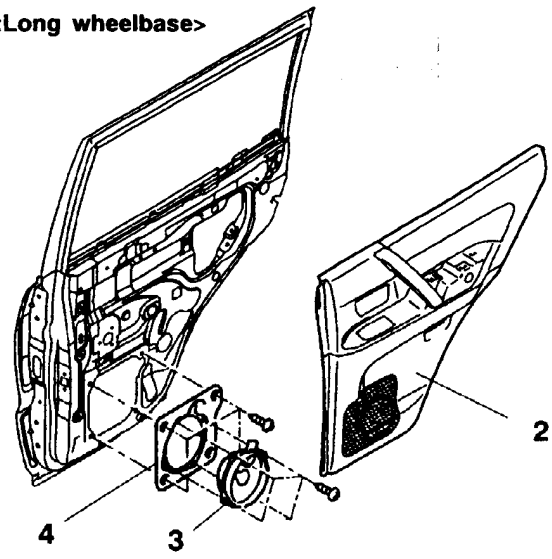
REAR SPEAKERS

REMOVAL AND INSTALLATION

<Short wheelbase>



<Long wheelbase>



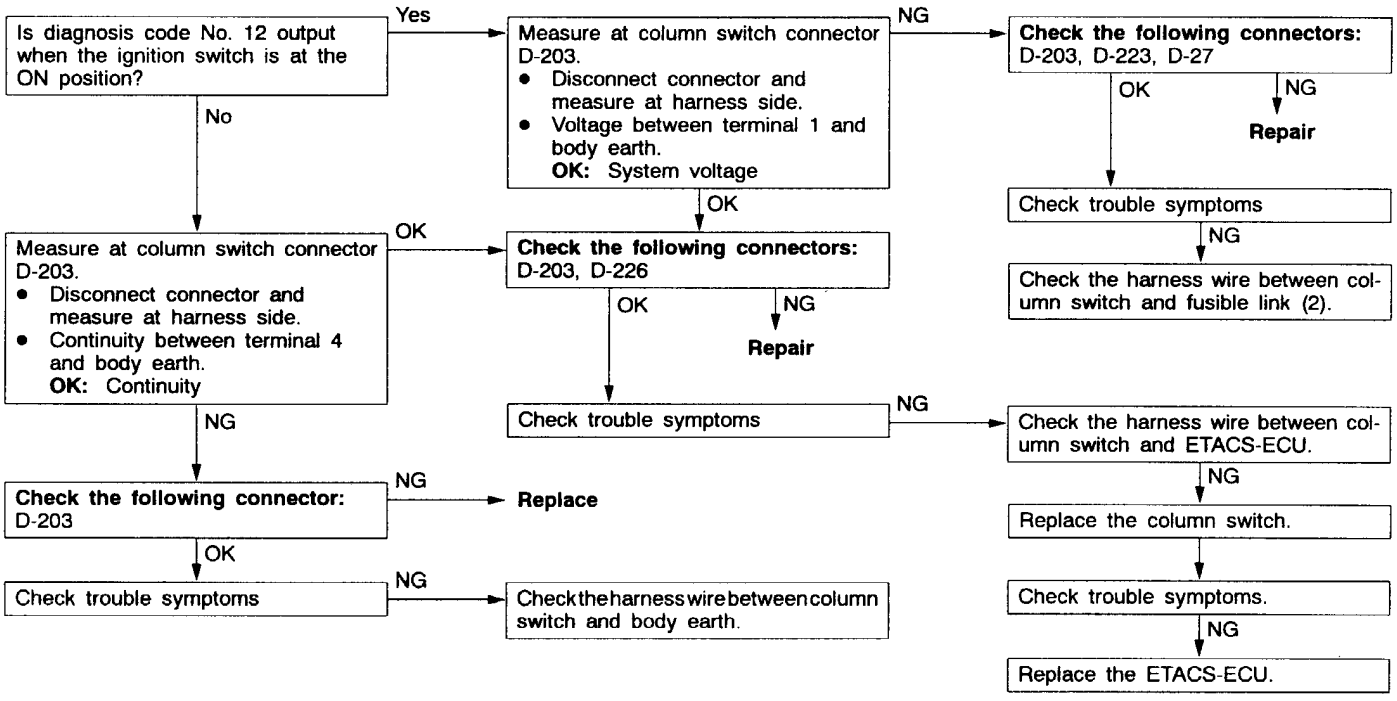
Removal steps
1. Lower quarter trim (Refer to GROUP 52A – Instrument Panel.)
2. Rear door trim (Refer to GROUP 52A – Instrument Panel.)
3. Rear speakers
4. Rear speaker bracket

