GENERAL

CONTENTS

120002192

HOW TO USE THIS MANUAL

120002571

SCOPE OF MAINTENANCE, REPAIR AND SERVICING EXPLANATIONS

This manual provides explanations, etc. concerning procedures for the inspection, maintenance, repair and servicing of the subject model. Note, however, that for engine and transmission-related component parts, this manual covers only on-vehicle inspections, adjustments, and the removal and installation procedures for major components.
For detailed information concerning the inspection, checking, adjustment, disassembly and reassembly of the engine, transmission and major components after they have been removed from the vehicle, please refer to the separate manuals covering the engine and the transmission.

SERVICE ADJUSTMENT PROCEDURES

"Service adjustment procedures" are procedures for performing inspections and adjustments of particularly important locations with regard to the construction and for maintenance and servicing, but other inspections (for looseness, play, cracking, damage, etc.) must also be performed.

INSPECTION

Under this title are presented inspection and checking procedures to be performed by using special tools and measuring instruments and by feeling, but, for actual maintenance and servicing procedures, visual inspections should always be performed as well.

DEFINITION OF TERMS

STANDARD VALUE

Indicates the value used as the standard for judging the quality of a part or assembly on inspection or the value to which the part or assembly is corrected and adjusted. It is given by tolerance.

LIMIT

Shows the standard for judging the quality of a part or assembly on inspection and means the maximum or minimum value within which the part or assembly must be kept functionally or in strength. It is a value established outside the range of standard value.

REFERENCE VALUE

Indicates the adjustment value prior to starting the work (presented in order to facilitate assembly and adjustment procedures, and so they can be completed in a shorter time).

CAUTION

Indicates the presentation of information particularly vital to the worker during the performance of maintenance and servicing procedures in order to avoid the possibility of injury to the worker, or damage to component parts, or a reduction of component or vehicle function or performance, etc.

INDICATION OF TIGHTENING TORQUE

The tightening torque shown in this manual is a basic value with a tolerance of +10% except the following cases when the upper and lower limits of tightening torque are given.
(1) The tolerance of the basic value is within +10%.
(2) Special bolts or the like are in use.
(3) Special tightening methods are used.

MODEL INDICATIONS

The following abbreviations are used in this manual for classification of model types.

M/T :	Indicates the manual transmission, or models equipped with the manual transmission.
A/T :	Indicates the automatic transmission, or models equipped with the automatic transmission.
SOHC :	Indicates an engine with the single overhead camshaft, or a model equipped with such an engine.
MPI :	Indicates the multi-point injection, or engines equipped with the multi-point injection.
DIESEL :	Indicates a diesel engine, or models equipped with such an engine.
2WD :	Indicates the rear wheel-drive vehicles.
4WD :	Indicates the 4 wheel-drive vehicles.

EXPLANATION OF MANUAL CONTENTS

120000612

Indicates procedures to be performed before the work in that section is started, and procedures to be performed after the work in that section is finished.

Component Diagram
A diagram of the component parts is provided near the front of each section in order to give a reader a better understanding of the installed condition of component parts.

Indicates (by symbols) where lubrication is necessary.

Maintenance and Servicing Procedures
The numbers provided within the diagram indicate the sequence for maintenance and servicing procedures.

- Removal steps :
  The part designation number corresponds to the number in the illustration to indicate removal steps.
- Disassembly steps :
  The part designation number corresponds to the number in the illustration to indicate disassembly steps.
- Installation steps :
  Specified in case installation is impossible in reverse order of removal steps. Omitted if installation is possible in reverse order of removal steps.
- Reassembly steps :
  Specified in case reassembly is impossible in reverse order of disassembly steps. Omitted if reassembly is possible in reverse order of disassembly steps.

Classifications of Major Maintenance / Service Points

When there are major points relative to maintenance and servicing procedures (such as essential maintenance and service points, maintenance and service standard values, information regarding the use of special tools, etc.), these are arranged together as major maintenance and service points and explained in detail.

◀A▶ : Indicates that there are essential points for removal or disassembly.
▶A◀ : Indicates that there are essential points for installation or reassembly.

Symbols for Lubrication, Sealants and Adhesives

Information concerning the locations for lubrication and for application of sealants and adhesives is provided, by using symbols, in the diagram of component parts or on the page following the component parts page, and explained.

 : Grease
(multipurpose grease unless there is a brand or type specified)

 : Sealant or adhesive

 : Brake fluid or automatic transmission fluid

 : Engine oil, gear oil or air conditioner compressor oil

 : Adhesive tape or butyl rubber tape

Indicates the group title.

Indicates the section title.

Indicates the group number.

Indicates the page number.

STEERING – Power Steering Oil Pump 37A-29

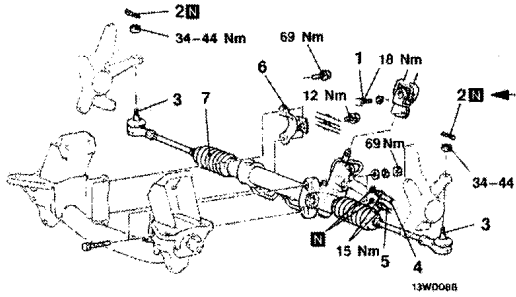
POWER STEERING GEAR BOX

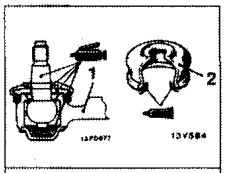
120000039

REMOVAL AND INSTALLATION

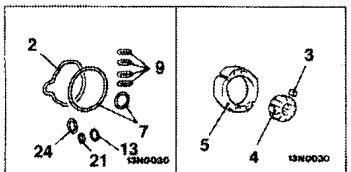
Pre-removal Operation
(1) Power Steering Fluid Draining (Refer to P. 37A-10.)
(2) Air Cleaner Assembly Removal
(3) Under Cover Removal (Refer to GROUP 42 – Under Cover.)

<2WD>





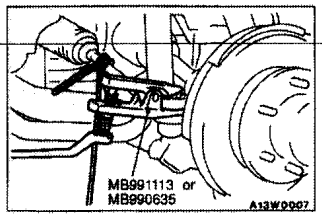
Sealant: 3M ATD Part No. 8661 or equivalent



Oil pump seal kit | Oil pump cartridge kit

Removal steps
1. Lower shaft assembly and gear box connecting bolt
2. Split pin
3. Connection for tie-rod end and knuckle
4. Connection for return tube
5. Connection for pressure tube
6. Clamp
7. Gear box assembly

◀A▶ ◀B▶



REMOVAL SERVICE POINTS

◀A▶ TIE-ROD END DISCONNECTION

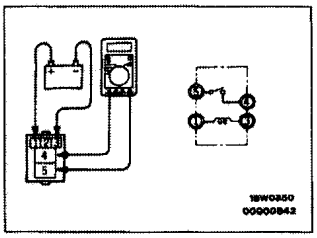
Caution
1. **Using the special tool, loosen the tie rod end mounting nut. Only loosen the nut; do not remove it from the ball joint.**
2. **Support the special tool with a cord, etc. to prevent it from coming off.**

Denotes non-reusable part.

Denotes tightening torque.

Repair kit or set parts are shown. (Only very frequently used parts are shown.)

Operating procedures, cautions, etc. on removal, installation, disassembly and reassembly are described.



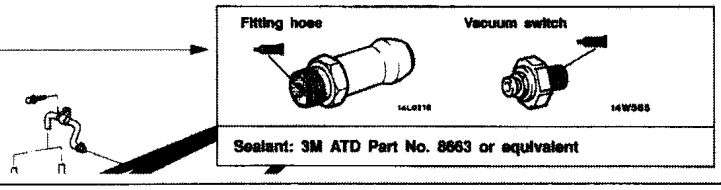
HEADLAMP RELAY CONTINUITY INSPECTION

Battery voltage	Terminal No.			
	1	3	4	5
Power is not supplied	○	○		
Power is supplied	⊕	⊖	○	○

○——○ indicates that there is a continuity between the terminals.
⊕ - - - ⊖ indicates terminals to which battery voltage is applied.

35A-26 BASIC BRAKE SYSTEM – Master Cylinder and Brake Booster

Lubrication and sealing points



Sealant: 3M ATD Part No. 8663 or equivalent

The title of the page (following the page on which the diagram of Component parts is presented) indicating the locations of lubrication and sealing procedures.

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HOW TO USE TROUBLESHOOTING / INSPECTION SERVICE POINTS

120000613

Troubleshooting of electronic control systems for which the MUT-II can be used follows the basic outline described below. Furthermore, even in systems for which the MUT-II cannot be used, part of these systems still follow this outline.

TROUBLESHOOTING CONTENTS

1. STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

The main procedures for diagnostic troubleshooting are shown.

2. SYSTEM OPERATION AND SYMPTOM VERIFICATION TESTS

If verification of the trouble symptoms is difficult, procedures for checking operation and verifying trouble symptoms are shown.

3. DIAGNOSTIC FUNCTION

The following diagnostic functions are shown.
- Method of reading diagnostic codes
- Method of erasing diagnostic codes
- Input inspection service points

4. INSPECTION CHART FOR DIAGNOSTIC TROUBLE CODES

5. INSPECTION PROCEDURE FOR DIAGNOSTIC TROUBLE CODES

Indicates the inspection procedures corresponding to each diagnosis code. (Refer to the next page for how to read the inspection procedures.)

6. INSPECTION CHART FOR TROUBLE SYMPTOMS

If there are trouble symptoms even though the results of inspection using the MUT-II show that all diagnosis codes are normal, inspection procedures for each trouble symptom will be found by means of this chart.

7. INSPECTION PROCEDURE FOR DIAGNOSTIC SYMPTOM

Indicates the inspection procedures corresponding to each trouble symptoms classified in the Inspection Chart for Trouble Symptoms. (Refer to the next page for how to read the inspection procedures.)

8. SERVICE DATA REFERENCE TABLE

Inspection items and normal judgement values have been provided in this chart as reference information.

9. CHECK AT ECU TERMINALS

Terminal numbers for the ECU connectors, inspection items and standard values have been provided in this chart as reference information.

