GENERAL

Click on the applicable bookmark to selected the required model year

GENERAL

CONTENTS

00109001493

HOW TO USE THIS MANUAL

00100010401

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 separate manuals covering the engine and the transmission.

ON-VEHICLE SERVICE

"On-vehicle Service" is procedures for performing inspections and adjustments of particularly important locations with regard to the construction and for maintenance and servicing, but other inspection (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.
SOHC:	Indicates an engine with the single overhead camshaft, or a model equipped with such an engine.
DOHC:	Indicates an engine with the double overhead camshaft, or a model equipped with such an engine.
MPI:	Indicates the multipoint injection, or engines equipped with the multipoint injection.
GDI:	Indicates the gasoline direct injection, or engines equipped with the gasoline direct injection.

EXPLANATION OF MANUAL CONTENTS

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 reassemby 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

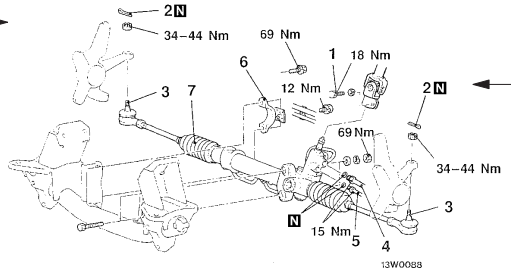
POWER STEERING GEAR BOX

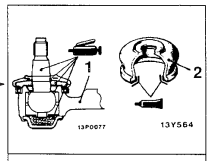
120000039

REMOVAL AND INSTALLATION

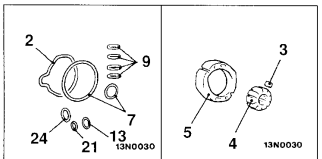
Pre-removal Operation
(1) Power Steering Fluid Draining (Refer to P. 37A-10.)
(2) Air Cleaner Assembly Removal
(3) Under Cover Removal (Refer to GROUP 42 – Under Cover.)

<2WD>





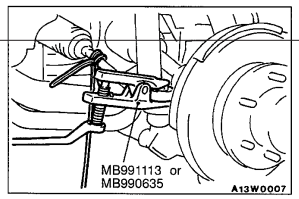
Sealant: 3M ATD Part No. 8661 or equivalent



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

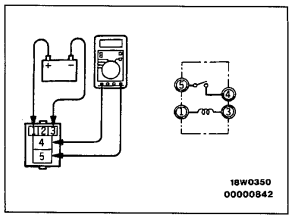
◀A▶ ◀B▶



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.**

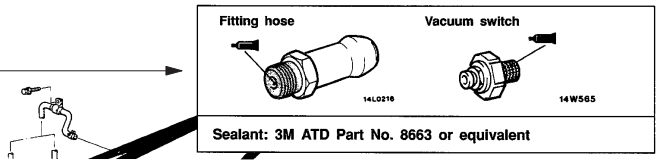


HEADLAMP RELAY CONTINUITY INSPECTION

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

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

Lubrication and sealing points



Sealant: 3M ATD Part No. 8663 or equivalent

00002471

N denotes non-reusable part.

Denotes tightening torque.
For bolts and nuts which do not have a tightening torque listed, refer to the “Standard Parts-tightening-torque Table”.

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.

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

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.

HOW TO USE TROUBLESHOOTING/INSPECTION SERVICE POINTS

00100020213

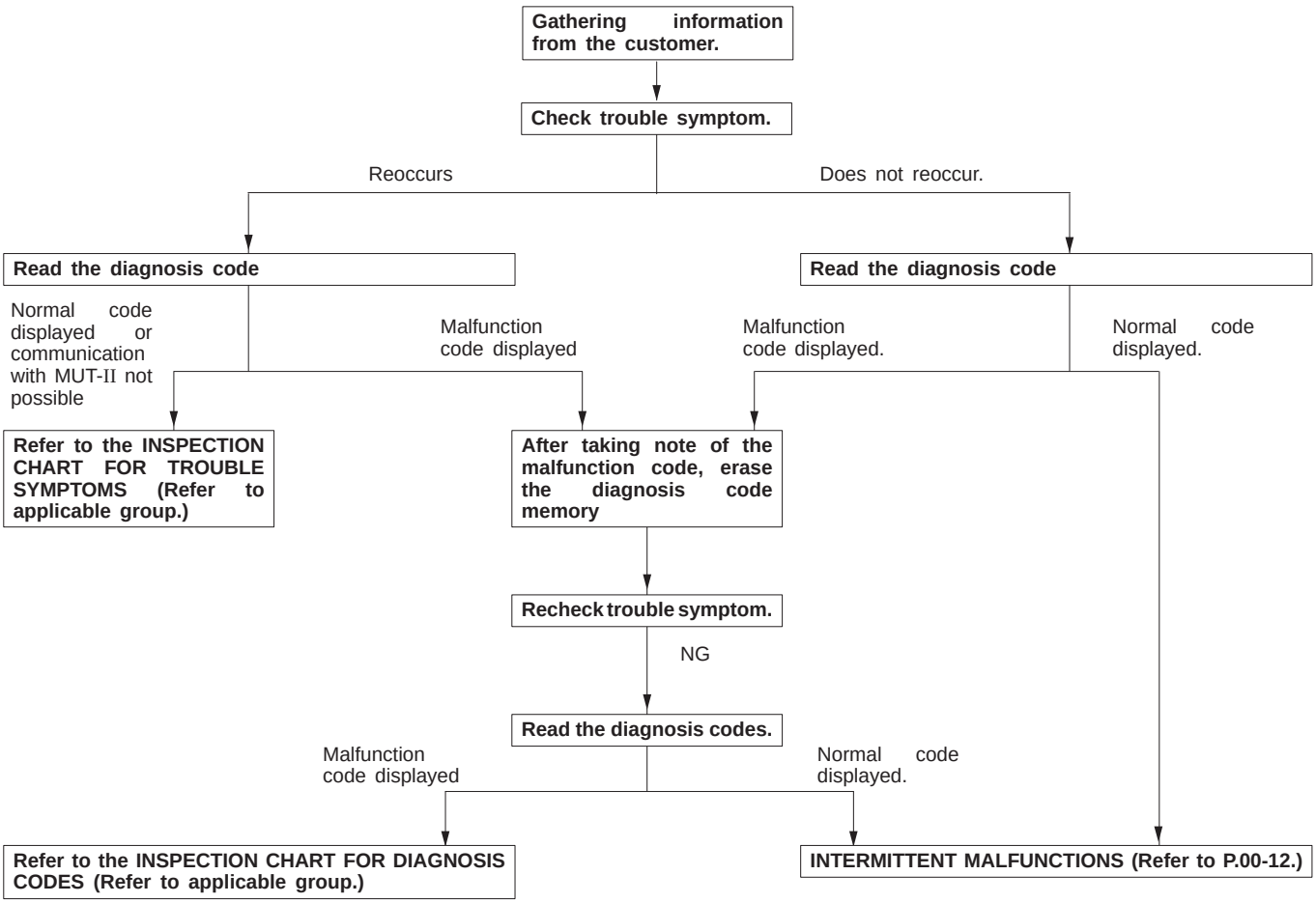
Troubleshooting of electronic control systems for which the MUT-II can be used follows the basic outline described below. Furthermore, even in systems for which the MUT-II cannot be used, part of these systems still follow this outline.

TROUBLESHOOTING CONTENTS

1. STANDARD FLOW OF DIAGNOSIS TROUBLESHOOTING

The troubleshooting sections follow the basic diagnosis flow which is given below. If the diagnosis flow is different from that given below, or if additional explanation is required, the details of such differences or additions will also be listed.

Diagnosis method



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. DIAGNOSIS FUNCTION

Details which are different from those in the “Diagnosis Function” section on the next page are listed.

4. INSPECTION CHART FOR DIAGNOSIS CODES

5. INSPECTION PROCEDURE FOR DIAGNOSIS 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 DIAGNOSIS 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

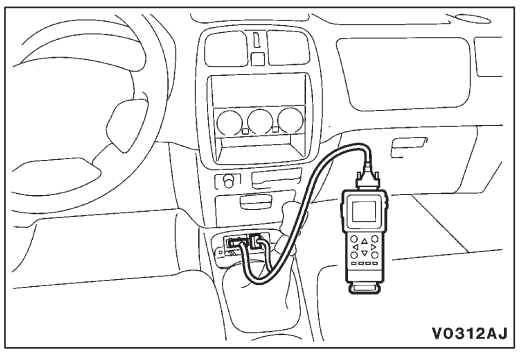
Inspection items and normal judgement values have been provided in this chart as reference information.

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.



DIAGNOSIS FUNCTION

1. METHOD OF READING DIAGNOSIS CODES

When using the MUT-II
Connect the MUT-II to the diagnosis connector and take a reading of the diagnosis codes.

Caution
Connection and disconnection of the MUT-II should always be carried out with the ignition switch in the LOCK (OFF) position.

2. METHOD OF ERASING DIAGNOSIS CODES

When using the MUT-II
Connect the MUT-II to the diagnosis connector and erase the diagnosis code.