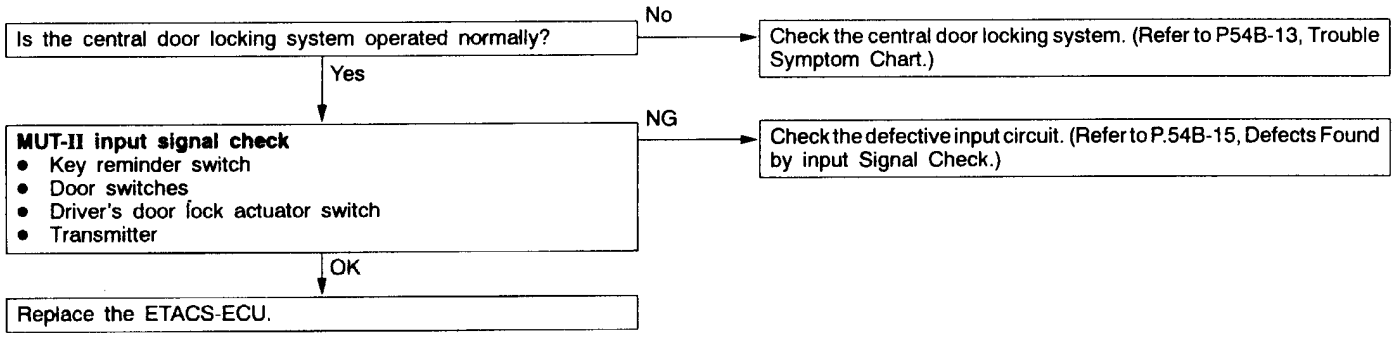
DIAGNOSIS CODE INSPECTION PROCEDURES

Code No.11 Failure concerning the ETACS-ECU	Probable cause
The ETACS-ECU monitors its own communication data, and sends a diagnosis code when an error takes place consecutive fifteen times in 0.6 second. The diagnosis code will be erased when the ETACS-ECU determines that its own communication data is sent consecutive 15 times in 0.6 second.	• Malfunction of ETACS-ECU

Replace the ETACS-ECU.

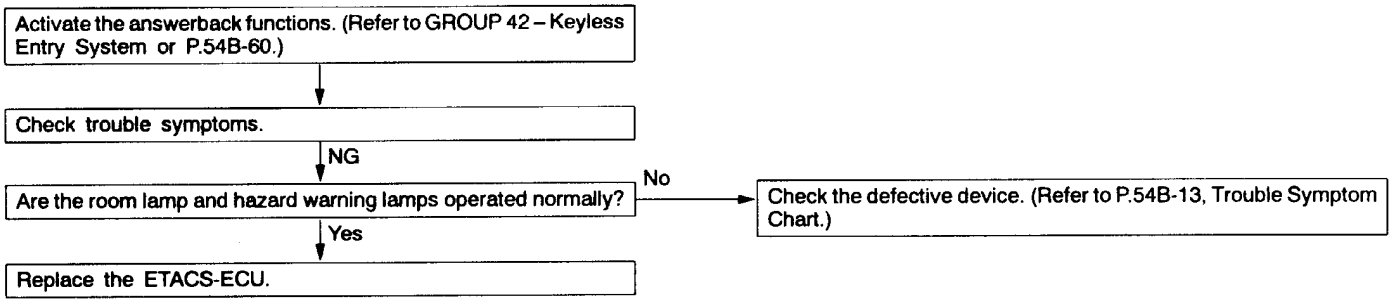
Code No.12 Failure concerning the column switch or improper connection with the ETACS-ECU	Probable cause
This diagnosis code is displayed when the column switch sends a signal regardless of the transmission request signal from the ETACS-ECU (three times or more in one second). The diagnosis code is erased when the column switch continues to send a signal according to the transmission request signal from the ETACS-ECU for one second.	• Malfunction of column switch • Malfunction of ETACS-ECU • Malfunction of wiring harness or connector