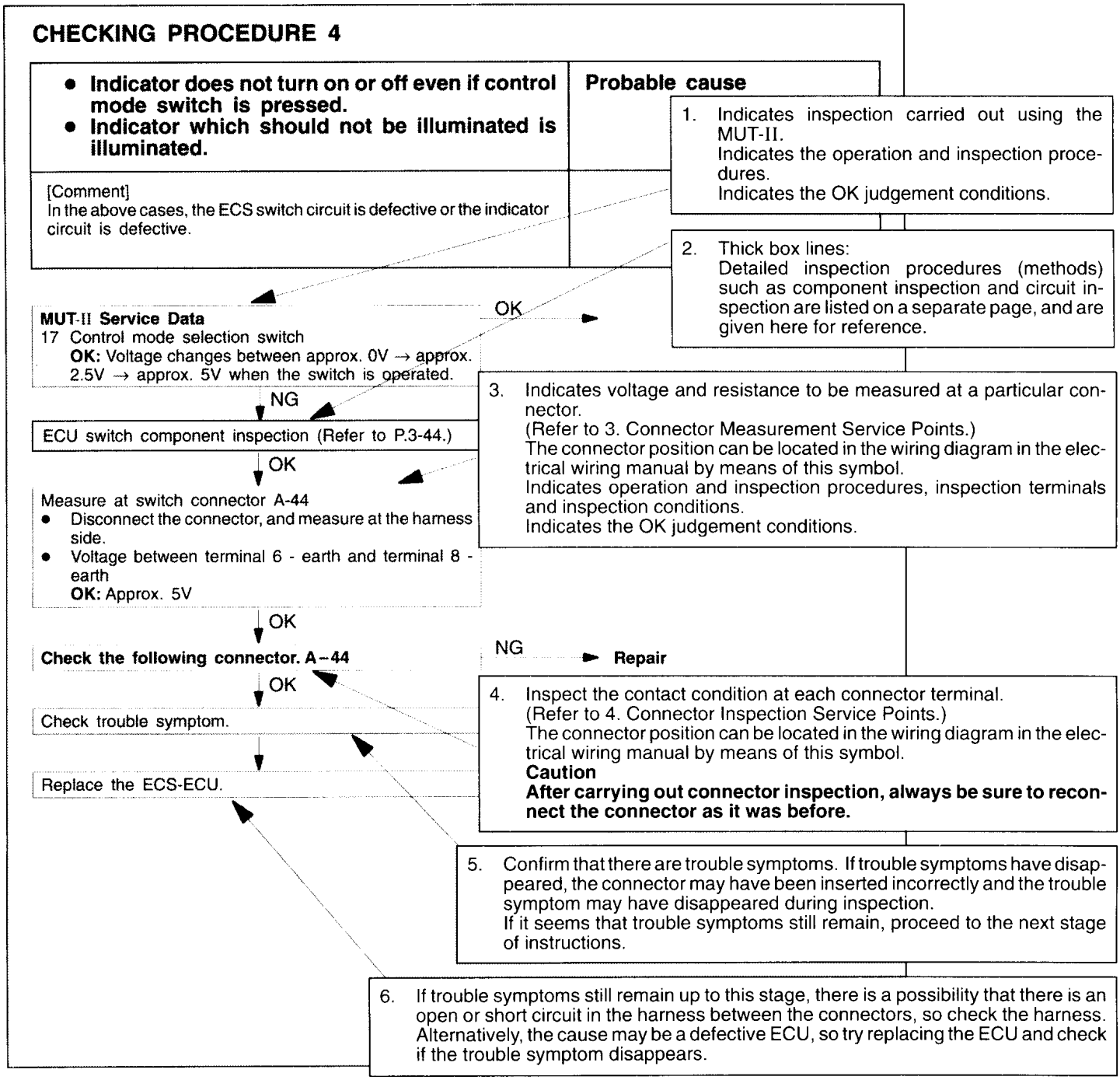
10. INSPECTION PROCEDURES USING AN OSCILLOSCOPE

When there are inspection procedures using an oscilloscope, these are listed here.

HOW TO USE THE INSPECTION PROCEDURES

120000614

The causes of a high frequency of problems occurring in electronic circuitry are generally the connectors, components, the ECU and the harnesses between connectors, in that order. These inspection procedures follow this order, and they first try to discover a problem with a connector or a defective component.



HARNESS INSPECTION

Check for an open or short circuit in the harness between the terminals which were defective according to the connector measurements. Carry out this inspection while referring to the electrical wiring manual. Here, "Check harness between power supply and terminal xx" also includes checking for blown fuses. For inspection service points when there is a blown fuse, refer to "Inspection Service Points for a Blown Fuse."

MEASURES TO TAKE AFTER REPLACING THE ECU

If the trouble symptoms have not disappeared even after replacing the ECU, repeat the inspection procedure from the beginning.

CONNECTOR MEASUREMENT SERVICE POINTS

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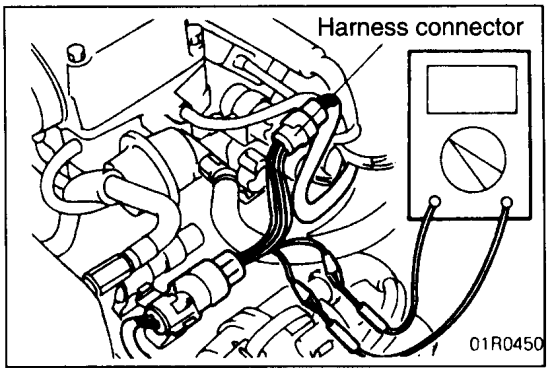
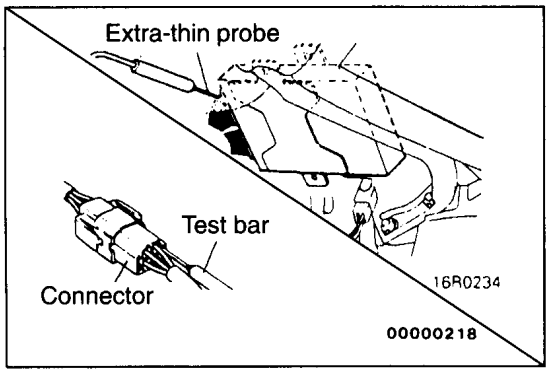
Turn the ignition switch to OFF when connecting and disconnecting the connectors, and turn the ignition switch to ON when measuring if there are no instructions to the contrary.



IF INSPECTING WITH THE CONNECTOR CONNECTED (WITH CIRCUIT IN A CONDITION OF CONTINUITY)

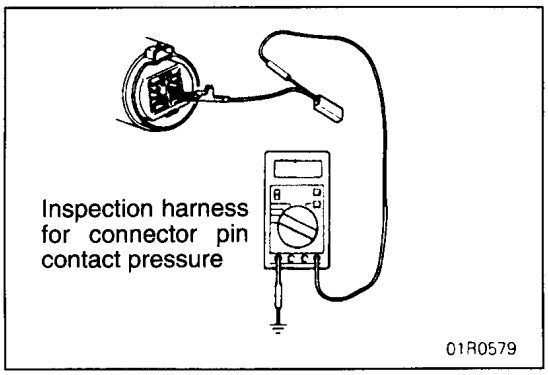
Waterproof Connectors

Be sure to use the special tool (harness connector). Never insert a test bar from the harness side, because to do so will reduce the waterproof performance and result in corrosion.



Ordinary (non-waterproof) Connectors

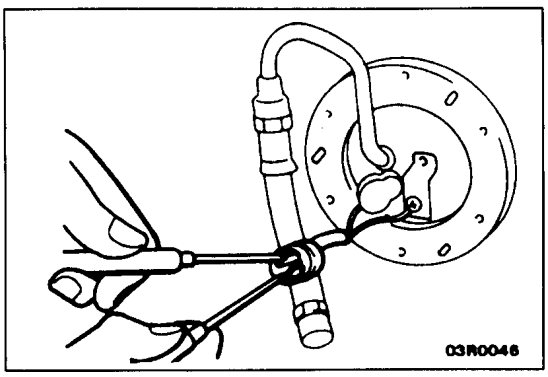
Check by inserting the test bar from the harness side. Note that if the connector (control unit, etc.) is too small to permit insertion of the test bar, it should not be forced; use a special tool (the extra-thin probe in the harness set for checking) for this purpose.



IF INSPECTING WITH THE CONNECTOR DISCONNECTED

<When Inspecting a Female Pin>

Use the special tool (inspection harness for connector pin contact pressure in the harness set for inspection).
The inspection harness for connector pin contact pressure should be used. The test bar should never be forcibly inserted, as it may cause a defective contact.

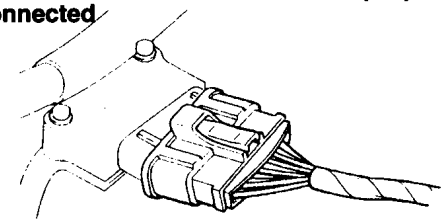


<When Inspecting a Male Pin>

Touch the pin directly with the test bar.

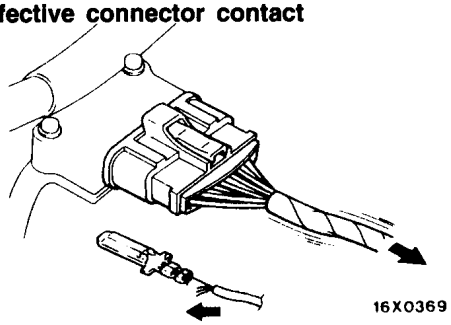
Caution
At this time, be careful not to short the connector pins with the test bars. To do so may damage the circuits inside the ECU.