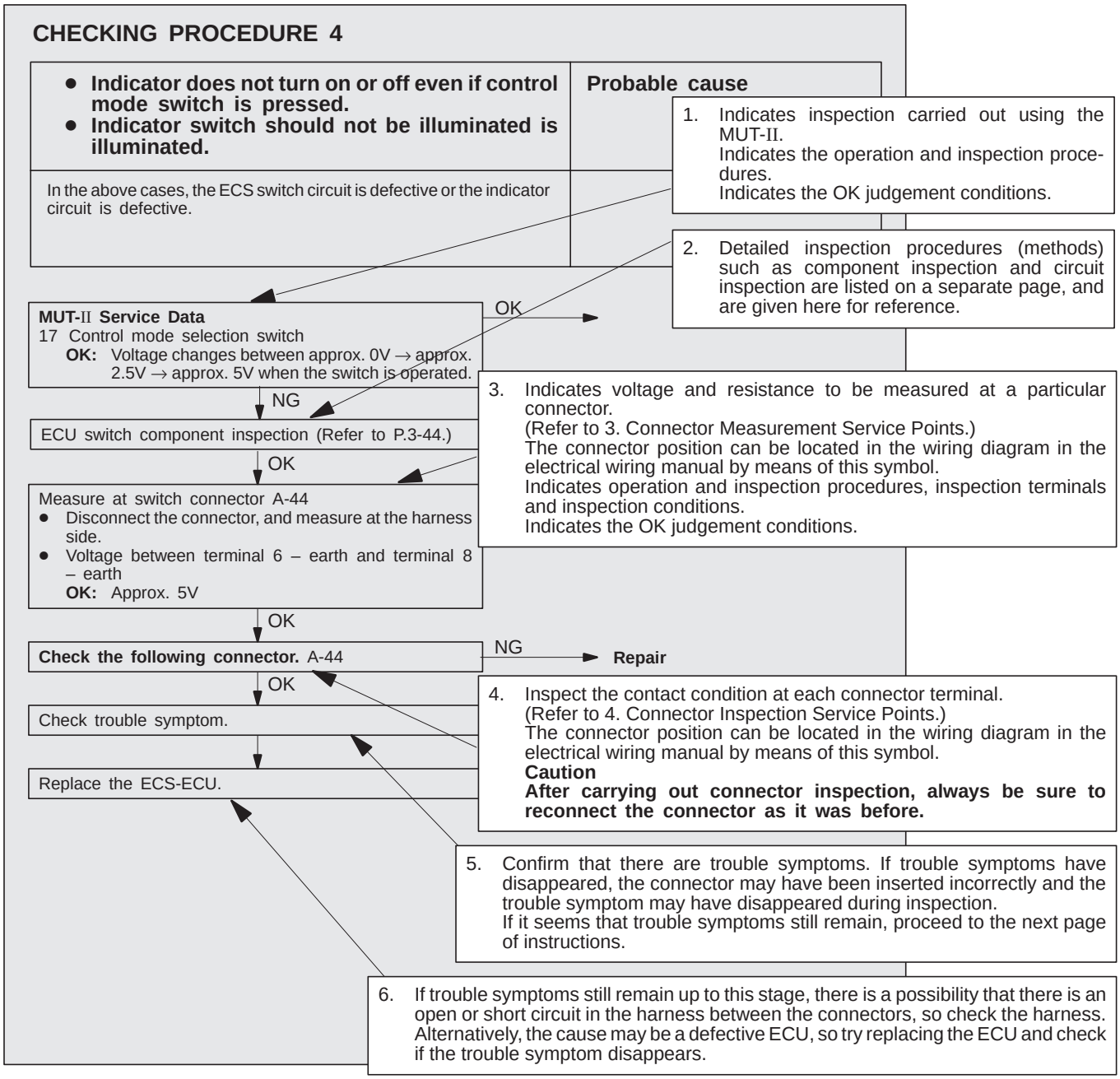
Caution

Connection and disconnection of the MUT-II should always be carried out with the ignition switch in the LOCK (OFF) position.

When not using the MUT-II
(1) Turn the ignition switch to LOCK (OFF).
(2) After disconnecting the battery cable from the battery (–) terminal for 10 seconds or more, reconnect the cable.
(3) After the engine has warmed up, run it at idle for about 15 minutes.

HOW TO USE THE INSPECTION PROCEDURES

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

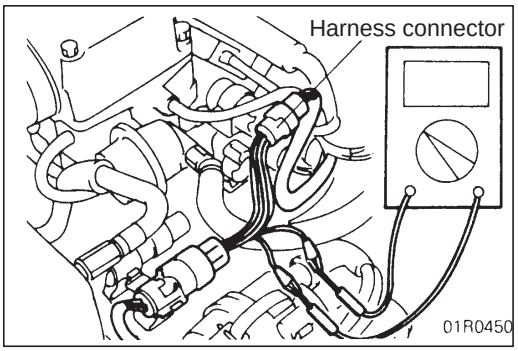
Check for an open or short circuit in the harness between the terminals which were defective according to the connector measurements. Carry out this inspection while referring to the electrical wiring manual. Here, “Check harness between power supply and terminal xx” also includes checking for blown 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

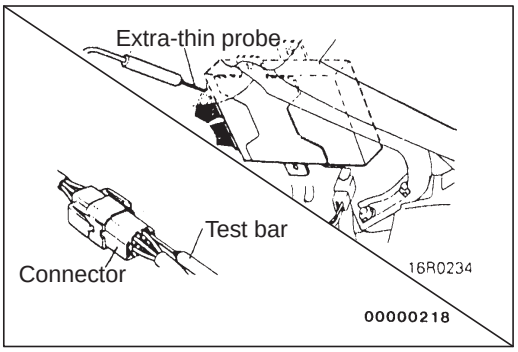
Turn the ignition switch to OFF when connecting disconnecting the connectors, and turn the ignition switch to ON when measuring if there are no instructions to be contrary.



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

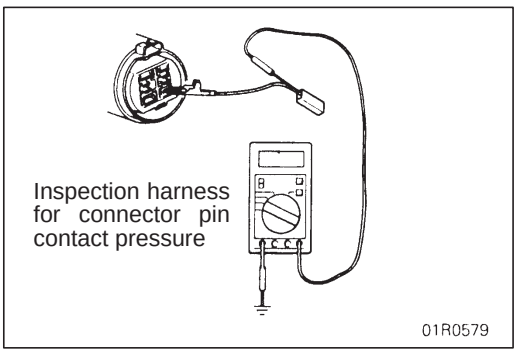
Waterproof Connectors

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

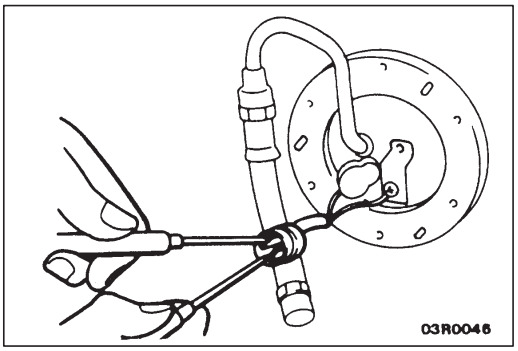
Check by inserting the test bar from the harness side. Note that if the connector (control unit, etc.) is too small to permit insertion of the test bar, it should not be forced; use a special tool (the extra-thin probe in the harness set for checking for this purpose.



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.

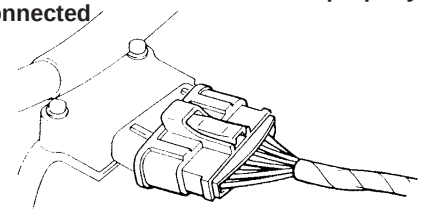


<When Inspecting a Male Pin>

Touch the pin directly with the test bar.

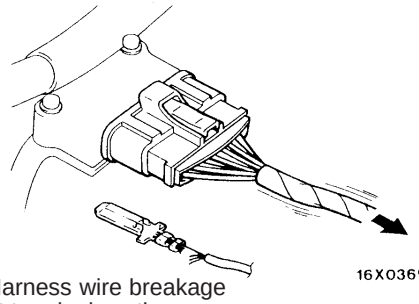
Caution
At this time, be careful not to short the connector pins with the test bars. To do so may damage the circuits inside the ECU.

Connector disconnected or improperly connected



16S0256

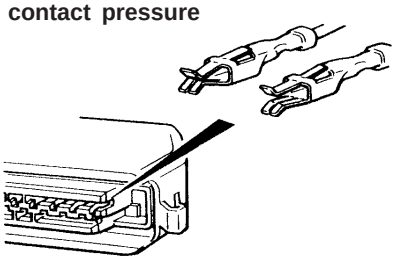
Defective connector contact



16X0369

Harness wire breakage at terminal section

Low contact pressure

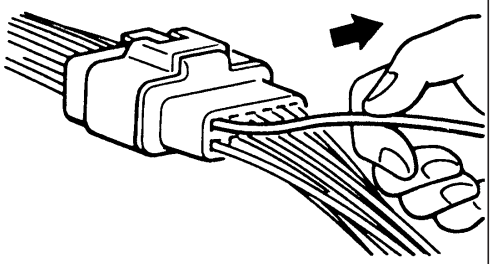


16S0254
00000219

CONNECTOR INSPECTION

VISUAL INSPECTION

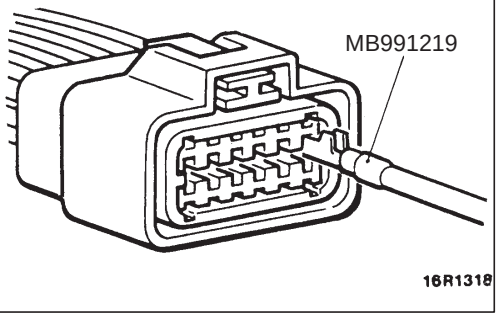
- Connector is disconnected or improperly connected
- Connector pins are pulled out
- Due to harness tension at terminal section
- Low contact pressure between male and female terminals
- Low connection pressure due to rusted terminals or foreign matter lodged in terminals



16R1317

CONNECTOR PIN INSPECTION

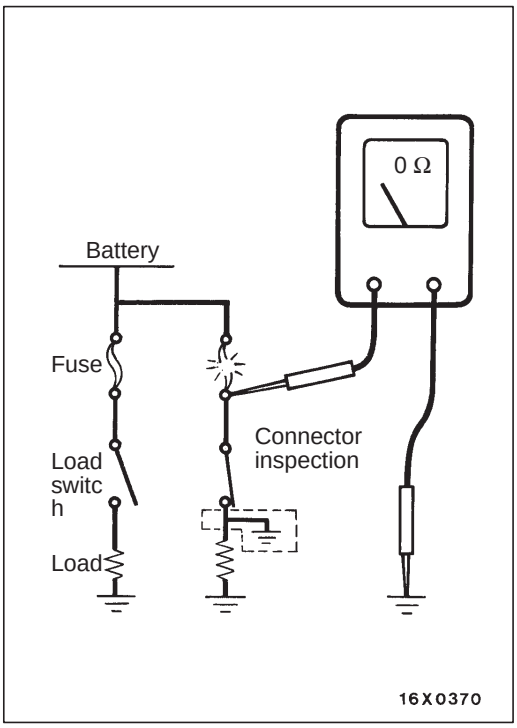
If the connector pin stopper is damaged, the terminal connections (male and female pins) will not be perfect even if the connector body is connected, and the pins may pull out of the reverse side of the connector. Therefore, gently pull the harnesses one by one to make sure that no pins pull out of the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



16R1318

CONNECTOR ENGAGEMENT INSPECTION

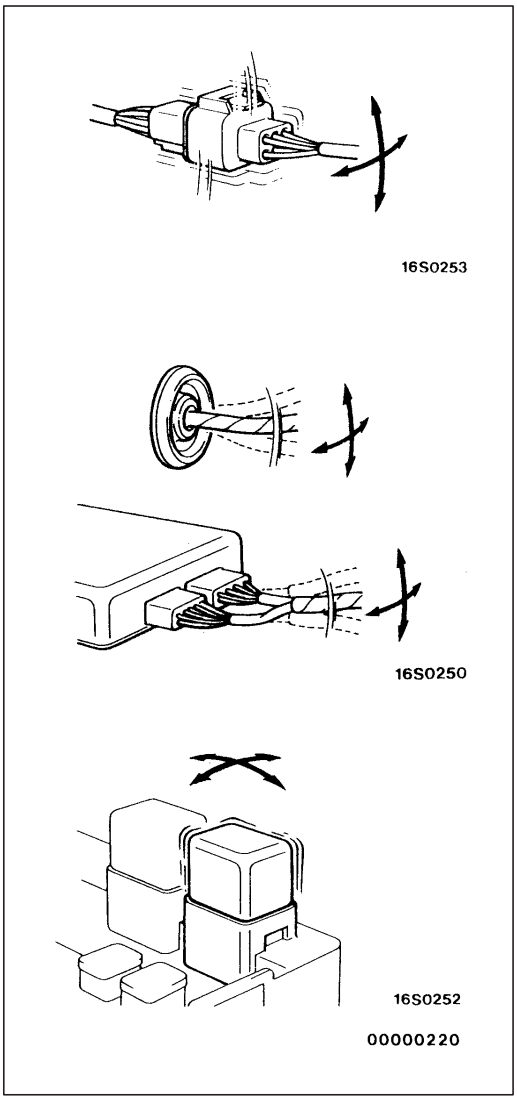
Use the special tool (connector pin connection pressure inspection harness of the inspection harness set) to inspect the engagement of the male pins and females pins. (Pin drawing force : 1 N or more)



INSPECTION SERVICE POINTS FOR A BLOWN FUSE

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.