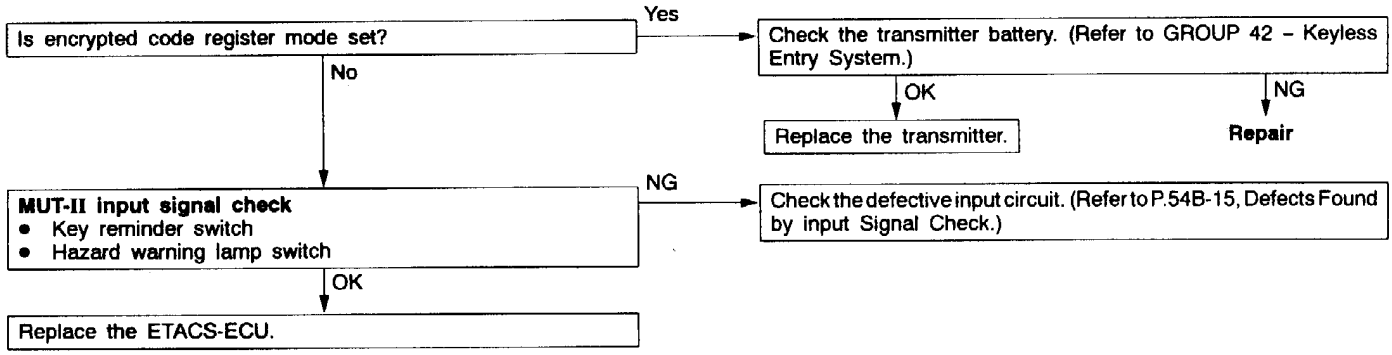
Inspection Procedure E-2

Keyless entry system: The room lamp and hazard warning lamps do not operate through the answerback function.	Probable cause
The hazard warning lamp answerback function can be selected by the driver's desire (can be deactivated). However, the room lamp answerback function can not be deactivated. if all of these device do not operate through the answerback function, the ETACS-ECU may be defective.	• Malfunction of turn-signal lamp • Malfunction of room lamp • Malfunction of ETACS-ECU • Malfunction of harness wire or connector