Connector disconnected or improperly connected



16S0256

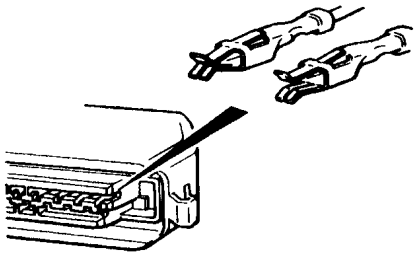
Defective connector contact



16X0369

Harness wire breakage at terminal section

Low contact pressure



16S0254
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CONNECTOR INSPECTION

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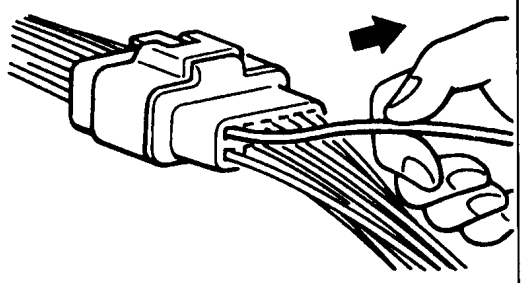
VISUAL INSPECTION

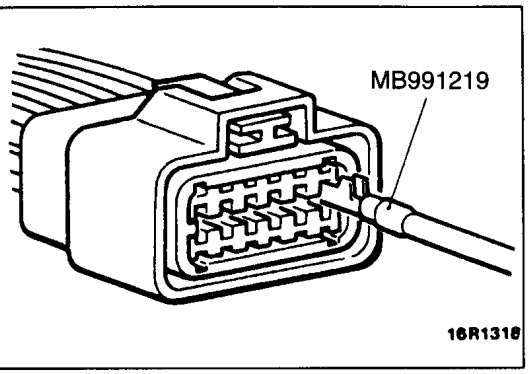
- Connector is disconnected or improperly connected
- Connector pins are pulled out
- Due to harness tension at terminal section
- Low contact pressure between male and female terminals
- Low connection pressure due to rusted terminals or foreign matter lodged in terminals



16R1317

CONNECTOR PIN INSPECTION

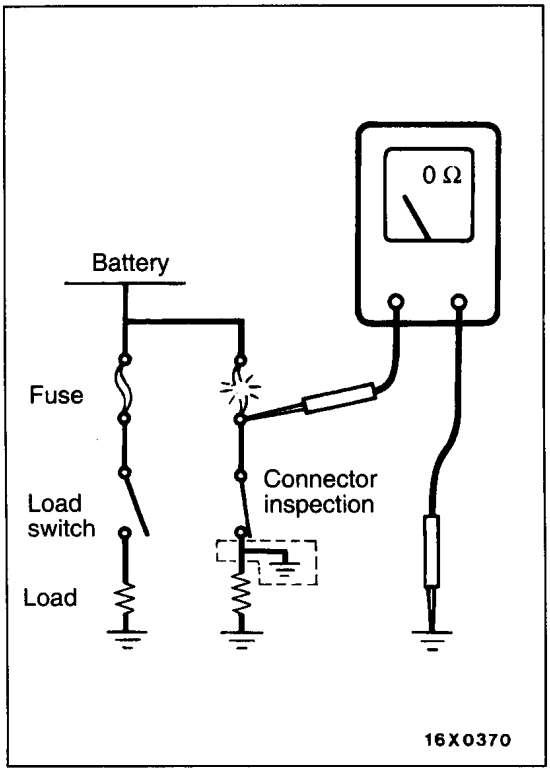
If the connector pin stopper is damaged, the terminal connections (male and female pins) will not be perfect even if the connector body is connected, and the pins may pull out of the reverse side of the connector. Therefore, gently pull the harnesses one by one to make sure that no pins pull out of the connector.



16R1318

CONNECTOR ENGAGEMENT INSPECTION

Use the special tool (connector pin connection pressure inspection harness of the inspection harness set) to inspect the engagement of the male pins and female pins. (Pin drawing force : 1 N or more)

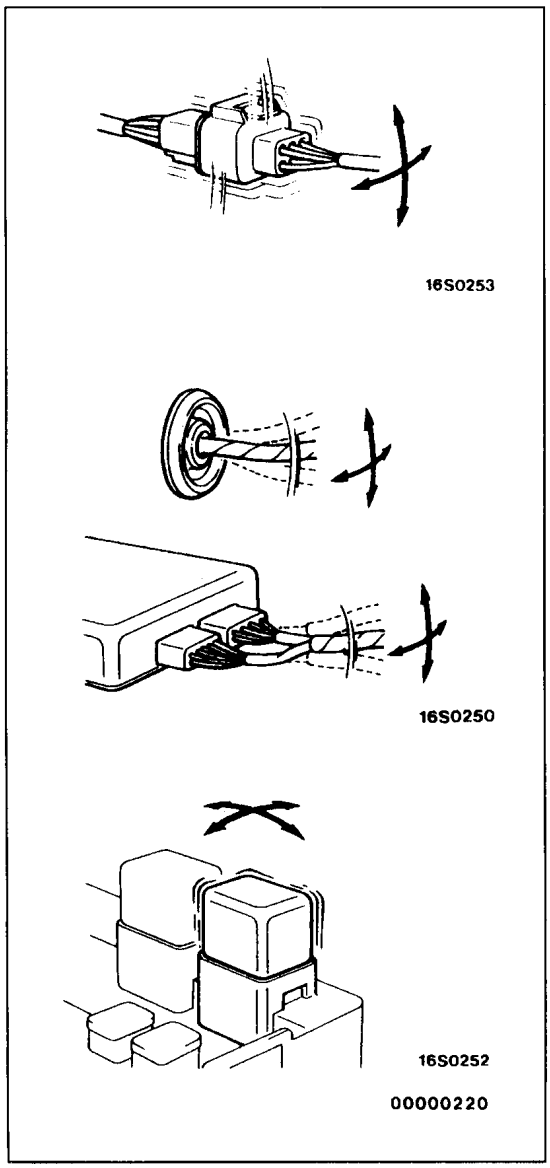


INSPECTION SERVICE POINTS FOR A BLOWN FUSE

120000617

Remove the fuse and measure the resistance between the load side of the 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

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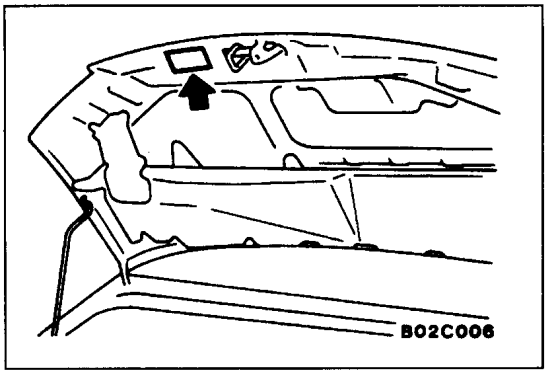
Intermittent malfunctions often occur under certain conditions, and if these conditions can be ascertained, determining the cause becomes simple. In order to ascertain the conditions under which an intermittent malfunction occurs, first ask the customer for details about the driving conditions, weather 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 generate 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.



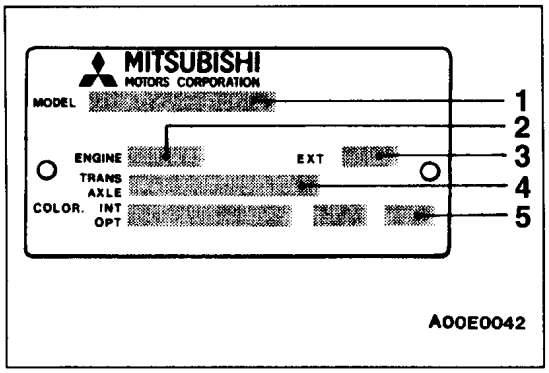
VEHICLE IDENTIFICATION

120002193

VEHICLE INFORMATION CODE PLATE

LOCATION

Vehicle information code plate is riveted on the front end of the hood.



CODE PLATE DESCRIPTION

The plate shows model code, engine model, transmission model, and body colour code.

No.	Item	Contents	
1	MODEL	PA5V GLZDTL6	PA5V: Vehicle model
			GLZDTL6: Model series
2	ENGINE	4D56	Engine model
3	EXT	B60B	Exterior code
4	TRANS AXLE	R5M21 4222	R5M21: Transaxle code
			4222: Rear differential reduction
5	COLOR INT OPT	B60 41H 03V	B60: Body colour code
			41H: Interior code
			03V: Equipment code

For monotone colour vehicles, the body colour code shall be indicated. For two-tone or three-way two-tone colour vehicles, each colour code only shall be indicated in series.

MODELS

120002194

<Standard wheelbase models>

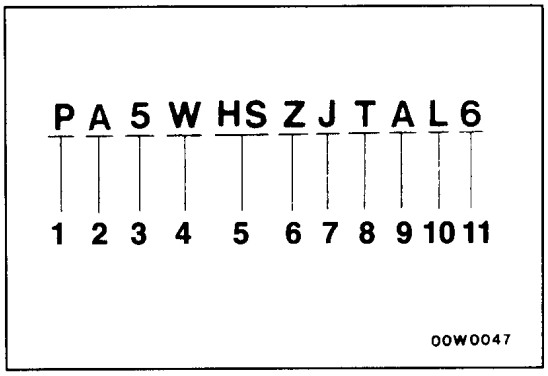
Model code		Engine model	Transmission model	Fuel supply system
PA3V	GLZDAL6	4G63 (1,997 mℓ)	R5M21 (2WD-5M/T)	Electronic controlled carburettor
	NLZDAL6			
	GLZDEL6			MPI
	GLZDER6			
	NLZDEL6			
	NLNUEL6			
PA5V	GLZDTL6	4D56 (2,476 mℓ) with turbocharger	R5M21 (2WD-5M/T)	Injection
	GLZDTR6			
	GLZDTAL6			
	NLZDTAL6			
PD4V	NLNDEL6	4G64 (2,350 mℓ)	V5M21 (4WD-5M/T)	MPI
PD5V	GLNDTL6	4D56 (2,476 mℓ) with turbocharger	V5M21 (4WD-5M/T)	Injection
	GLNDTAL6			
PA3W	NLZJEL6	4G63 (1,997 mℓ)	R5M21 (2WD-5M/T)	MPI
	NLZUEL6			
	NLNUEL6			
	NLEUEL6		R4AW2 (2WD-4A/T)	
PA4W	HSNHEL6	4G64 (2,350 mℓ)	R5M21 (2WD-5M/T)	MPI
	HSEHEL6		R4AW2 (2WD-4A/T)	
PA5W	NLZUFL6	4D56 (2,476 mℓ) with intercooler turbocharger	R5M31 (2WD-5M/T)	Injection
	NLZUFAL6			
PD4W	NLNUEL6	4G64 (2,350 mℓ)	V5M21 (4WD-5M/T)	MPI
PD5W	NLNUFL6	4D56 (2,476 mℓ) with intercooler turbocharger	V5M31 (4WD-5M/T)	Injection
	NLNUFAL6			