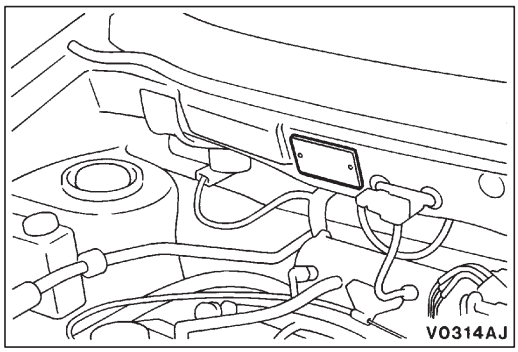
The main causes of a short circuit are the following.
- Harness being clamped by the vehicle body
- Damage to the outer casing of the harness due to wear or heat
- Water getting into the connector or circuitry
- Human error (mistakenly shorting a circuit, etc.)



POINTS TO NOTE FOR INTERMITTENT MALFUNCTIONS

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.



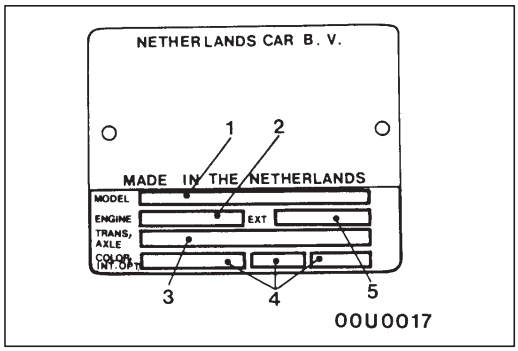
VEHICLE IDENTIFICATION

00100540160

VEHICLE INFORMATION CODE PLATE

LOCATION

Vehicle information code plate is riveted on the toeboard inside the engine compartment.



CODE PLATE DESCRIPTION

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

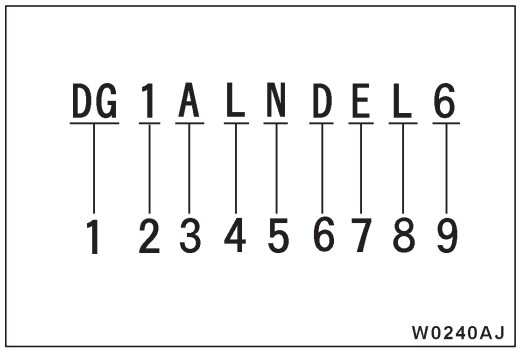
No.	Item	Contents	
1	MODEL	DG2A LNDEL6	DG2A: Vehicle model
			LNDEL6: Model series
2	ENGINE	4G13	Engine model
3	TRANS AXLE	F5MR1	Transmission code
4	COLOR INT OPT	B60 41H 03V	B60: Body colour code
			41H: Interior code
			03V: Equipment code
5	EXT	B60B	Exterior code

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

00100030315

Model code		Engine model	Transmission model	Fuel supply system
DG1A	LNDEL6/R6	4G13–SOHC (1,299 mℓ)	F5MR1 (2WD–5M/T)	MPI
	LNDJL6			
	LNJEL6/R6			
	LNJJL6			
DG5A	LNDCL6/R6	4G93–DOHC (1,834 mℓ)	F5M42 (2WD–5M/T)	GDI
	LNDGL6			
	LNJCL6/R6			
	LNJGL6			

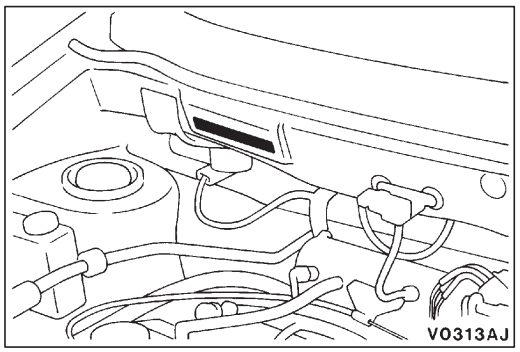


W0240AJ

MODEL CODE

00100040394

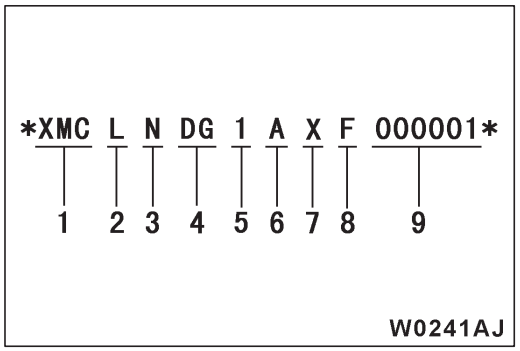
No.	Items	Contents
1	Development	DG : MITSUBISHI SPACE STAR
2	Engine type	1 : 1,299 mℓ petrol engine
		5 : 1,834 mℓ petrol engine
3	Sort	A : Passenger car
4	Body style	L : 5 door
5	Transmission type	N : 5–speed manual transmission
6	Trim level	D : GL
		J : GLX
7	Specified engine feature	E : MPI–SOHC (Step–II)
		J : MPI–SOHC (D3)
		C : GDI–DOHC (Step–II)
		G : GDI–DOHC (D3)
8	Steering wheel location	L : Left hand
		R : Right hand
9	Destination	6 : For Europe



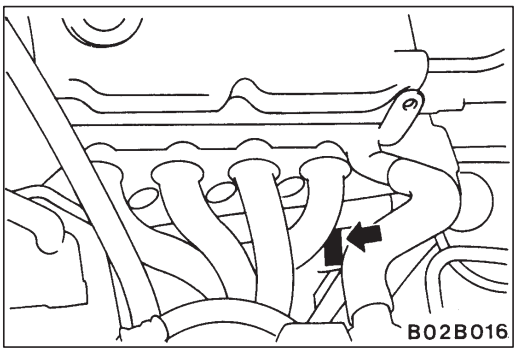
CHASSIS NUMBER

00100560135

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



No.	Items		Contents
1	Steering wheel location	XMC	Left hand drive
		XMD	Right hand drive
2	Body style	L	5-door hatchback
3	Transmission type	N	5-speed manual transmission
4	Vehicle line	DG	SPACE STAR
5	Development order	1	1,299 mℓ petrol engine
		5	1,834 mℓ petrol engine
6	Sort	A	Passenger car
7	Model year	X	1999
8	Factory code	F	Netherlands Car B.V.
9	Serial number	–	–



ENGINE MODEL NUMBER

00100570121

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

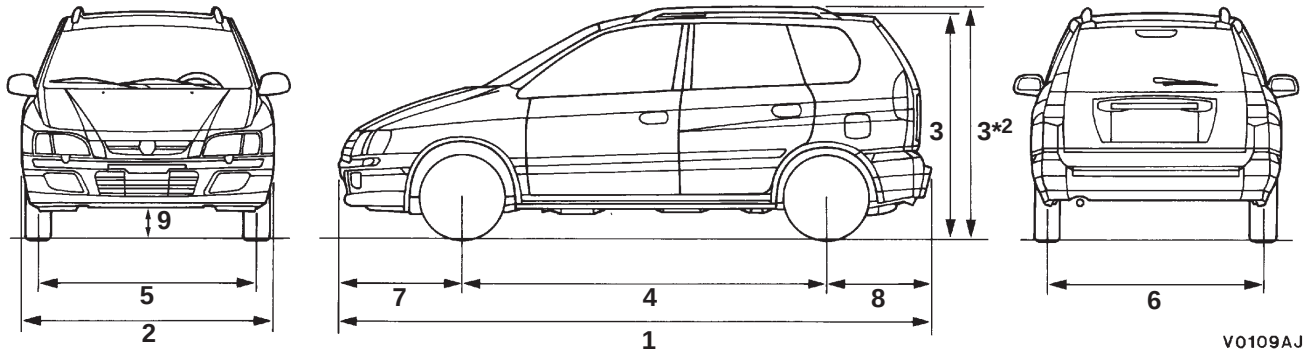
Engine model	Engine displacement
4G13 4G93	1,299 1,834

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

Engine serial number	AA0201 to YY9999

MAJOR SPECIFICATIONS

00100080204



Items			DG1A		DG5A	
			LNDEL6/R6, LNDJL6	LNJEL6/R6, LNJJL6	LNDCL6/R6, LNDGL6	LNJCL6/R6, LNJGL6
Vehicle dimensions mm	Overall length	1	4,030	4,030	4,030	4,030
	Overall width	2	1,695 1,700*1	1,695	1,695 1,700*1	1,695
	Overall height (unladen)	3	1,515, 1,555*2	1,515, 1,555*2	1,515, 1,555*2	1,515, 1,555*2
	Wheelbase	4	2,500	2,500	2,500	2,500
	Track-front	5	1,475	1,475	1,475	1,475
	Track-rear	6	1,470	1,470	1,470	1,470
	Overhang-front	7	835	835	835	835
	Overhang-rear	8	695	695	695	695
	Ground clearance (unladen)	9	155	155	140	140
Vehicle weight kg	Kerb weight		1,120 <LHD>, 1,125 <RHD>	1,125 <LHD>, 1,130 <RHD>	1,195 <LHD>, 1,200 <RHD>	1,200 <LHD>, 1,205 <RHD>
	Max. gross vehicle weight rating		1,655	1,655	1,730	1,730
	Max. axle weight rating-front		850	850	880	880
	Max. axle weight rating-rear		805	805	850	850
Seating capacity			5			
Engine	Model No.		4G13		4G93	
	Total displacement mℓ		1,299		1,834	
Transmission	Model No.		F5MR1		F5M42	
	Type		5 speed-manual			
Fuel system	Fuel supply system		MPI		GDI	

NOTE
*1 : indicates vehicles equipped with the side protect moulding.
*2 : indicates vehicles equipped with the roof rail.