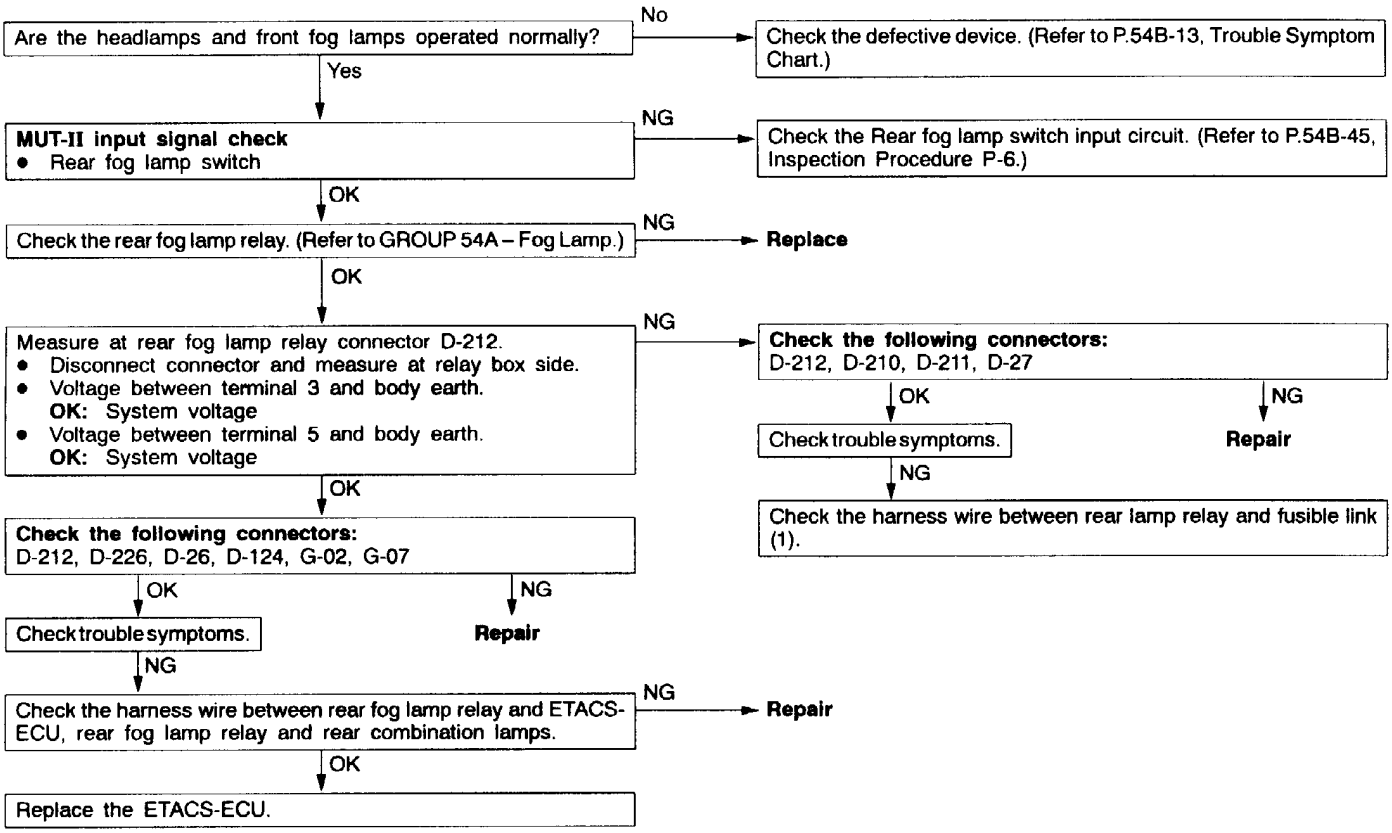
Inspection Procedure E-3

Keyless entry system: The encrypted code cannot be registered.	Probable cause
The ETACS-ECU actives the encrypted code register mode according to the following switch signals. • Key reminder switch • Hazard warning lamp switch If the encrypted code register mode is not set, the relevant input signal circuit or the ETACS-ECU may be defective. If a transmitter can not be registered although the encrypted code register mode is set, the transmitter or the ETACS-ECU may be defective.	• Malfunction of key reminder switch • Malfunction of hazard warning lamp switch • Malfunction of transmitter • Malfunction of ETACS-ECU • Malfunction of harness wire or connector



Inspection Procedure N-1

Rear fog lamp: Rear fog lamps do not illuminate when the rear fog lamp switch is turned on.	Probable cause
If the headlamps and rear fog lamps illuminate normally, the rear fog lamp switch, the rear fog lamp relay or the ETACS-ECU may be defective.	• Malfunction of rear fog lamp switch • Malfunction of rear fog lamp relay • Malfunction of ETACS-ECU • Malfunction of harness wire or connector.