<Long wheelbase models>

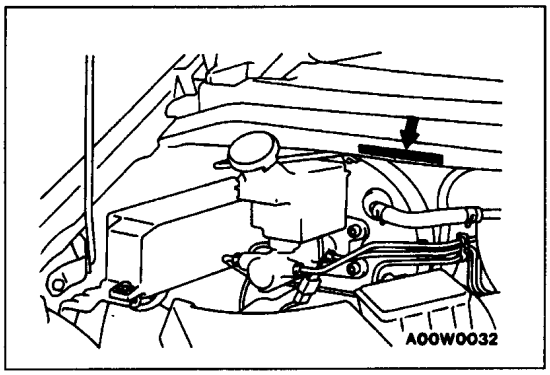
Model code		Engine model	Transmission model	Fuel supply system
PB3V	JLZDAL6	4G63 (1,997 mℓ)	R5M21 (2WD-5M/T)	Electronic controlled carburettor
	HLZDEL6			MPI
	JLZDEL6			
	JLZDER6			
PB5V	HLZDTL6	4D56 (2,476 mℓ) with turbocharger	R5M21 (2WD-5M/T)	Injection
	JLZDTL6			
	JLZDTR6			
	JLZDTAL6			

MODEL CODE

120002195



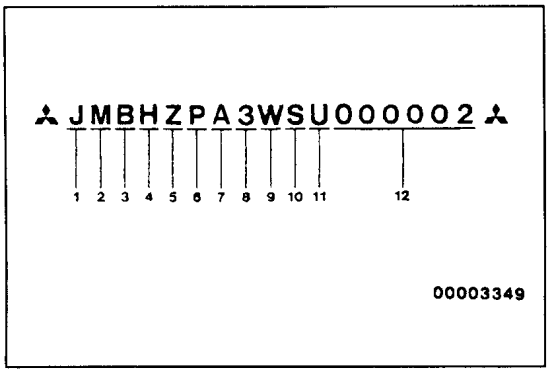
No.	Items		Contents
1	Sort	P	L400 VAN or SPACE GEAR
2	Chassis type	A	Standard wheelbase <2WD>
		B	Long wheelbase <2WD>
		D	Standard wheelbase <4WD>
3	Development order	3	1,997 mℓ, Petrol engine
		4	2,350 mℓ, Petrol engine
		5	2,476 mℓ, Diesel engine
4	Body type	V	Panel van or window van
		W	Wagon
5	Roof type	NL	Standard roof – 4-door with tailgate (Clear window)
		HS	High roof – 3-door with tailgate (Clear window)
		HL	High roof – 4-door with tailgate (Clear window)
		JL	High roof – 4-door with tailgate (Dark window)
		GL	Standard roof – 4-door with tailgate (Dark window)
6	Transmission type	Z	5-speed manual transmission (Column shift)
		N	5-speed manual transmission (Floor shift)
		E	4-speed automatic transmission (Column shift)
7	Trim code	D	GL
		H	GLS
		J	GL <Rear 5-link coil spring suspension>
		U	GLX
8	Specified engine feature	A	SOHC–Electronic controlled carburettor
		E	SOHC-MPI
		F	Turbocharger with intercooler
		T	Turbocharger
9	Exhaust emission specification	None	Without EGR system <Diesel-powered vehicles>
		A	With EGR system <Diesel-powered vehicles>
10	Steering wheel location	L	Left hand
		R	Right hand
11	Destination	6	For Europe



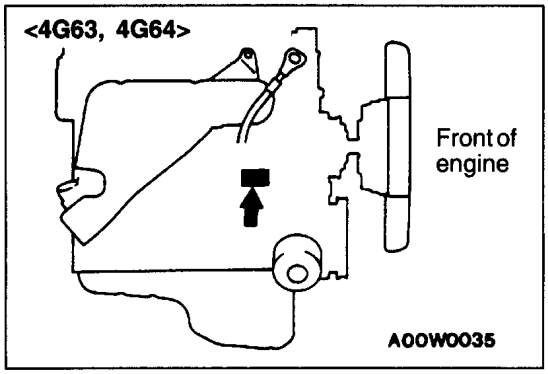
CHASSIS NUMBER

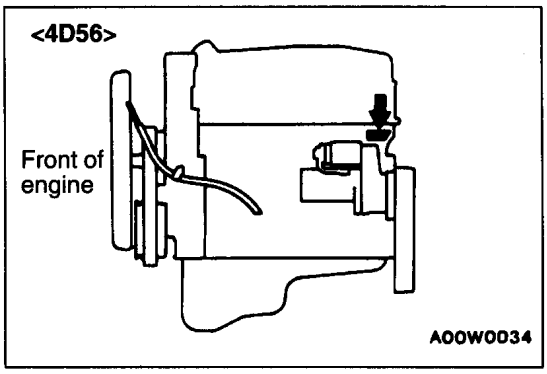
120002196

The chassis number is stamped on the toeboard inside the engine compartment.



No.	Items		Contents
1	Fixed figure	J	Asia
2	Distribution channel	M	Japan channel
3	Destination	A	For Europe, right hand drive
		B	For Europe, left hand drive
4	Body style	G	Standard roof (Dark window)
		H	High roof (Clear window)
		J	High roof (Dark window)
		N	Standard roof (Clear window)
5	Transmission type	E	4-speed automatic transmission (Column shift)
		N	5-speed manual transmission (Floor shift)
		Z	5-speed manual transmission (Column shift)
6	Vehicle line	P	L400 VAN or SPACE GEAR
7	Feature	A	Standard wheelbase <2WD>
		B	Long wheelbase <2WD>
		D	Standard wheelbase <4WD>
8	Development order	3	1,997 mℓ, Petrol engine
		4	2,350 mℓ, Petrol engine
		5	2,476 mℓ, Diesel engine
9	Body type	V	Panel van or window van
		W	Wagon
10	Model year	S	1995
11	Plant	U	Mizushima Motor Vehicle Works
12	Serial number	–	–





ENGINE MODEL NUMBER

120002197

1. The engine model number is stamped at the cylinder block as shown in the following.

Engine model	Engine displacement
4G63	1,997
4G64	2,350
4D56	2,476

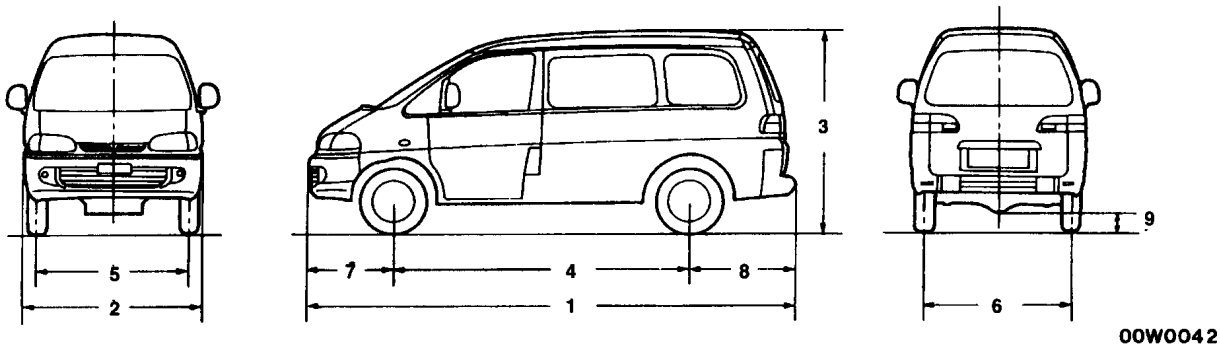
2. The engine serial number is stamped near the engine model number.

<4G63, 4G64, 4D56>

Engine serial number	AA0201 to YY9999

MAJOR SPECIFICATIONS

120002198



00W0042

Items			PA3VGLZDAL6 PA3VGLZDEL6 PA3VGLZDER6	PA3VNLZDAL6 PA3VNLZDEL6	PA3VNLNUEL6	PA5VGLZDTL6 PA5VGLZDTR6 PA5VGLZDTAL6 PA5VNLZDTAL6	PD4VNLNDEL6
Vehicle dimensions mm	Overall length	1	4,595	4,595	4,595	4,595	4,595
	Overall width	2	1,695	1,695	1,695	1,695	1,695
	Overall height (unladen)	3	1,855	1,855	1,855	1,855	1,965
	Wheelbase	4	2,800	2,800	2,800	2,800	2,800
	Tread–Front	5	1,445	1,445	1,445	1,445	1,440
	Tread–Rear	6	1,420	1,420	1,420	1,420	1,435
	Overhang–Front	7	795	795	795	795	795
	Overhang–Rear	8	1,000	1,000	1,000	1,000	1,000
	Ground clearance (unladen)	9	195	195	190	190	195
Vehicle weight kg	Kerb weight		1,445, 1,450*1	1,460, 1,470*2	1,515	1,525, 1,550*3	1,640
	Maximum vehicle weight		2,510	2,510	2,510	2,510	2,510
Seating capacity			3	6	6	3, 6*3	5
Engine	Model		4G63	4G63	4G63	4D56	4G64
	Total displacement mℓ		1,997	1,997	1,997	2,476	2,350
Transmission	Model		R5M21	R5M21	R5M21	R5M21	V5M21
	Type		5-speed manual	5-speed manual	5-speed manual	5-speed manual	5-speed manual

NOTE
*1: PA3VGLZDEL6, PA3VGLZDER6
*2: PA3VNLZDEL6
*3: PA5VNLZDTAL6

Items			PD5VGLNDTL6 PD5VGLNDTAL6	PA3WNLZJEL6 PA3WNLZUEL6 PA3WNLNUEL6	PA3WNLEUEL6	PA4WHSNHEL6	PA4WHSEHEL6
Vehicle dimensions mm	Overall length	1	4,595	4,595	4,595	4,595	4,595
	Overall width	2	1,695	1,695	1,695	1,695	1,695
	Overall height (unladen)	3	1,965	1,855	1,855	1,950	1,950
	Wheelbase	4	2,800	2,800	2,800	2,800	2,800
	Tread–Front	5	1,440	1,445	1,445	1,445	1,445
	Tread–Rear	6	1,435	1,420	1,420	1,420	1,420
	Overhang–Front	7	795	795	795	795	795
	Overhang–Rear	8	1,000	1,000	1,000	1,000	1,000
	Ground clearance (unladen)	9	195	195	195	190	190
Vehicle weight kg	Kerb weight		1,620	1,560, 1,570*1, 1,580*2	1,595	1,660	1,685
	Maximum vehicle weight		2,600	2,460, 2,440*2	2,440	2,835	2,410
Seating capacity			2	9, 8*2	8	7	7
Engine	Model		4D56	4G63	4G63	4G64	4G64
	Total displacement mℓ		2,476	1,997	1,997	2,350	2,350
Transmission	Model		V5M21	R5M21	R4AW2	R5M21	R4AW2
	Type		5-speed manual	5-speed manual	4-speed automatic	5-speed manual	4-speed automatic