PRECAUTIONS BEFORE SERVICE

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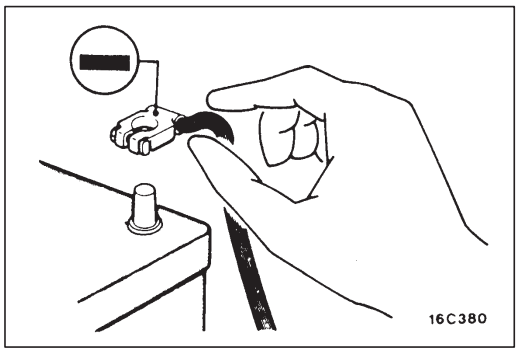
SUPPLEMENTAL RESTRAINT SYSTEM (SRS), SEAT BELT WITH PRE-TENSIONER

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 air bag control unit, air bag module, side air bag module, side impact sensor and clock spring) and seat belt with pre-tensioner. If faulty, replace it.
   (5) Warning labels must be heeded when servicing or handling SRS components and seat belt with pre-tensioner. Warning labels are located in the following locations.
   - Sun visor
   - Glove box
   - SRS air bag control unit
   - Steering wheel
   - Steering gear and linkage
   - Air bag module
   - Clock spring
   - Seat belt with pre-tensioner
   - Side air bag module
   - Side impact sensor

   (6) Store components removed from the SRS and seat belt with pre-tensioner in a clean and dry place.
   The air bag module and seat belt with pre-tensioner 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 and seat belt with pre-tensioner before disposing of the air bag module and seat belt with pre-tensioner or disposing of a vehicle equipped with an air bag and seat belt with pre-tensioner. (Refer to GROUP 52B – Air Bag Module Disposal Procedures.)
   (8) Whenever you finish servicing the SRS and seat belt with pre-tensioner, 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 and seat belt with pre-tensioner are installed, including operations not directly related to the SRS air bag and seat belt with pre-tensioner.
   (1) When removing or installing parts do not allow any impact or shock to the SRS components and seat belt with pre-tensioner.
   (2) SRS components and seat belt with pre-tensioner should not be subjected to heat, so remove the SRS components and seat belt with pre-tensioner before drying or baking the vehicle after painting.
   - SRS air bag control unit, air bag module, clock spring: 93°C or more
   - Seat belt with pre-tensioner 90°C or more

   After re-installing them, check the SRS warning lamp operation to make sure that the system functions properly.



SERVICING THE ELECTRICAL SYSTEM

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.)

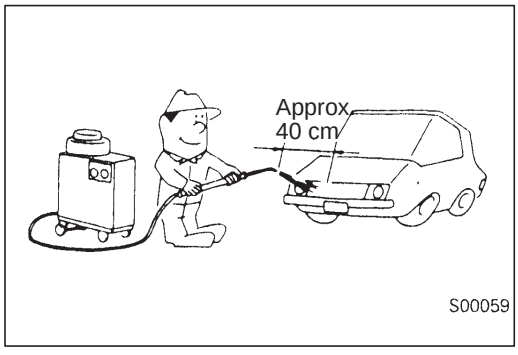
APPLICATION OF ANTI-CORROSION AGENTS AND UNDERCOATS

If oil or grease gets onto the oxygen sensor, it will cause a drop in the performance of the sensor.
Cover the oxygen sensor with a protective cover when applying anti-corrosion agents and undercoats.

PRE-INSPECTION CONDITION

"Pre-inspection condition" refers to the condition that the vehicle must be in before proper engine inspection can be carried out. If you see the words "Set the vehicle to the pre-inspection condition." in this manual, it means to set the vehicle to the following condition.

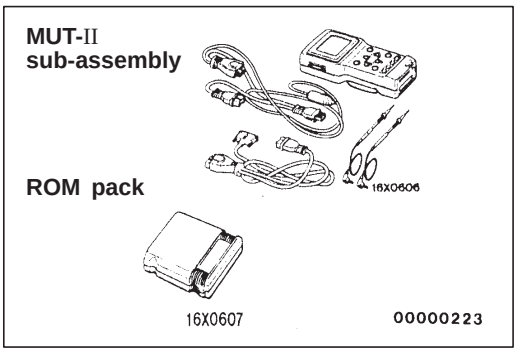
- Engine coolant temperature: 80–90°C
- Lamps, electric cooling fan and all accessories: OFF
- M/T: Neutral
- A/T: P range



VEHICLE WASHING

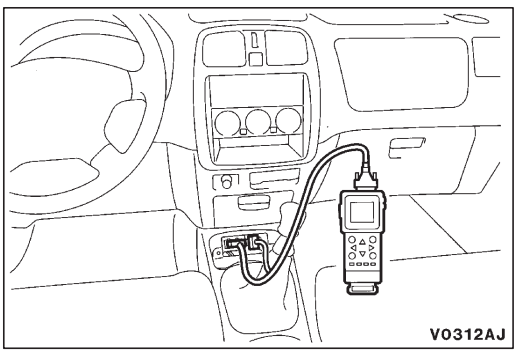
If high-pressure car-washing equipment or steam car-washing equipment is used to wash the vehicle, be sure to note the following information in order to avoid damage to plastic components, etc.

- Spray nozzle distance: Approx. 40cm or more
- Spray pressure: 3,900 kPa or less
- Spray temperature: 82°C or less
- Time of concentrated spray to one point: within 30 sec.



MUT-II

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



Connect the MUT-II to the diagnosis connector as shown in the illustration.

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

IN ORDER TO PREVENT VEHICLES FROM FIRE

"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

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

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) AND SEAT BELT WITH PRE-TENSIONER

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To improve safety, the SRS and seat belt with pre-tensioner are available as optional parts. These systems enhance a collision safety by restraining the front passengers in case of an accident. The SRS works with the pre-tensioner simultaneously when a collision is detected.

SUPPLEMENTAL RESTRAINT SYSTEM (SRS)

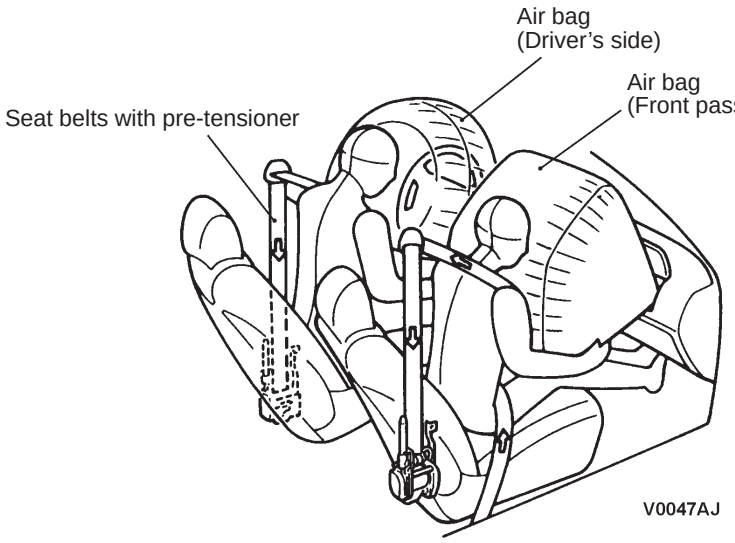
The SRS is designed to supplement the front seat belts. It eliminates or reduces an injury to the front passengers by deploying two air bags in case of a head-on collision.

SEAT BELT WITH PRE-TENSIONER

The seat belt with pre-tensioner work simultaneously with the SRS. The pre-tensioner takes up seat belt slack immediately at a collision, by that restraining the front passengers sooner than the SRS. This prevents the passengers from moving forwards.

CAUTION

1. Even if there is no passenger, the air bag and pre-tensioner will work by detecting a bigger head-on collision than a specific value.
2. The specific value is an equivalent impact when a vehicle collides against a concrete (fixed) wall at approx. 25 km/h or more.
3. The SRS and pre-tensioner may not work under the following conditions:
   - A head-on collision is smaller than the specific value.
   - A vehicle collides on its side or rear end.
   - A vehicle rolls over or upsets.



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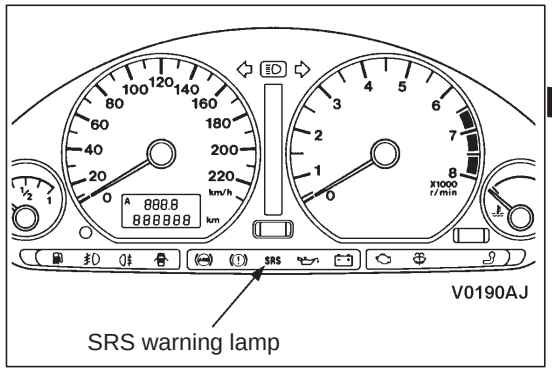
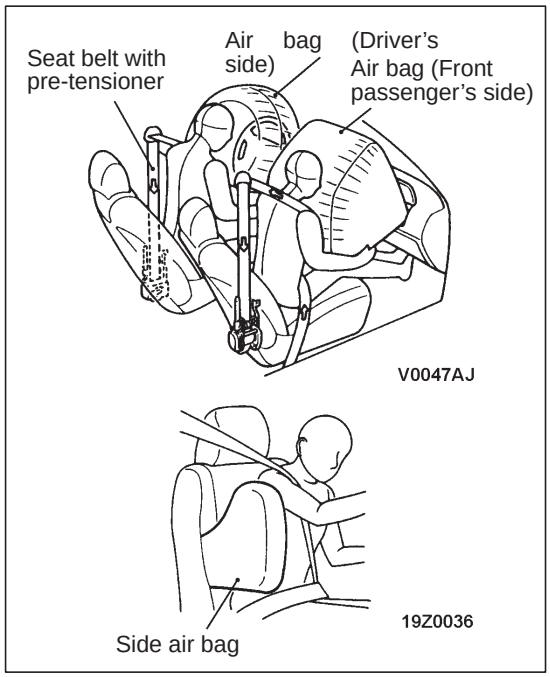
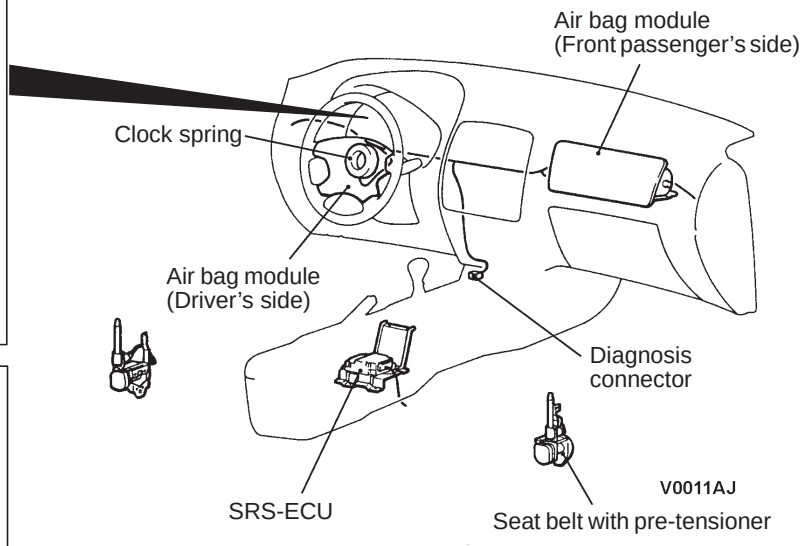
SUPPLEMENTAL RESTRAINT SYSTEM (SRS) AND SEAT BELT WITH PRE-TENSIONER CONSTRUCTIONS