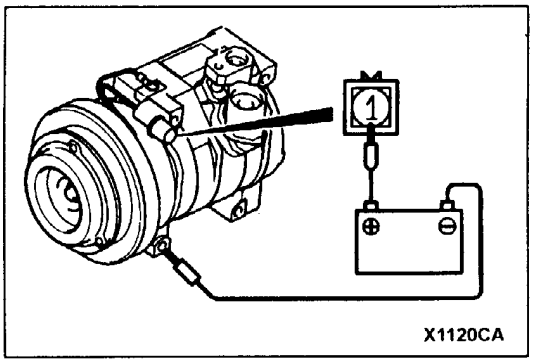
NOTE
If only one of the rear fog lamp or rear fog lamp indicator lamp does not illuminate, the harness wire between the lamp and rear fog lamp relay may be defective or the lamp bulb may be burned out. In this case, check the rear fog lamp circuit.

Inspection Procedure N-2

Rear fog lamp: Rear fog lamp do not go out when the headlamps and front fog lamps are turned off while the fog lamps are on.	Probable cause
If the malfunction above occurs, the ETACS-ECU may be defective.	• Malfunction of ETACS-ECU

Replace the ETACS-ECU.

Terminal No.	Check items	Checking requirements	Normal condition
26	Key reminder switch signal input	Key reminder switch: ON (Ignition key removed)	0 V
27	Hazard warning lamp switch signal input	Hazard warning lamp switch: ON	0 V
29	Recognition line of daytime running lamp (DRL) <Vehicles with DRL>	Always	0 V
31	Data request signal output	Always	0 – 5 V (pulse signal)
34	Windshield intermittent wiper interval adjusting knob signal input	Ignition switch: ACC, Windshield intermittent wiper interval adjusting knob: FAST → SLOW	0 → 2.5 V
35	Back-up lamp switch signal input <M/T>	Ignition switch: ON, Shift lever: R	System voltage
	Inhibitor switch (reverse) signal input <A/T>	Ignition switch: ON, Selector lever: R	System voltage
36	Ignition key hole illumination lamp output	When ignition key hole illumination lamp is lighted	2 V or less
37	Diagnosis code or input signal check output	When diagnosis code is output	0 – 12 V (pulse signal)
		When input signal check is output	0, 12 V (When input pulse signal is changed)
40	Rear fog lamp relay output	When rear fog lamp is lighted	2 V or less
53	Front passenger's and back door lock key cylinder switch (LOCK) signal input	Front passenger's or back door lock key cylinder switch: LOCK	0 V
54	Front passenger's and back door lock key cylinder switch (UNLOCK) signal input	Front passenger's or back door lock switch: UNLOCK	0 V
55	Driver's door lock actuator switch (LOCK) signal input	Driver's door lock actuator switch: LOCK	0 V
56	Driver's door lock actuator switch (UNLOCK) signal input	Driver's door lock actuator switch: UNLCOK	0 V



MAGNETIC CLUTCH TEST

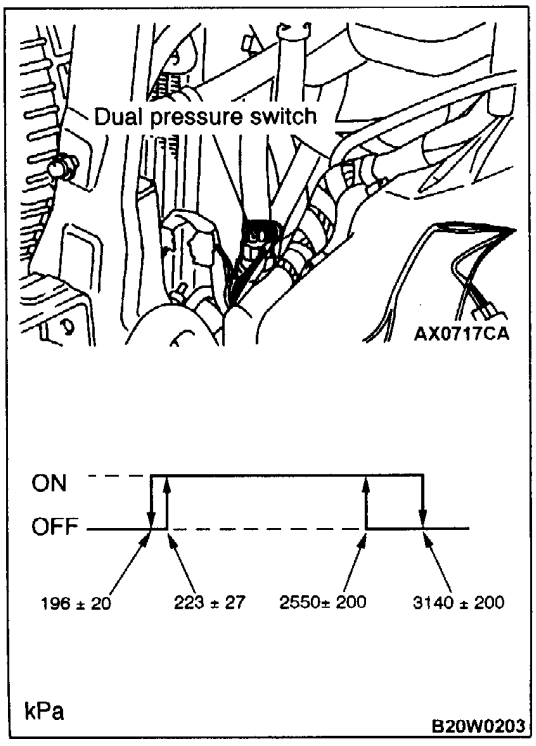
1. Disconnect the connector (1-pin) to the magnetic clutch.
2. Connect battery (+) voltage directly to the connector for the magnetic clutch.
3. If the magnetic clutch is normal, there will be "click". If the pulley and armature do not make contact ('click'), there is a malfunction.