NOTE
*1: PA3WNLZUEL6
*2: PA3WNLNUEL6

Items			PA5WNLZUFL6 PA5WNLZUFAL6	PD4WNLNUEL6	PD5WNLNUFL6 PD5WNLNUFAL6	PB3VHLZDEL6 PB3VJLZDAL6 PB3VJLZDEL6 PB3VJLZDER6	PB5VHLZDTL6 PB5VJLZDTL6 PB5VJLZDTR6 PB5VJLZDTAL6
Vehicle dimensions mm	Overall length	1	4,595	4,595	4,595	4,995	4,995
	Overall width	2	1,695	1,695	1,695	1,695	1,695
	Overall height (unladen)	3	1,855	1,965	1,965	1,960	1,960
	Wheelbase	4	2,800	2,800	2,800	3,000	3,000
	Tread–Front	5	1,445	1,440	1,440	1,445	1,445
	Tread–Rear	6	1,420	1,435	1,435	1,420	1,420
	Overhang–Front	7	795	795	795	795	795
	Overhang–Rear	8	1,000	1,000	1,000	1,200	1,200
	Ground clearance (unladen)	9	190	195	195	190	170
Vehicle weight kg	Kerb weight		1,650	1,735	1,835	1,475*1, 1,500*2, 1,480	1,630*3, 1,585
	Maximum vehicle weight		2,550	2,580	2,700	2,700	2,700
Seating capacity			9	8	8	3, 6*2	6*3, 3
Engine	Model		4D56	4G64	4D56	4G63	4D56
	Total displacement mℓ		2,476	2,350	2,476	1,997	2,476
Transmission	Model		R5M31	V5M21	V5M31	R5M21	R5M21
	Type		5-speed manual	5-speed manual	5-speed manual	5-speed manual	5-speed manual

NOTE
*1: PB3VJLZDAL6
*2: PB3VHLZDEL6
*3: PB5VHLZDTL6

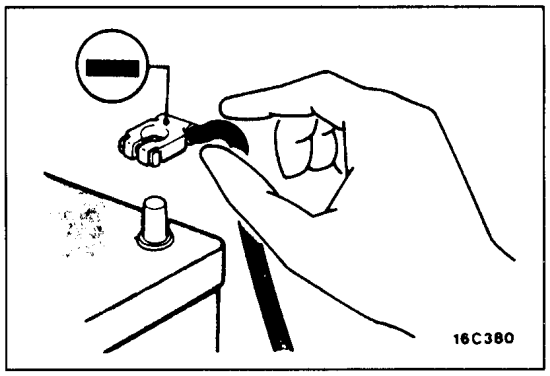
PRECAUTIONS BEFORE SERVICE

120000625

SUPPLEMENTAL RESTRAINT SYSTEM (SRS)

1. Items to follow when servicing SRS
   (1) Be sure to read GROUP 52B – Supplemental Restraint System (SRS).
   For safe operations, please follow the directions and heed all warnings.
   (2) Always use the designated special tools and test equipment.
   (3) Wait at least 60 seconds after disconnecting the battery cable before doing any further work. The SRS system is designed to retain enough voltage to deploy the air bag even after the battery has been disconnected. Serious injury may result from unintended air bag deployment if work is done on the SRS system immediately after the battery cable is disconnected.
   (4) Never attempt to disassemble or repair the SRS components, (SRS diagnosis unit, air bag module and clock spring). If faulty, replace it.
   (5) Warning labels must be heeded when servicing or handling SRS components. Warning labels are located in the following locations.
   - Hood (air intake duct B)
   - Sun visor
   - Glove box
   - SRS diagnosis unit
   - Steering wheel
   - Air bag module
   - Clock spring
   - Engine support crossmember

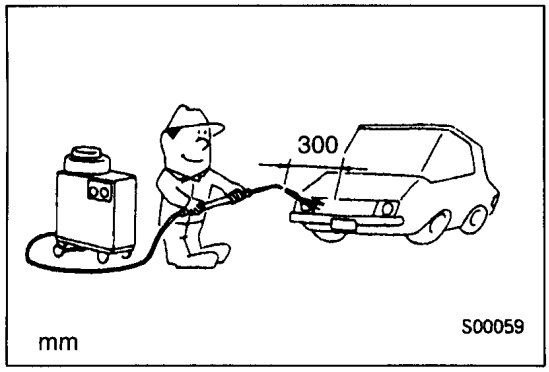
   (6) Store components removed from the SRS in a clean and dry place.
   The air bag module should be stored on a flat surface and placed so that the pad surface is facing upward.
   Do not place anything on top of it.
   (7) Be sure to deploy the air bag before disposing of the air bag module or disposing of a vehicle equipped with an air bag. (Refer to GROUP 52B – Air Bag Module Disposal Procedures.)
   (8) Whenever you finish servicing the SRS, check the SRS warning lamp operation to make sure that the system functions properly.
2. Observe the following when carrying out operations on places where SRS components are installed, including operations not directly related to the SRS air bag.
   (1) When removing or installing parts do not allow any impact or shock to the SRS components.
   (2) SRS components should not be subjected to heat over 93°C, so remove the SRS components before drying or baking the vehicle after painting.
   After re-installing them, check the SRS warning lamp operation to make sure that the system functions properly.



SERVICING THE ELECTRICAL SYSTEM 120000626

Before replacing a component related to the electrical system and before undertaking any repair procedures involving the electrical system, be sure to first disconnect the negative (–) cable from the battery in order to avoid damage caused by short-circuiting.

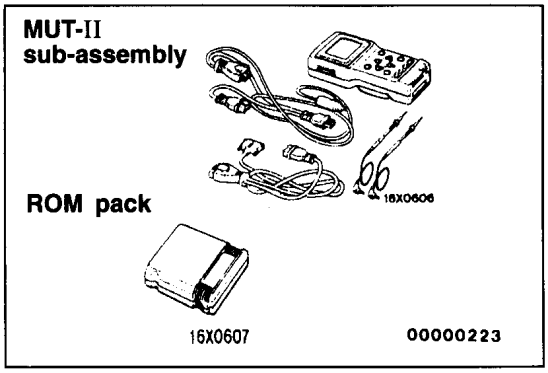
Caution
Before connecting or disconnecting the negative (–) cable, be sure to turn off the ignition switch and the lighting switch.
(If this is not done, there is the possibility of semiconductor parts being damaged.)



VEHICLE WASHING 120000627

If high-pressure car-washing equipment or steam car-washing equipment is used to wash the vehicle, be sure to note the following information in order to avoid damage to plastic components, etc.

- Spray nozzle distance: 300 mm or more
- Spray pressure: 4 MPa or less
- Spray temperature: 82°C or less
- Time of concentrated spray to one point: within 30 sec.



MUT-II 120000628

Refer to the MUT-II INSTRUCTION MANUAL for instructions on handling the MUT-II.

Connection and disconnection of the MUT-II should always be made with the ignition switch in the OFF position.

IN ORDER TO PREVENT VEHICLES FROM FIRE

120000629

"Improper installation of electrical or fuel related parts could cause a fire. In order to retain the high quality and safety of the vehicle, it is important that any accessories that may be fitted or modifications/repairs that may be carried out which involve the electrical or fuel systems, MUST be carried out in accordance with MMC's information/Instructions".

ENGINE OILS

120000630

Health Warning

Prolonged and repeated contact with mineral oil will result in the removal of natural fats from the skin, leading to dryness, irritation and dermatitis. In addition, used engine oil contains potentially harmful contaminants which may cause skin cancer. Adequate means of skin protection and washing facilities must be provided.

Recommended Precautions

120000631

The most effective precaution is to adapt working practices which prevent, as far as practicable, the risk of skin contact with mineral oils, for example by using enclosed systems for handling used engine oil and by degreasing components, where practicable, before handling them.

Other precautions:

- Avoid prolonged and repeated contact with oils, particularly used engine oils.
- Wear protective clothing, including impervious gloves where practicable.
- Avoid contaminating clothes, particularly underpants, with oil.
- Do not put oily rags in pockets, the use of overalls without pockets will avoid this.
- Do not wear heavily soiled clothing and oil-impregnated foot-wear. Overalls must be cleaned regularly and kept separately from personal clothing.
- Where there is a risk of eye contact, eye protection should be worn, for example, chemical goggles or face shields; in addition an eye wash facility should be provided.
- Obtain First Aid treatment immediately for open cuts and wounds.
- Wash regularly with soap and water to ensure all oil is removed, especially before meals (skin cleansers and nail brushes will help). After cleaning, the application of preparations containing lanolin to replace the natural skin oils is advised.
- Do not use petrol, kerosine, diesel fuel, gas oil, thinners or solvents for cleaning skin.
- Use barrier creams, applying them before each work period, to help the removal of oil from the skin after work.
- If skin disorders develop, obtain medical advice without delay.