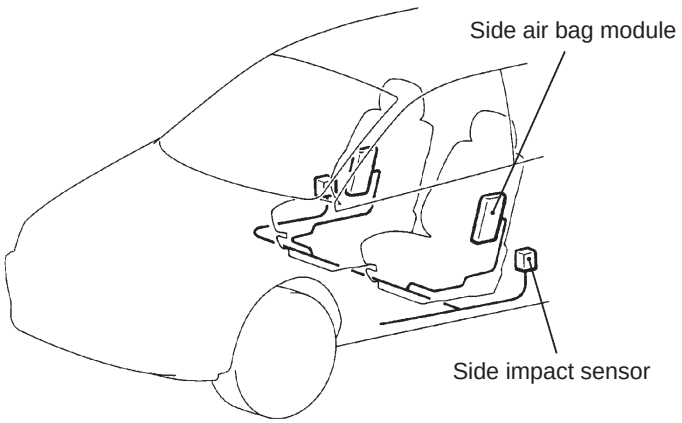
The SRS consists of four air bag modules, SRS air bag control unit (SRS-ECU), side impact sensors, SRS warning lamp and clock spring. The air bags are located in the centre of the steering wheel, above the glove box, and built into the front seat back assemblies. Each air bag has a folded air bag and an inflator unit. The SRS-ECU under the floor console monitors the system and has a safing G sensor and an analog G sensor. The side impact sensor inside the center pillar monitors any shocks coming from the side of the vehicle. The warning lamp on the instrument panel indicates the operational status of the SRS. The clock spring is installed in the steering column.
The SRS side air bag deploys if an impact received at the side of the vehicle is stronger than a certain set value, in order to protect the upper bodies of front seat passengers in the event of a collision. The seat belt pre-tensioner is built into the front seat belt retractor. Only authorized service personnel should do work on or around the SRS components and seat belt with pre-tensioner. Those service personnel should read this manual carefully before starting any such work. Extreme care must be used when servicing the SRS to avoid injury to the service personnel (by inadvertent deployment of the air bags or inadvertent operation of the seat belt with pre-tensioner) or the driver (by rendering the SRS or the seat belt with pre-tensioner inoperative).

CONSTRUCTION DIAGRAM









SRS SERVICE PRECAUTIONS

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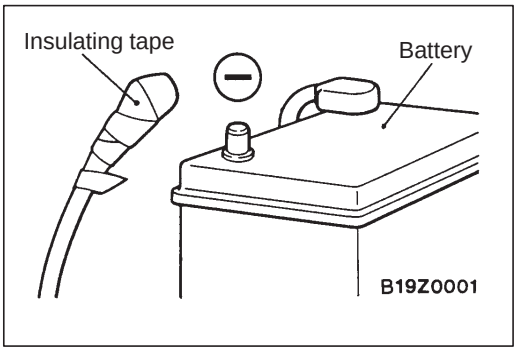
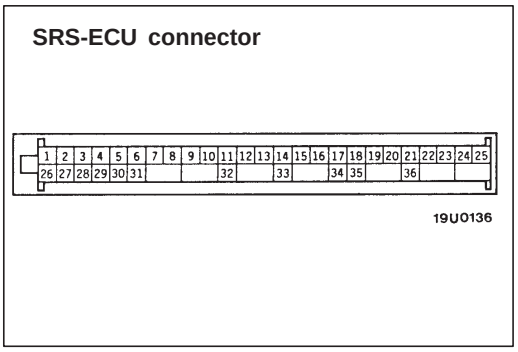
1. In order to avoid injury to yourself or others from accidental deployment of the air bag and accidental operation of the seat belt with pre-tensioner during servicing, read and carefully follow all the precautions and procedures described in this manual.
2. Do not use any electrical test equipment on or near SRS components, except those specified on GROUP52B.
3. **Never Attempt to Repair the Following Components:**
   - SRS air bag control unit (SRS-ECU)
   - Clock spring
   - Front air bag module (Driver's side or front passenger's side)
   - Side air bag module
   - Side impact sensor
   - Seat belt with pre-tensioner

   NOTE
   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, starting at GROUP52B.



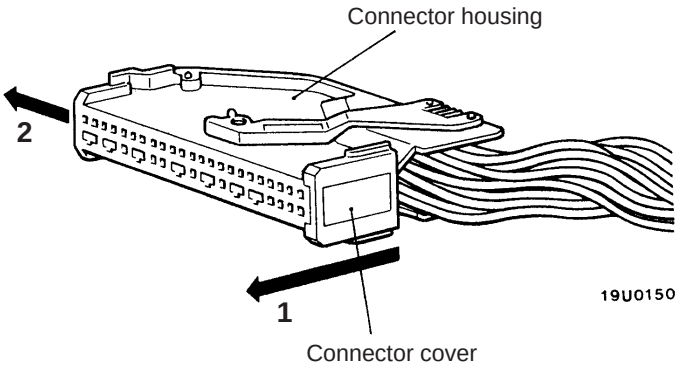
4. **After disconnecting the battery cable, wait 60 seconds or more before proceeding with the following work. The SRS system is designed to retain enough voltage to deploy the air bag for a short time even after the battery has been disconnected, so serious injury may result from unintended air bag deployment if work is done on the SRS system immediately after the battery cables are disconnected.**

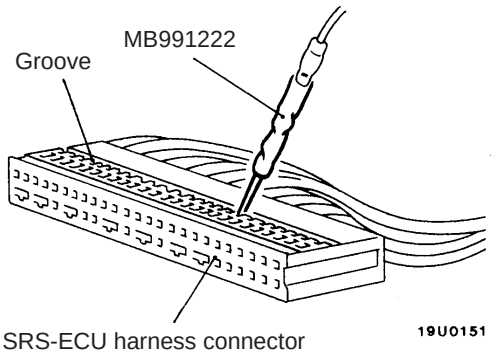


5. Do not attempt to repair the wiring harness connectors of the SRS. If any of the connectors are diagnosed as faulty, replace the wiring harness. If the wires are diagnosed as faulty, replace or repair the wiring harness according to the following table.

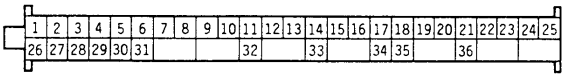
SRS-ECU Terminal No.	Destination of harness	Corrective action
1 to 4	–	–
5, 14	Body wiring harness → Side impact sensor (RH)	Correct or replace each wiring harness.
6, 34	Body wiring harness → Side impact sensor (LH)	
7, 8	Body wiring harness → Side air bag module (RH)	
9, 10	Body wiring harness → Side air bag module (LH)	
11	–	–
12, 13	Body wiring harness → Air bag module (Front passenger's side)	Correct or replace each wiring harness.
15, 16	Body wiring harness → Clock spring → Air bag module (Driver's side)	Correct or replace the dash wiring harness. Replace the clock spring.
17	Body wiring harness → Diagnosis connector	Correct or replace each wiring harness.
18	Body wiring harness → Junction block (fuse No.4)	
19	Body wiring harness → Combination meter (SRS warning lamp)	
20	Body wiring harness → Earth	
21	Body wiring harness → Junction block (fuse No.11)	
22, 23	Body wiring harness → Seat belt with pre–tensioner (Front passenger's side)	
24, 25	Body wiring harness → Seat belt with pre–tensioner (driver's side)	
26 to 33, 36	–	–

6. Inspection of the SRS-ECU harness connector should be carried out by the following procedure.
   After removing the harness connector cover by sliding it in the direction of the arrow 1 in the illustration, remove the connector housing by sliding it in the direction of arrow 2.
   Insert the special tool (ultra-fine probe in harness set) into the groove in the SRS-ECU harness connector and connect this to the tester in order to carry out inspection. If any tool other than the designated special tool is used, it will damage the harness and other parts. In addition, do not take the measurements by touching the probe directly to any terminals other than the groove shown in the illustration. The connector terminals are plated in order to increase their conductivity, so that if they are touched by the probe, it could cause the plating to peel off, which will affect the reliability of the connector performance.





SRS-ECU harness connector (seen from the rear)



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7. SRS components and seat belt with pre-tensioner should not be subjected to heat, so remove the SRS-ECU, air bag module (driver's side and front passenger's side), clock spring and side impact sensors, front seat assemblies (side air bag module), and seat belt with pre-tensioner before drying or baking the vehicle after painting.
   - SRS-ECU, air bag module, clock spring, side impact sensor: 93°C or more
   - Seat belt with pre-tensioner: 90°C or more
8. Whenever you finish servicing the SRS, check warning lamp operation to make sure that the system functions properly. (Refer to GROUP52B.)
9. Make certain that the ignition switch is OFF when the MUT-II is connected or disconnected.
10. 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

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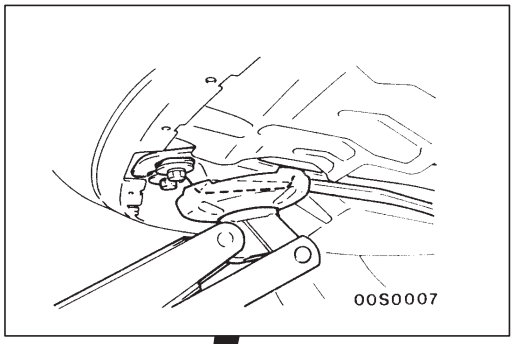
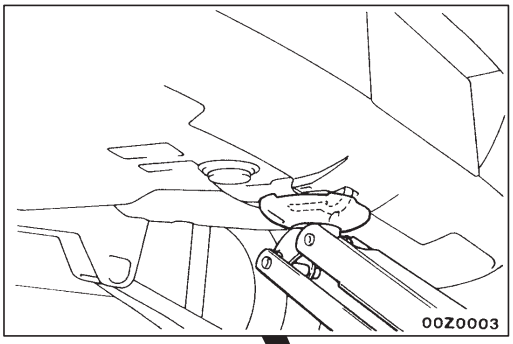
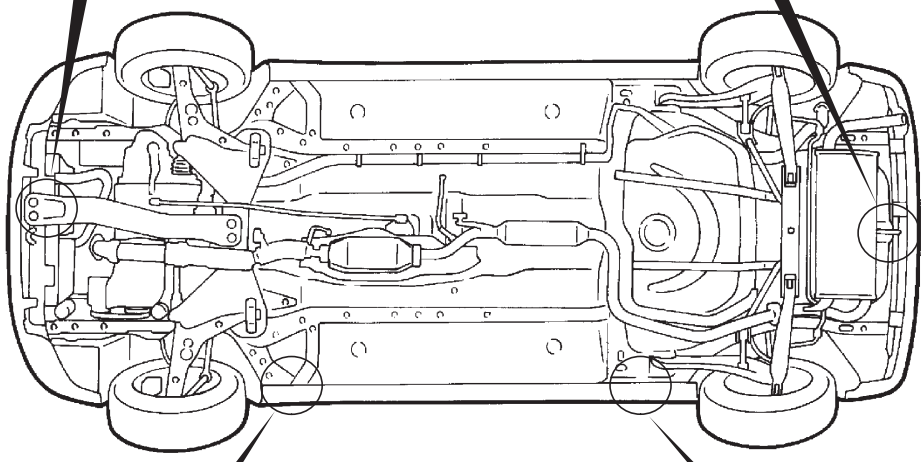
Caution
Do not support the vehicles at locations other than specified supporting points. If do so, this will cause damage, etc.