RECEIVER DRIER TEST

Operate the unit and check the piping temperature by touching the receiver drier outlet and inlet.
If there is a difference in the temperatures, the receiver drier is restricted.
Replace the receiver drier.

COMPRESSOR DRIVE BELT ADJUSTMENT

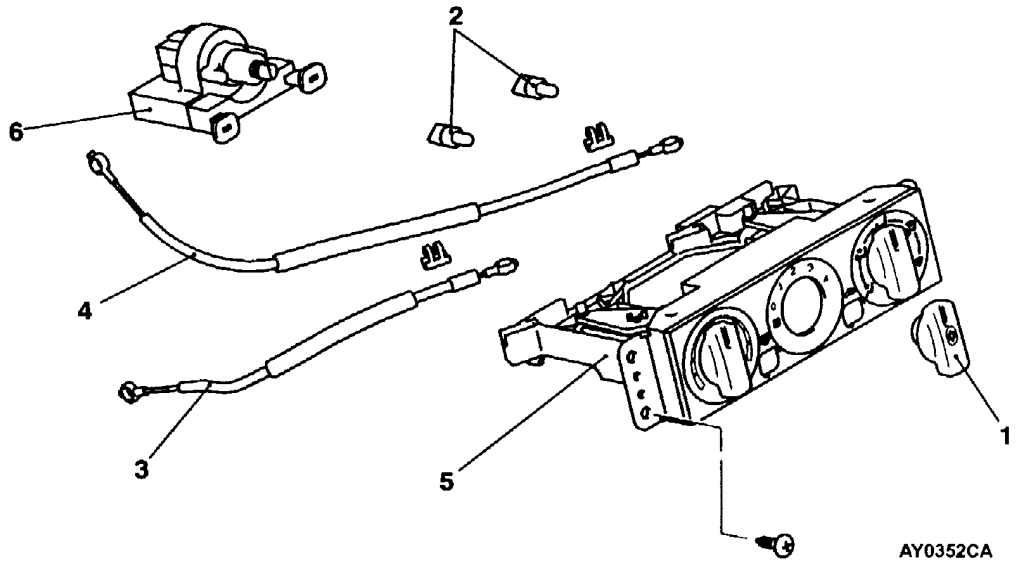
Refer to GROUP 11 – On-vehicle Service.



DUAL PRESSURE SWITCH CHECK

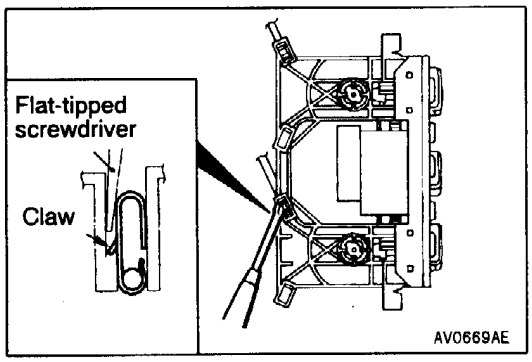
1. Remove the dual pressure switch connector and connect the high/low pressure side terminals located on the harness side as shown in the illustration.
2. Install a gauge manifold to the high-pressure side service valve of the refrigerant line. (Refer to Performance Test.)
3. When the high/low pressure sides of the dual pressure switch are at operation pressure (ON) and there is continuity between the respective terminals, then the condition is normal. If there is no continuity, replace the switch.