SUPPLEMENTAL RESTRAINT SYSTEM (SRS)–AIR BAG

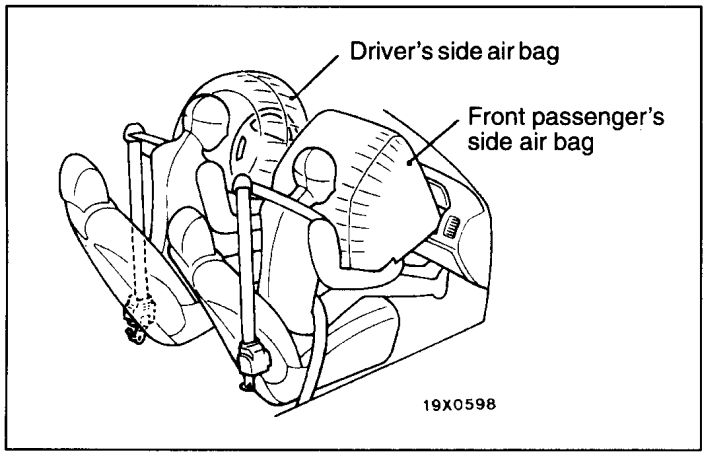
120002199

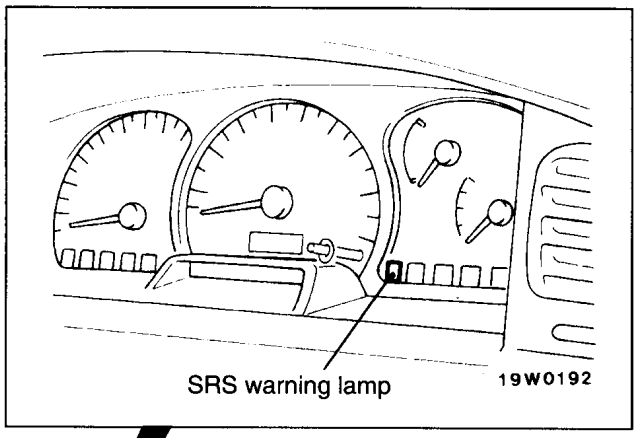
The Supplemental Restraint System (SRS) is designed to supplement the seat belt to help reduce the risk or severity of injury to the driver and front passenger* by activating and deploying driver's-side and front passenger's side* air bag in certain frontal collisions.

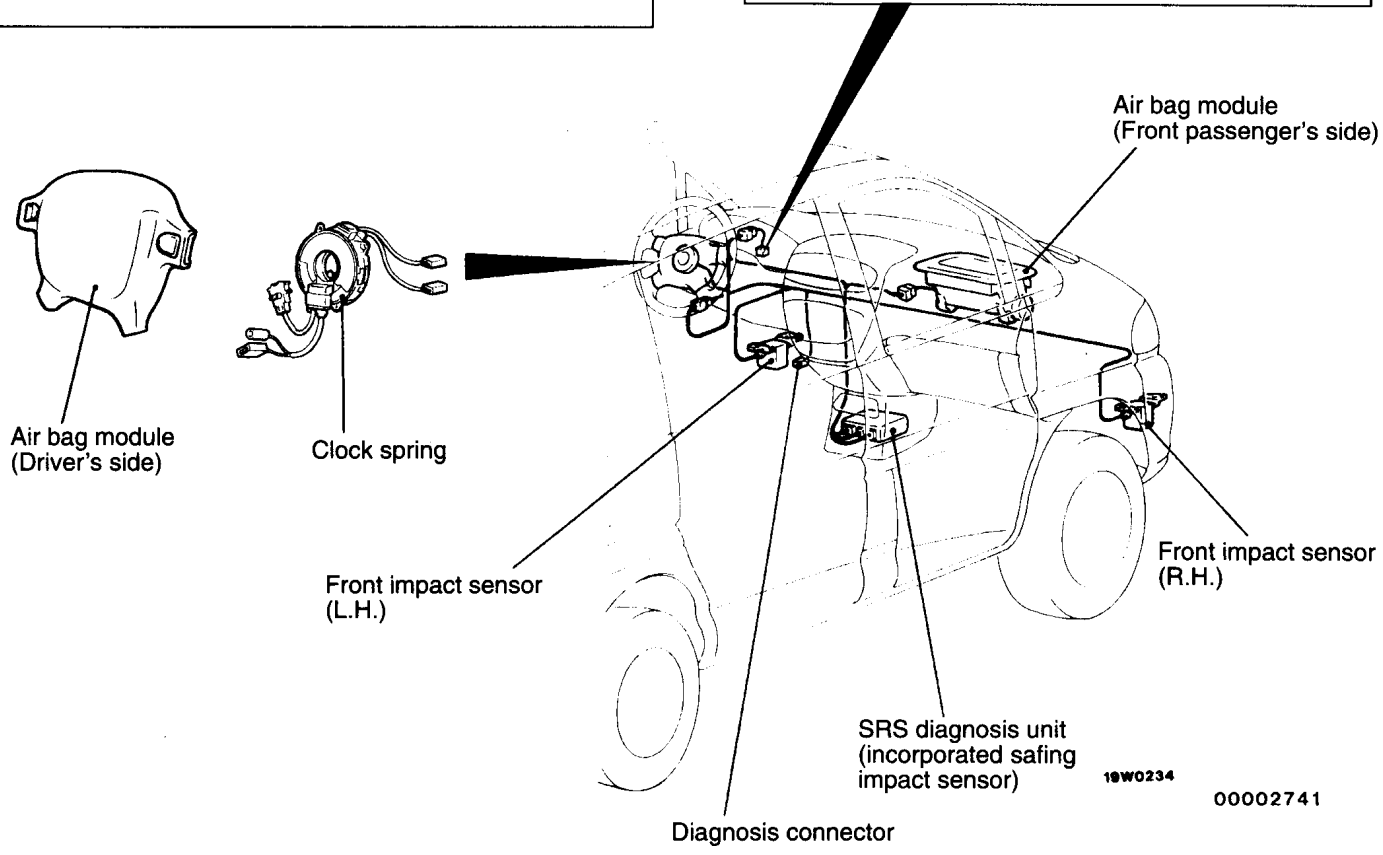
The SRS consists of : left front and right front impact sensors (located on the headlamp support corner panels); air bag modules for the driver's seat (located in the centre of steering wheel) and for the front passenger* seat (located above the glove box). Each module contains a folded air bag and an inflator unit. The SRS also contains: an SRS Diagnosis Unit with safing impact sensor (located under the computer cover which monitors the system): an SRS warning lamp to indicate the operational status of the SRS (located on the instrument panel): a clock spring interconnection (located within the steering column): system wiring and wiring connectors.

The SRS is designed so that the air bag will deploy when the safing sensor, plus either or both of the left front and right front impact sensors simultaneously activate while the ignition "ON" is switched. In addition, the SRS diagnosis unit (SDU) has the following functions.

- A backup function (charging condenser for the power supply) for cases when there is a malfunction of the power supply when the SRS air bag is deployed (during an impact).
- A voltage build-up function (DC/DC converter circuit) for cases when there is a drop in system voltage.
- A self-diagnosis function to further improve the degree of safety and reliability.







SRS SERVICE PRECAUTIONS

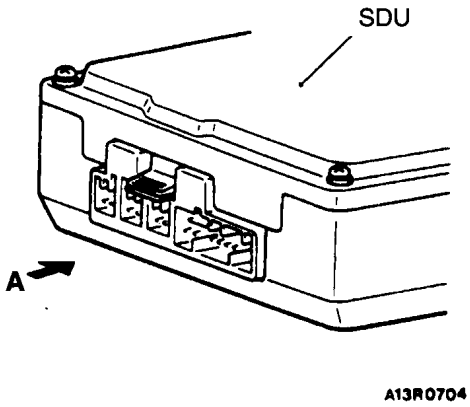
120002200

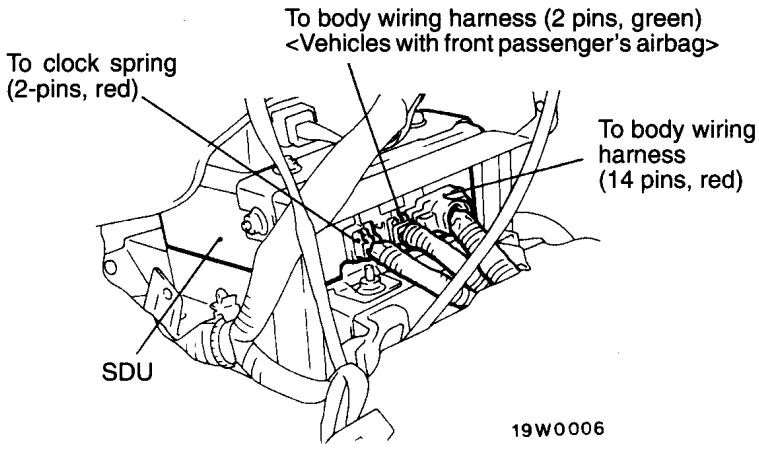
1. In order to avoid injury to yourself or others from accidental deployment of the air bag during servicing, read and carefully follow all the precautions and procedures described in this manual.
2. Do not use any electrical test equipment on or near SRS components, except those specified on GROUP 52B – Special Tools and Test Equipment.
   Never use an analogue ohmmeter.
3. **Never Attempt to Repair the Following Components:**
   - Front Impact Sensors
   - SRS Diagnosis Unit (SDU)
   - Clock Spring
   - Air Bag Module (Driver's side or front passenger's side)

   If any of these components are diagnosed as faulty, they should only be replaced, in accordance with the INDIVIDUAL COMPONENTS SERVICE procedures in this manual.
4. Do not attempt to repair the wiring harness connectors of the SRS. If any of the connectors are diagnosed as faulty, replace the wiring harness. If the wires are diagnosed as faulty, replace or repair the wiring harness according to the following table.

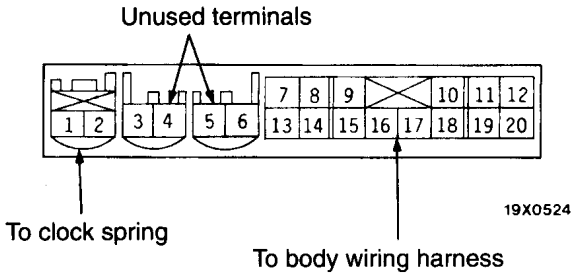
Harness connector (No. of terminals, colour)	SDU terminal No.	Destination of harness	Corrective action
2 pins, red	1, 2	Body wiring harness → Clock spring	Replace clock spring
2 pins, green	5*1, 6*1	Body wiring harness → Air bag module (Front passenger's side)	Correct or replace each wiring harness
14 pins, red	9	Body wiring harness → Diagnosis connector	Correct or replace each wiring harness
	10	Body wiring harness → Control wiring harness → Body wiring harness → Ignition switch (ST)	
	11	Body wiring harness → Instrument panel wiring harness → Junction block (fuse No. 4)	
	12	Body wiring harness → Junction block (fuse No. 8)	
	13, 14	Body wiring harness → Instrument panel wiring harness → Combination meter (SRS warning lamp)	
	15	Body wiring harness → Front wiring harness → Front impact sensor (+) (R.H.)	Sensor cable*2 installation procedures (Refer to GROUP 52B.)
	16	Body wiring harness → Front wiring harness → Front impact sensor (+) (L.H.)	
	17	Body wiring harness → Front wiring harness → Front impact sensor (–) (L.H.)	
	18	Body wiring harness → Front wiring harness → Front impact sensor (–) (R.H.)	
	19, 20	Body wiring harness → Earth	Correct or replace each wiring harness

NOTE
*1: Vehicles with front passenger's air bag
The sensor cable marked with*2 is available as service part.