SUPPORT POSITIONS FOR A GARAGE JACK AND AXLE STANDS

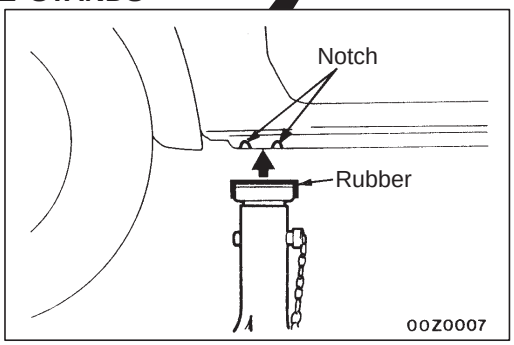
GARAGE JACK

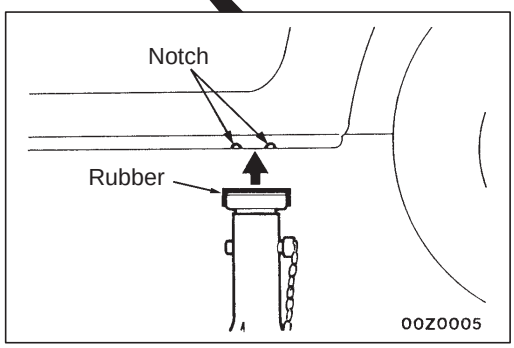






AXLE STANDS





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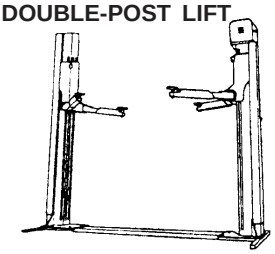
SUPPORT POSITIONS FOR A SINGLE-POST LIFT OR DOUBLE-POST LIFT

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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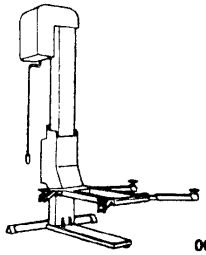
SINGLE-POST LIFT



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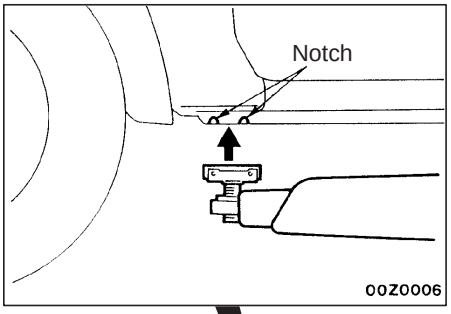

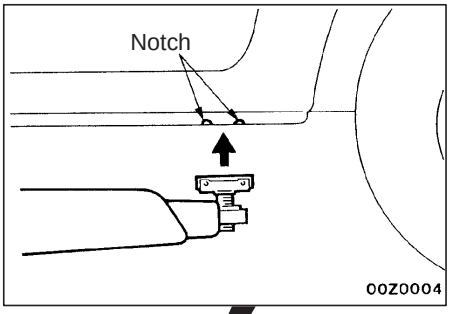

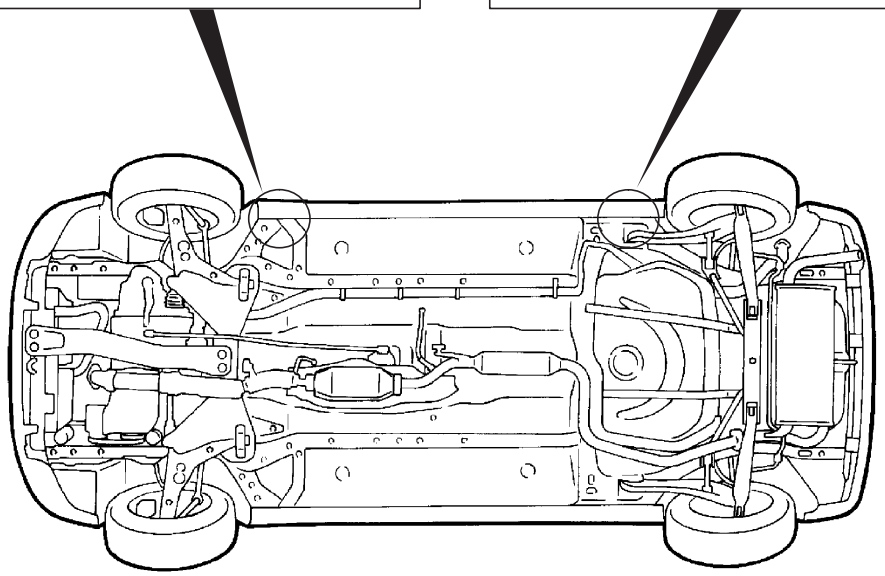

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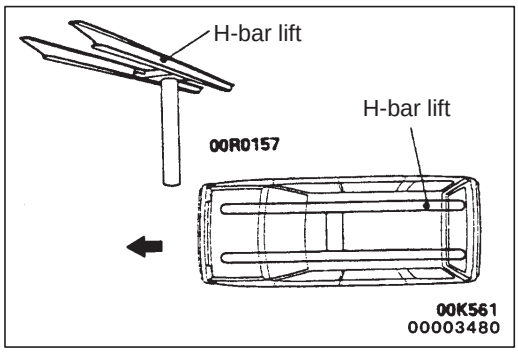
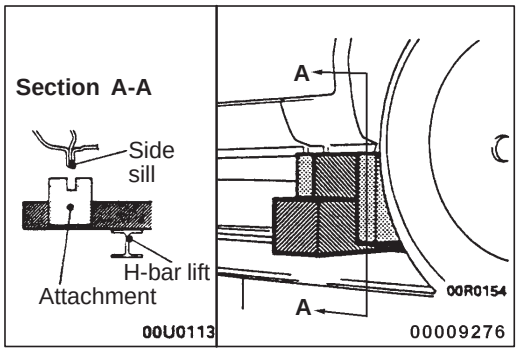


SUPPORT POSITIONS AND SUPPORT METHOD FOR AN H-BAR LIFT

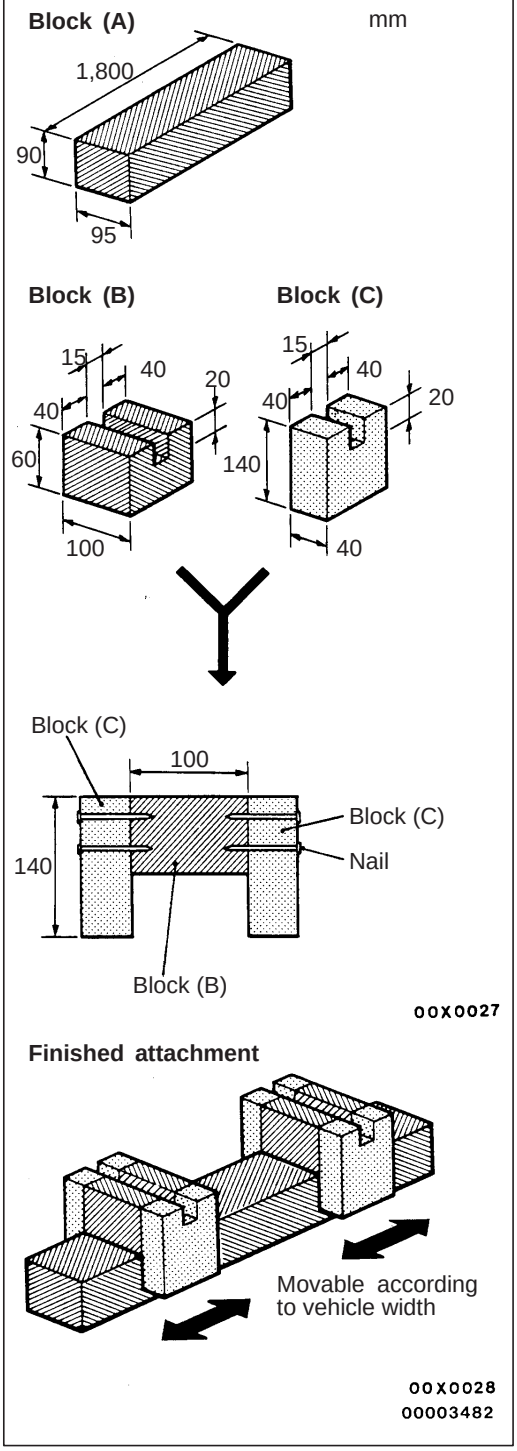
Caution
When service procedures require removing rear suspension, fuel tank, spare tyre and rear bumper, place additional weight on rear end of vehicle or anchor vehicle to hoist to prevent tipping of centre of gravity changes.

When H-bar lift is used to lift up vehicles, use of metallic attachment attached to the H-bar lift may cause damage to the suspension arm etc. Therefore, lift up the vehicle by the following procedure.



1. Place the vehicle on the H-bar lift (same direction).
2. Place attachments on the H-bar lift at the designated chassis-support positions. When making the attachments, refer to the section concerning making them.

   Caution
   If support is at any location other than the designated positions, the body or suspension might be deformed or otherwise damaged, so care should be taken to support only at the correct (designated) positions.
3. Raise the H-bar lift to the height at which the vehicle is slightly raised and check to be sure that the vehicle is correctly and sufficiently secured; then raise the vehicle.



PREPARATION OF "ATTACHMENTS"

1. Prepare the blocks (wooden) and nails as shown in the figure.

Item	Dimensions mm	Quantity
Block (A)	90 × 95 × 1,800	2
Block (B)	60 × 100 × 95	4
Block (C)	140 × 40 × 95	8
Nail	70 or more	32

Caution
The wood selected for the blocks must be hard.

2. For the (B) blocks and (C) blocks, use a saw and chisel or similar tool to make grooves of the dimensions shown in the figure.
3. Make four "ATTACHMENTS" such as shown in the figure nailing (B) and (C) blocks so that each (B) blocks is sandwiches between (C) blocks.