DISASSEMBLY AND REASSEMBLY



Disassembly steps

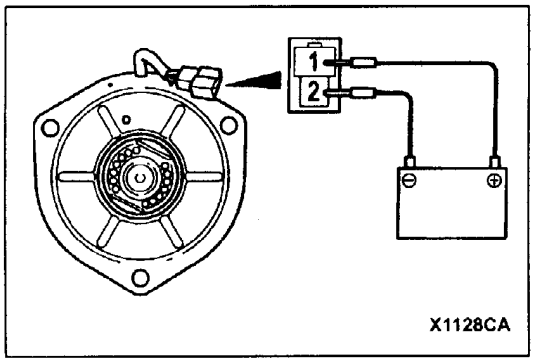
1. Knob assembly
2. Bulb
◀A▶ 3. Air outlet changeover damper cable
◀A▶ 4. Air mix damper cable
5. Heater control panel
6. Blower switch assembly



DISASSEMBLY SERVICE POINT

◀A▶ AIR OUTLET CHANGEOVER DAMPER CABLE /AIR MIX DAMPER CABLE DISCONNECTION

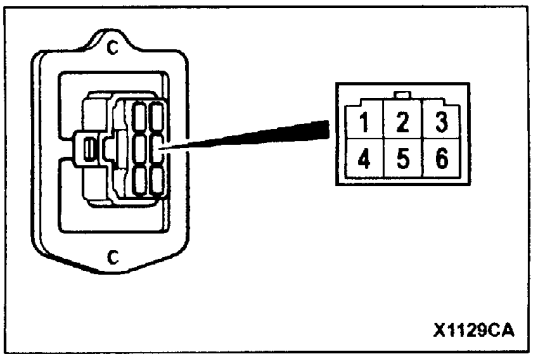
Insert a flat-tipped screwdriver into the clip through the inside of the control base, and then prise out the clip claw to disconnect the cables.



INSPECTION

BLOWER MOTOR CHECK

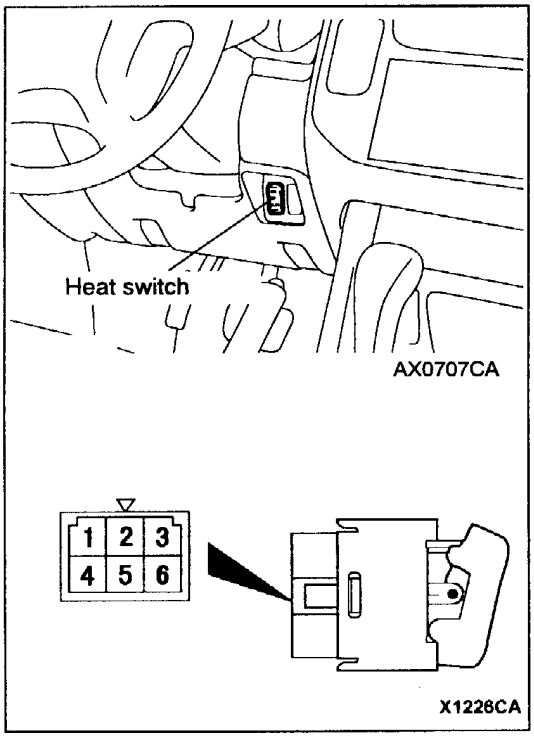
The motor should run when battery voltage is applied between the terminals. In addition, any abnormal sound should not be heard from the motor.