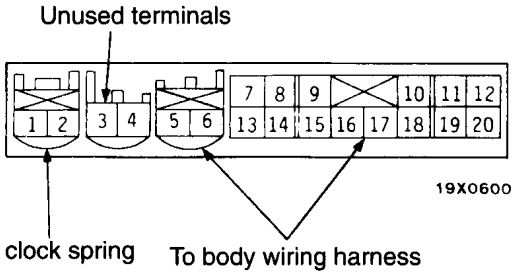


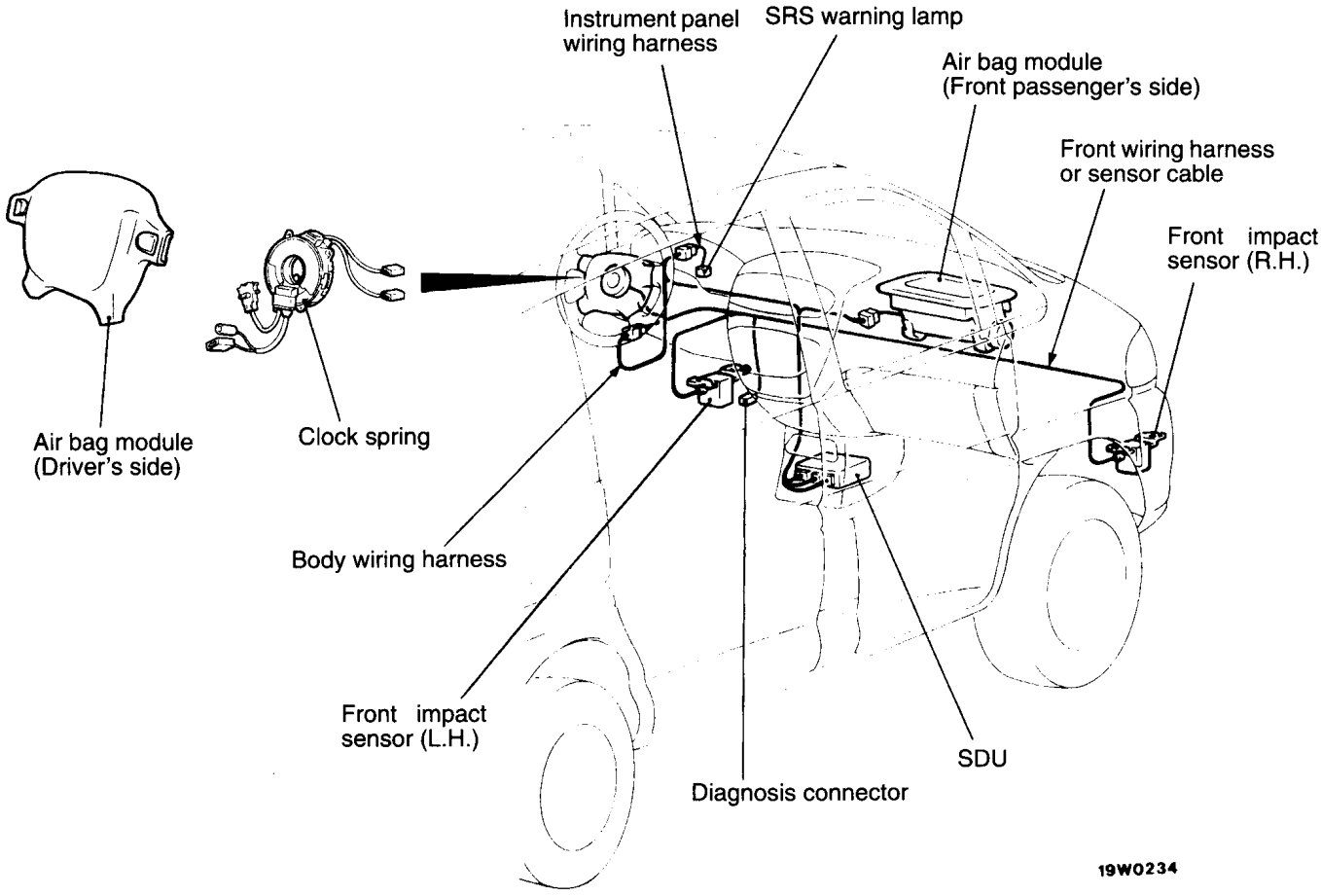


<Vehicles without front passenger's air bag> View A



<Vehicles with front passenger's air bag>





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5. **After disconnecting the battery cable, wait 60 seconds or more before proceeding with the following work. The SRS system is designed to retain enough voltage to deploy the air bag for a short time even after the battery has been disconnected, so serious injury may result from unintended air bag deployment if work is done on the SRS system immediately after the battery cables are disconnected.**
6. SRS components should not be subjected to heat over 93°C, so remove the front impact sensors, SRS diagnosis unit, air bag module and clock spring before drying or baking the vehicle after painting.
7. Whenever you finish servicing the SRS, erase the diagnosis codes and check the SRS warning lamp operation to make sure that the system functions properly. (Refer to GROUP 52B – Troubleshooting.)
8. Make certain that the ignition switch is OFF when the MUT-II is connected or disconnected.
9. If you have any questions about the SRS, please contact your local distributor.

NOTE
SERIOUS INJURY CAN RESULT FROM UNINTENDED AIR BAG DEPLOYMENT, SO USE ONLY THE PROCEDURES AND EQUIPMENT SPECIFIED IN THIS MANUAL.

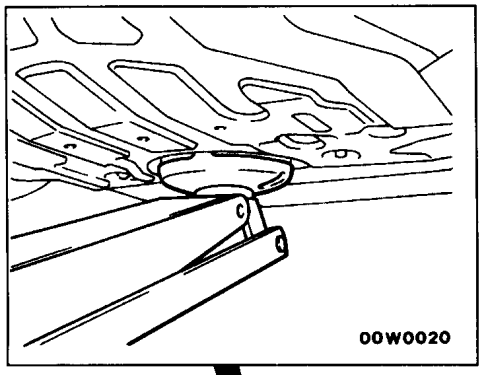
SUPPORT LOCATIONS FOR LIFTING AND JACKING

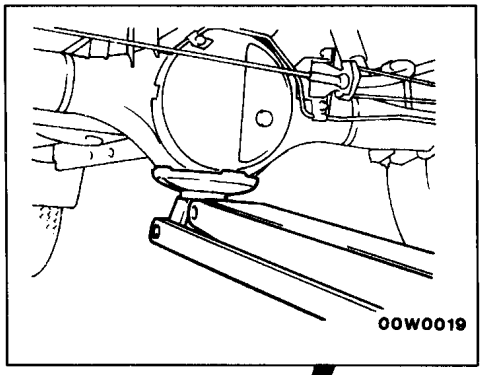
120000634

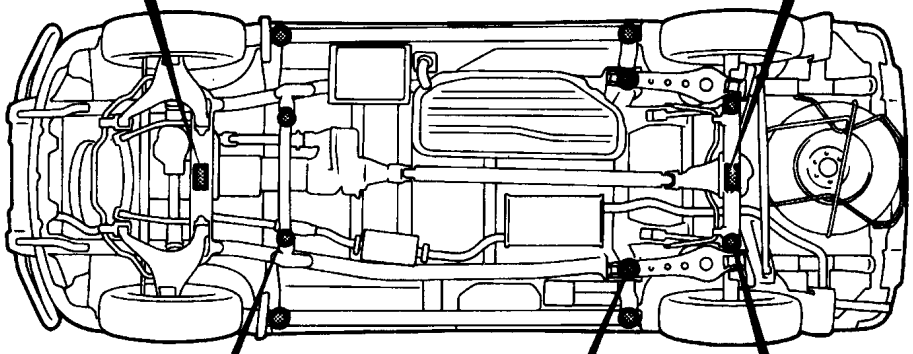
Caution
Do not support the vehicles at locations other than specified supporting points. If do so, this will cause damage, etc.

SUPPORT POSITIONS FOR A GARAGE JACK AND AXLE STANDS

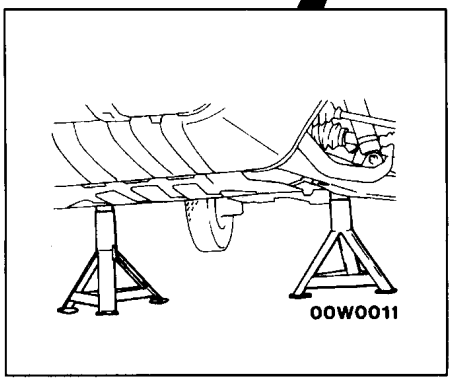
GARAGE JACK

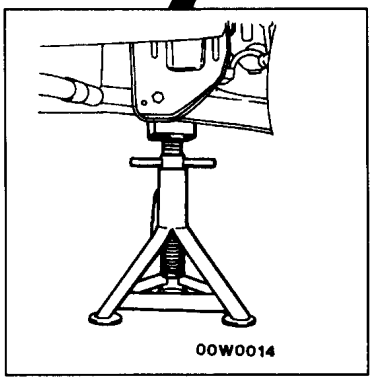


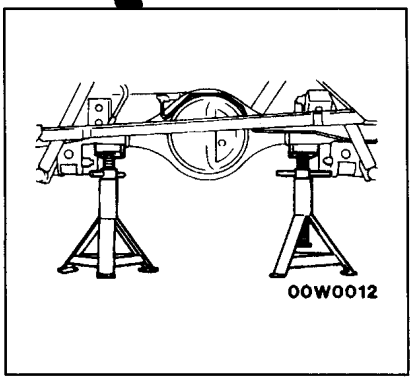




AXLE STANDS







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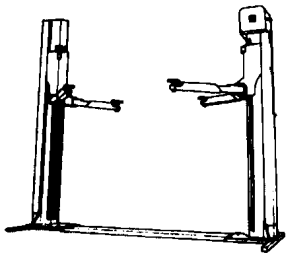
SUPPORT POSITIONS FOR A SINGLE-POST LIFT OR DOUBLE-POST LIFT AND H-BAR LIFT

120000635

Caution
When service procedures require removing rear suspension, spare tyre and rear bumper, place additional weight on rear end of vehicle or anchor vehicle to hoist to prevent tipping of centre of gravity changes.