STANDARD PARTS-TIGHTENING-TORQUE TABLE

00100110033

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

NOTES

GENERAL

CONTENTS

HOW TO USE THIS MANUAL

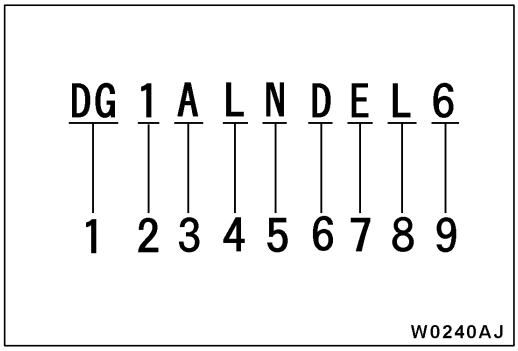
MODEL INDICATIONS

The following abbreviations are used in this manual for identification of model types.
MPI: Indicates the multi point fuel injection.
GD-D: Indicates the direct injection diesel.
GDI: Indicates the gasoline direct injection.
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.
A/C: Indicates the air conditioner.

VEHICLE IDENTIFICATION

MODELS

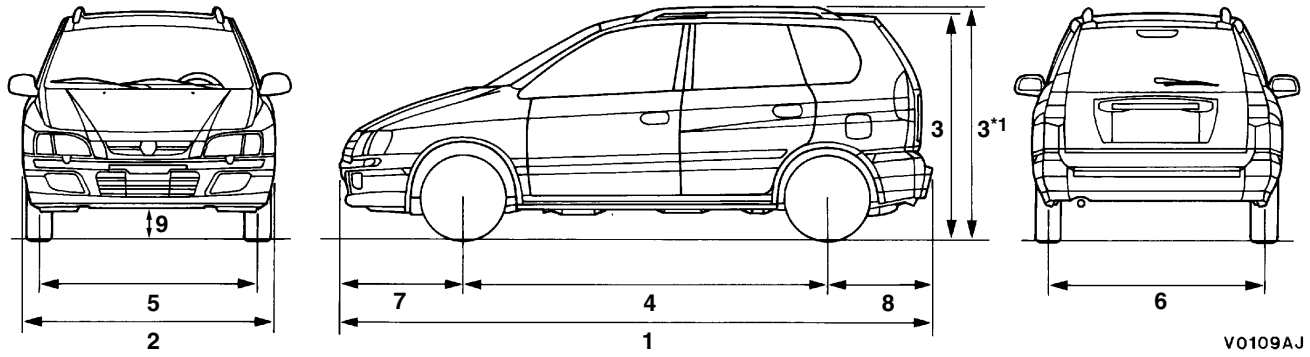
Model code		Engine model	Transmission model	Fuel supply system
DG1A	LNDEL6/R6	4G13 MPI (1,299 mL)	F5MR1 <5M/T>	MPI (Multi Point Fuel Injection)
	LNJEL6/R6			
	LNPEL6/R6			
DG4A	LNDFL6/R6	F9Q1 (1,870 mL)	F5MV1 <5M/T>	DI-D (Direct Injection Diesel)
	LNJFL6/R6			
	LNPFL6/R6			
DG5A	LNDCL6	4G93 GDI (1,834 mL)	F5M42 <5M/T>	GDI (Gasoline Direct Injection)
	LNJCL6/R6			
	LRJCL6/R6		F4A42 <INVECS-II 4A/T with Sports Mode>	
	LNPCL6/R6		F5M42 <5M/T>	
	LRPCL6/R6		F4A42 <INVECS-II 4A/T with Sports Mode>	



MODEL CODE

No.	Items	Contents
1	Development	DG: MITSUBISHI SPACE STAR
2	Engine type	1: 1,299 mL petrol engine 4: 1,870 mL diesel engine 5: 1,834 mL petrol engine
3	Sort	A: Passenger car
4	Body style	L: 5-door
5	Transmission type	N: 5-speed manual transmission R: 4-speed automatic transmission
6	Trim level	D: Family J: Comfort P: Sport
7	Specification engine feature	E: MPI F: DI-D C: GDI
8	Steering wheel location	L: Left hand R: Right hand
9	Destination	6: For Europe

MAJOR SPECIFICATIONS



Items			DG1A			DG4A		
			LNDEL6 /R6	LNJEL6 /R6	LNPEL6 /R6	LNDFL6 /R6	LNJFL6 /R6	LNPFL6 /R6
Vehicle dimensions mm	Overall length	1	4,030					
	Overall width	2	1,715					
	Overall height (unladen)	3	1,515, 1,555*1					
	Wheelbase	4	2,500					
	Track-front	5	1,475					
	Track-rear	6	1,470					
	Overhang-front	7	835					
	Overhang-rear	8	695					
	Ground clear-ance (unladen)	9	155					
Vehicle weight kg	Kerb weight		1,158	1,170	1,173	1,248	1,260	1,258
	Max. gross vehicle weight		1,655			1,730		
	Max. axle weight rating-front		855			920		
	Max. axle weight rating-rear		830			850		
Seating capacity			5					
Engine	Model No.		4G13			F9Q1		
	Total displacement mL		1,299			1,870		
Transmission	Model No.		F5MR1			F5MV1		
	Type		5 speed-manual					
Fuel system	Fuel supply system		Multi Point Fuel Injection			Direct Injection Diesel		

NOTE:
*1: Vehicles with roof rails

Items			DG5A				
			LNDCL6	LNJCL6/R6	LNPCL6/R6	LRJCL6/R6	LRPCL6/R6
Vehicle dimensions mm	Overall length	1	4,030				
	Overall width	2	1,715				
	Overall height (unladen)	3	1,515, 1,555*1				
	Wheelbase	4	2,500				
	Track-front	5	1,475				
	Track-rear	6	1,470				
	Overhang-front	7	835				
	Overhang-rear	8	695				
	Ground clearance (unladen)	9	150				
Vehicle weight kg	Kerb weight		1,228	1,240	1,238	1,255	1,253
	Max. gross vehicle weight		1,730				
	Max. axle weight rating-front		920				
	Max. axle weight rating-rear		850				
Seating capacity			5				
Engine	Model No.		4G93				
	Total displacement mL		1,834				
Transmission	Model No.		F5M42			F4A42	
	Type		5 speed-manual			INVECS-II 4A/T with Sports Mode	
Fuel system	Fuel supply system		Gasoline Direct Injection				

NOTE:
*1: Vehicles with roof rails

NOTES

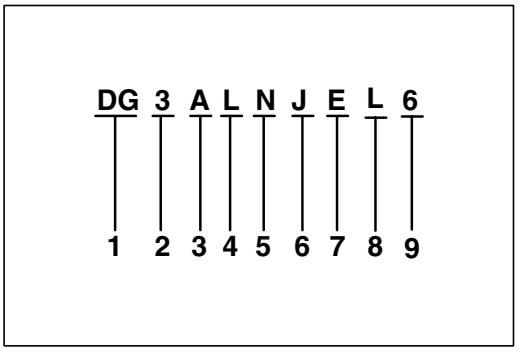
GENERAL

CONTENTS

VEHICLE IDENTIFICATION

MODELS

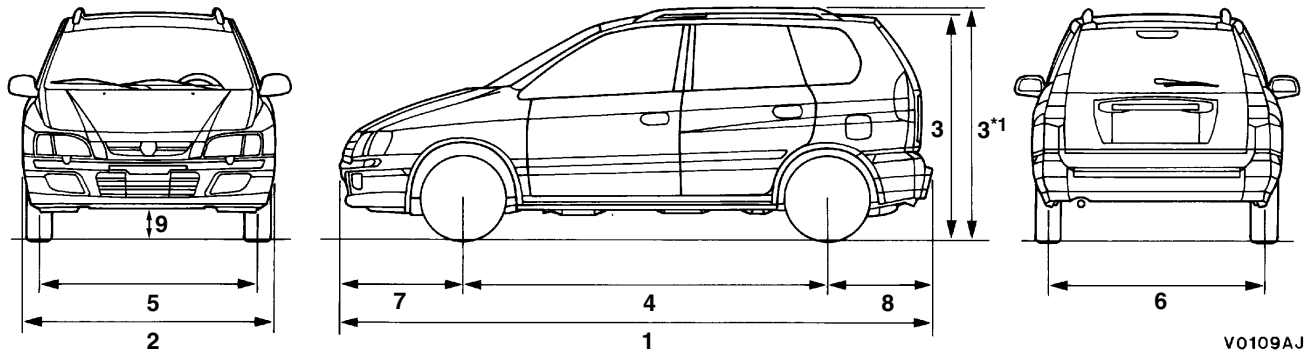
Model code		Engine model	Transmission model	Fuel supply system
DG1A	LNDEL6/R6	4G13-SOHC (1,299 mL)	F5MR1 (2WD-5M/T)	MPI
	LNJEL6/R6			
DG3A	LNDEL6/R6	4G18-SOHC (1,584 mL)		
	LNJEL6/R6			
	LNPEL6			
	LRJEL6/R6		F4A42 (2WD-4A/T)	
DG4A	LNDFL6	F9Q1 (1,870 mL)	F5MV1 (2WD-5M/T)	Fuel injection pump
	LNJFL6/R6			
DG5A	LNJCL6/R6	4G93-DOHC-GDI (1,834 mL)	F5M42 (2WD-5M/T)	GDI
	LNPCL6/R6			
	LRJCL6/R6		F4A42 (2WD-4A/T)	



MODEL CODE

No.	Items	Contents
1	Development	DG: MITSUBISHI SPACE STAR
2	Engine type	1: 1,299 mL petrol engine 3: 1,584 mL petrol engine 4: 1,870 mL diesel engine 5: 1,834 mL petrol engine
3	Sort	A: Passenger car
4	Body style	L: 5-door
5	Transmission type	N: 5-speed manual transmission R: 4-speed automatic transmission
6	Trim level	D: Family J: Comfort P: Sport
7	Specification engine feature	E: MPI F: Fuel injection pump C: GDI
8	Steering wheel location	L: Left hand R: Right hand
9	Destination	6: For Europe

MAJOR SPECIFICATIONS



Items			DG1A		DG3A			
			LNDEL6/ R6	LNJEL6/ R6	LNDEL6/ R6	LNJEL6/ R6	LNPEL6	LRJEL6/ R6
Vehicle dimensions mm	Overall length	1	4,030					
	Overall width	2	1,715					
	Overall height (unladen)	3	1,515, 1,555*1					
	Wheelbase	4	2,490, 2,500*2					
	Track-front	5	1,475					
	Track-rear	6	1,470					
	Overhang-front	7	835					
	Overhang-rear	8	695					
	Ground clear-ance (unladen)	9	155					150
Vehicle weight kg	Kerb weight		1,155	1,170	1,160	1,175	1,175	1,205
	Max. gross vehicle weight		1,655, 1,725*3		1,690, 1,765*3			
	Max. axle weight rating-front		855		880			
	Max. axle weight rating-rear		830, 910*3		850, 910*3			
Seating capacity			5					
Engine	Model No.		4G13		4G18			
	Total displacement mL		1,299		1,584			
Transmission	Model No.		F5MR1					F4A42
	Type		5 speed-manual					4 speed-automatic
Fuel system	Fuel supply system		MPI					