RESISTOR CHECK

Standard value:

Terminal to be measured	Standard value Ω
Between terminals No.1 and 6	4.9 ± 7%
Between terminals No.1 and 3	1.25 ± 7%



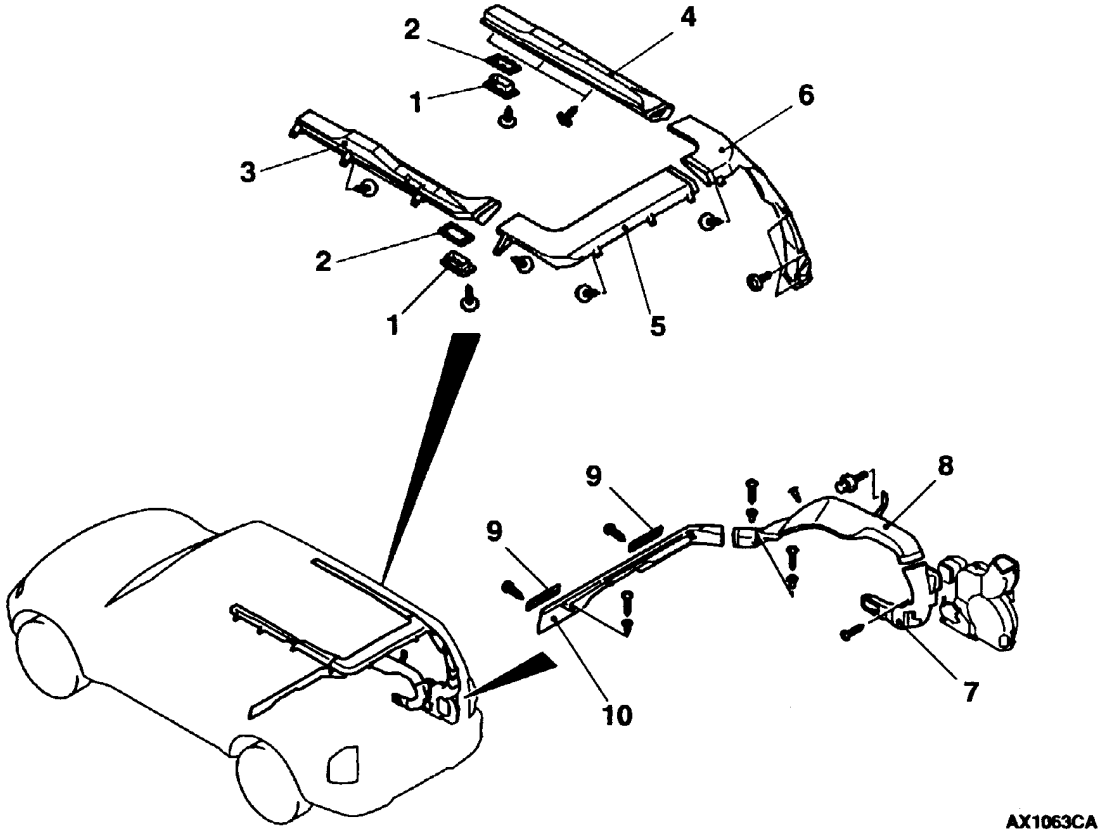
HEAT SWITCH <4M41>

INSPECTION

HEAT SWITCH CHECK

Switch position	Terminal No.						
	1	2	IND	6	3	ILL	4
OFF position	○		○	○	○	○	○
ON position	○	○	○	○	○	○	○

REAR A/C DUCT
REMOVAL AND INSTALLATION



Rear roof duct removal steps

- Upper quarter trim (R.H.) (Refer to GROUP 52–Trims.)

1. Air outlet assembly
2. Retainer

- Head lining

3. Roof duct (L.H.)
4. Roof duct (R.H.)
5. Rear roof duct
6. Pillar duct

Rear floor duct removal steps

- Upper quarter trim (R.H.), lower quarter trim (R.H.) (Refer to GROUP 52 – Trims.)

7. Rear quarter duct
8. Rear floor duct A
9. Rear heater grille

- Floor carpet

10. Rear floor duct B