DOUBLE-POST LIFT



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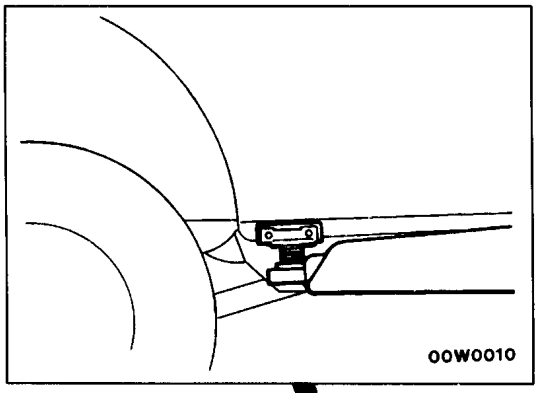

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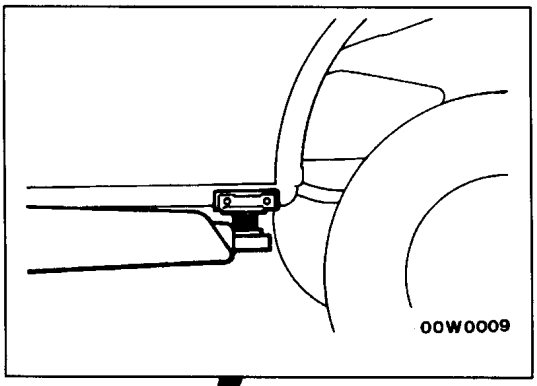

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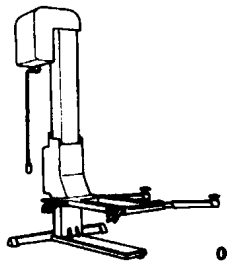
SINGLE-POST LIFT



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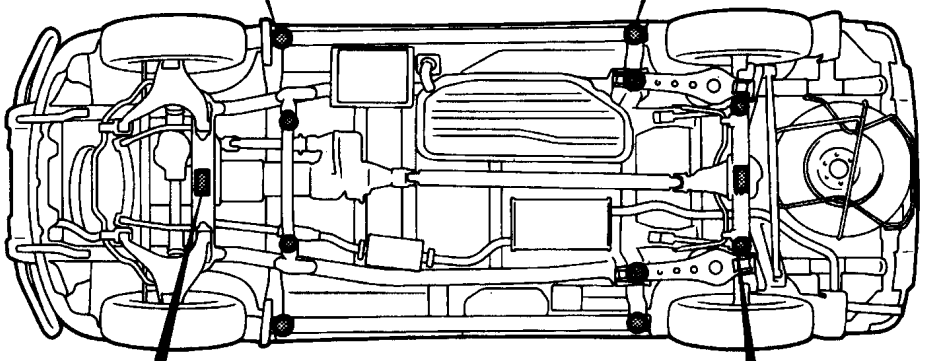

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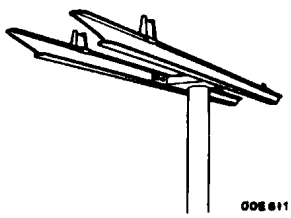
H-BAR LIFT



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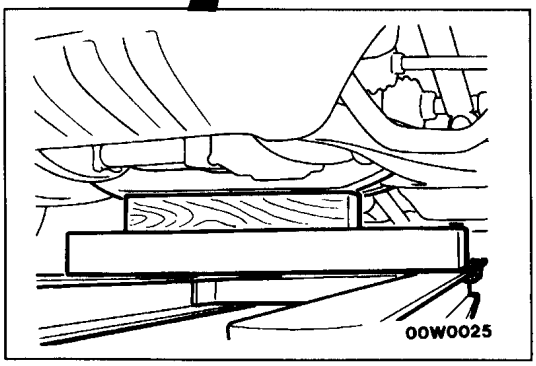

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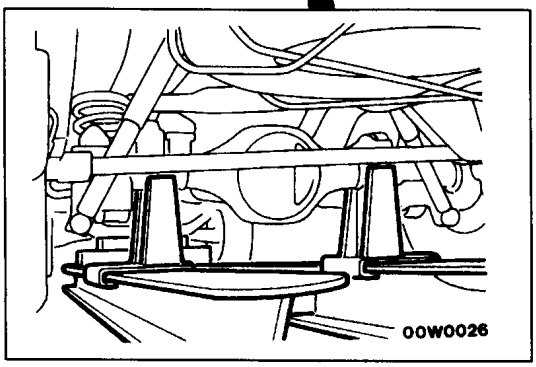

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STANDARD PARTS-TIGHTENING-TORQUE TABLE

120000636

Each torque value in the table is a standard value for tightening under the following conditions.
(1) Bolts, nuts and washers are all made of steel and plated with zinc.
(2) The threads and bearing surface of bolts and nuts are all in dry condition.

The values in the table are not applicable:
(1) If toothed washers are inserted.
(2) If plastic parts are fastened.
(3) If bolts are tightened to plastic or die-cast inserted nuts.
(4) If self-tapping screws or self-locking nuts are used.

Standard bolt and nut tightening torque

Thread size		Torque Nm		
Bolt nominal diameter (mm)	Pitch (mm)	Head mark "4"	Head mark "7"	Head mark "8"
M5	0.8	2.5	4.9	5.9
M6	1.0	4.9	8.8	9.8
M8	1.25	12	22	25
M10	1.25	24	44	52
M12	1.25	41	81	96
M14	1.5	72	137	157
M16	1.5	111	206	235
M18	1.5	167	304	343
M20	1.5	226	412	481
M22	1.5	304	559	647
M24	1.5	392	735	853

Flange bolt and nut tightening torque

Thread size		Torque Nm		
Bolt nominal diameter (mm)	Pitch (mm)	Head mark "4"	Head mark "7"	Head mark "8"
M6	1.0	4.9	9.8	12
M8	1.25	13	24	28
M10	1.25	26	49	57
M10	1.5	24	44	54
M12	1.25	46	93	103
M12	1.75	42	81	96

MAIN SEALANT AND ADHESIVE TABLE

120000637

SEALANTS FOR ENGINE ACCESSORIES

Application	Recommended brand
Sealing between rocker cover and camshaft bearing cap (4G6 DOHC and 6G7 engines only)	3M ATD Part No. 8660 or equivalent
Sealing between semi-circular packing and rocker cover and between semi-circular packing and cylinder head	
Oil pressure switch	
Engine coolant temperature switch, engine coolant, temperature sensor, thermo valve, thermo switch, joints, engine coolant temperature gauge unit (large size)	3M Nut Locking Part No. 4171 or equivalent
Engine coolant temperature gauge unit (small size, MD091056 only)	3M ATD Part No. 8660 or equivalent
Oil pan (except 4G5 engine)	MITSUBISHI GENUINE Part No. MD970389 or equivalent
Water pump, thermostat case <4G9, 4G6, 6A1 engine only)	

SEALING BETWEEN GLASS AND WEATHERSTRIP

Application	Recommended brand
Sealing between tempered glass and weatherstrip	3M ATD Part No. 8513 or equivalent
Sealing between body flange and weatherstrip	3M ATD Part No. 8509 or equivalent
Sealing between laminated glass and weatherstrip	

ADHESION WITH RIBBON SEALER

Application	Recommended brand
Waterproof film for door	3M ATD Part No. 8625 or equivalent
Fender panel, splash shield, mud guard	
Rear combination lamp	

ADHESIVES FOR INTERIOR TRIM

Application	Recommended brand
Adhesion of polyvinyl chloride sheet	3M Part No. EC-1368 or equivalent
Adhesion of door weatherstrip to body	3M ATD Part No. 8001 or 3M ATD Part No. 8011 or equivalent
Sealing between grommet or packing and metal seal	3M ATD Part No. 8513 or equivalent
Adhesion of headlining and other interior trim materials	3M Part No. EC-1368 or 3M Part No. 8080 or equivalent
Adhesion of fuel tank to pad	

BODY SEALANT

Application	Recommended brand
Sealing of sheet metal, drip rail, floor, body side panel, trunk, front panel and the like joints	3M ATD Part No. 8513 or 3M ATD Part No. 8646 or equivalent
Sealing of tailgate hinges	

CHASSIS SEALANT

Application	Recommended brand
Sealing of flange surface and threaded portions (Fuel gauge unit packing)	3M ATD Part No. 8659 or equivalent
Sealing of flange surfaces, threaded portions, packing and dust cover (Differential carrier packing, dust covers for joint and linkage, steering gear box packing and shims, steering gear housing rack support cover and top cover, mating surface of knuckle arm flange)	3M ATD Part No. 8663 or equivalent
Sealing between accelerator arm bracket and toeboard	Drying sealant
Sealant for drum brake shoe hold-down pin and wheel cylinder	3M ATD Part No. 8513 or equivalent

FAST BONDING ADHESIVE

Application	Recommended brand
Adhesion of all materials except polyethylene, polypropylene, fluorocarbon resin or other materials with highly absorbent surface	3M ATD Part No. 8155 or equivalent

ANAEROBIC FAST BONDING ADHESIVES

Application	Recommended brand
Fixing of bolts and screws (Tightening of drive gear to differential case, bolts for coupling tilt steering upper column with lower column)	3M Stud locking Part No. 4170 or equivalent
Fixing of bearing, fan, pulley and gear connections	
Sealing of small recess or flange surface	

UNDERCOAT

Application	Recommended brand
Anti-corrosion treatment inside wheel housings and underneath the body	3M ATD Part No. 8864 or equivalent