NOTE:
*1: Vehicles with roof rails
*2: Measured in running order condition
*3: In cace of trailing towing

Items			DG4A		DG5A		
			LNDFL6	LNJFL6/R6	LNJCL6/R6	LNPCL6/R6	LRJCL6/R6
Vehicle dimensions mm	Overall length	1	4,030				
	Overall width	2	1,715				
	Overall height (unladen)	3	1,515, 1,555*1				
	Wheelbase	4	2,490, 2,500*2				
	Track-front	5	1,475				
	Track-rear	6	1,470				
	Overhang-front	7	835				
	Overhang-rear	8	695				
	Ground clearance (unladen)	9	145		150		
Vehicle weight kg	Kerb weight		1,245	1,260	1,240	1,235	1,255
	Max. gross vehicle weight		1,730, 1,790*3				
	Max. axle weight rating-front		920				
	Max. axle weight rating-rear		850, 910*3				
Seating capacity			5				
Engine	Model No.		F9Q1		4G93		
	Total displacement mL		1,870		1,834		
Transmission	Model No.		F5MV1		F5M42		F4A42
	Type		5 speed-manual		5 speed-manual		4 speed-automatic
Fuel system	Fuel supply system		Fuel Injection Pump		GDI		

NOTE:
*1: Vehicles with roof rails
*2: Measured in running order condition
*3: In cace of trailing towing

NOTES

GENERAL

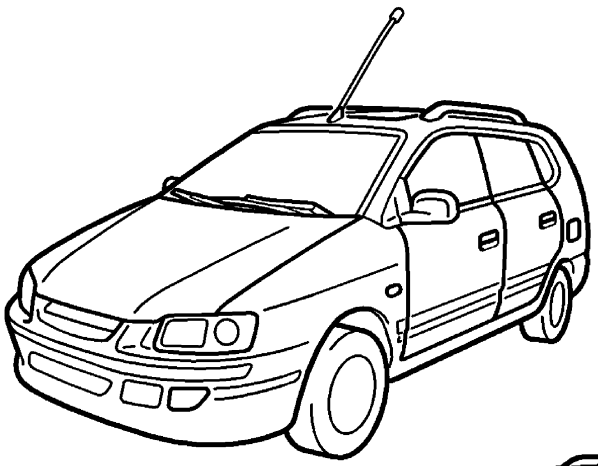
CONTENTS

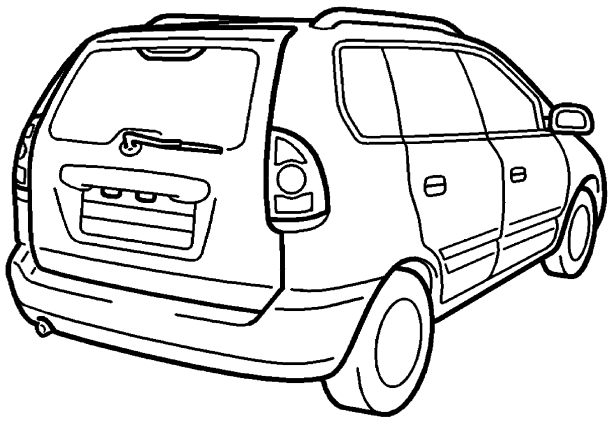
TARGETS OF DEVELOPMENT

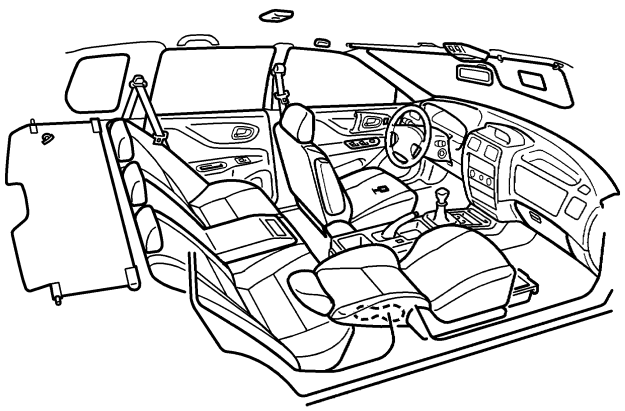
Since its release, the SPACE STAR has received wide acclaim in the European market. Changes for the model year 2003 SPACE STAR are designed to further enhance its appeal by refining the interior as well as the exterior.

TECHNICAL FEATURES

Major changes for the model year 2003 are:
1. The headlamps are integrated with the front turn-signal lamps.
2. The rear combination lamps are newly designed.
3. The shape of the front fog lamp has been changed.
4. The shape of the front bumper has been changed.
5. The front seat and rear seat are provided with an armrest.
6. The instrument panel has been modified due to a new-designed heater control panel and ashtray.



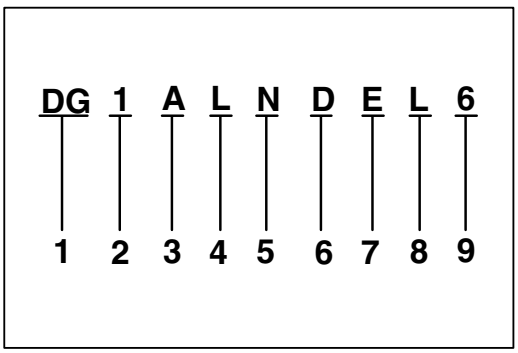




VEHICLE IDENTIFICATION

MODELS

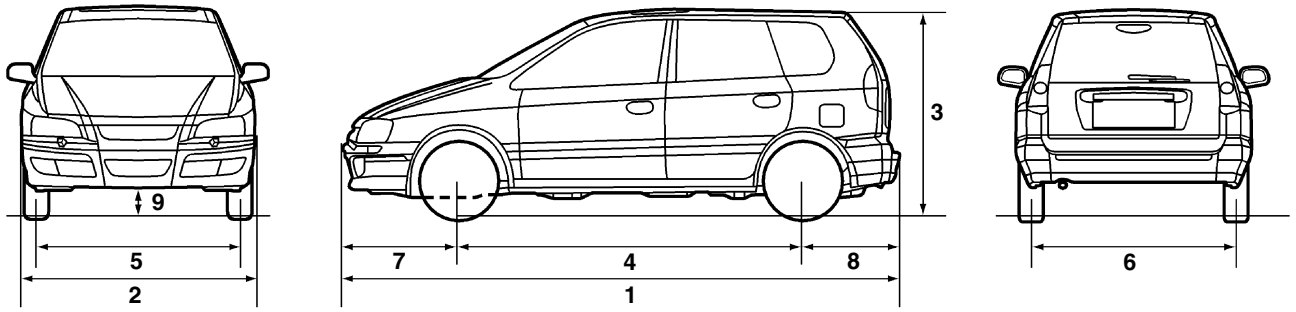
Model code		Engine model	Transmission model	Fuel supply system
DG1A	LNDEL6/R6	4G13 MPI (1,299 mL)	F5MR1 <5M/T>	MPI (Multi Point Fuel Injection)
	LNJEL6/R6			
DG3A	LNDEL6/R6	4G18 MPI (1,584 mL)		
	LNJEL6/R6			
	LNPEL6			
	LRDER6		F4A42 <4A/T>	
	LRJEL6/R6			
DG4A	LNDFL6/R6	F9Q1 (1,870 mL)	F5MV1 <5M/T>	DI-D (Direct Injection Diesel)
	LNJFL6/R6			



MODEL CODE

No.	Item	Content
1	Development	DG: MITSUBISHI SPACE STAR
2	Engine type	1: 1,299 mL petrol engine 3: 1,584 mL petrol engine 4: 1,870 mL diesel engine
3	Sort	A: Passenger car
4	Body style	L: 5-door
5	Transmission type	N: 5-speed manual transmission R: 4-speed automatic transmission
6	Trim level	D: Family J: Comfort P: Sport
7	Specification engine feature	E: MPI F: DI-D
8	Steering wheel location	L: Left hand R: Right hand
9	Destination	6: For Europe

MAJOR SPECIFICATIONS



Item			DG1A		DG3A		
			LNDEL6 /R6	LNJEL6 /R6	LNDEL6 /R6	LNJEL6 /R6	LNPFL6
Vehicle dimensions mm	Overall length	1	4,050				
	Overall width	2	1,715				
	Overall height (unladen)	3	1,515, 1,555*1				
	Wheelbase	4	2,490, 2,500*2				
	Track-front	5	1,475				
	Track-rear	6	1,470				
	Overhang-front	7	855				
	Overhang-rear	8	695				
	Ground clearance (unladen)	9	155				
Vehicle weight kg	Kerb weight		1,160	1,180	1,165	1,185	1,185
	Max. gross vehicle weight		1,655		1,690		
	Max. axle weight rating-front		855		880		
	Max. axle weight rating-rear		830, 910*3		850, 910*3		
Seating capacity			5				
Engine	Model No.		4G13		4G18		
	Total displacement mL		1,299		1,584		
Transmission	Model No.		F5MR1				
	Type		5 speed-manual				
Fuel system	Fuel supply system		Multi Point Fuel Injection				

NOTE:
*1: Vehicles with roof rails
*2: Measured in running order condition
*3: In case of trailing towing

Item			DG3A		DG4A	
			LRDER6	LRJEL6 /R6	LNDFL6 /R6	LNJFL6 /R6
Vehicle dimensions mm	Overall length	1	4,050			
	Overall width	2	1,715			
	Overall height (unladen)	3	1,515, 1,555*1			
	Wheelbase	4	2,490, 2,500*2			
	Track-front	5	1,475			
	Track-rear	6	1,470			
	Overhang-front	7	855			
	Overhang-rear	8	695			
	Ground clearance (unladen)	9	150		145	
Vehicle weight kg	Kerb weight		1,195	1,215	1,245	1,265
	Max. gross vehicle weight		1,690		1,730	
	Max. axle weight rating-front		880		920	
	Max. axle weight rating-rear		850 910*3		850 910*3	
Seating capacity			5			
Engine	Model No.		4G18		F9Q1	
	Total displacement mL		1,584		1,870	
Transmission	Model No.		F4A42		F5MV1	
	Type		4 speed-automatic		5 speed-manual	
Fuel system	Fuel supply system		Multi Point Fuel Injection		Fuel Injection Pump	

NOTE:
*1: Vehicles with roof rails
*2: Measured in running order condition
*3: In case of trailing towing

NOTES

SERVICE BULLETIN

QUALITY INFORMATION ANALYSIS
OVERSEAS SERVICE DEPT. MITSUBISHI MOTORS CORPORATION

SERVICE BULLETIN	**No.:** MSB-00E00-505	
	Date: 2001-09-25	**<Model>** / **<M/Y>**

Subject: ESTABLISHMENT OF GDI ENGINE IDLE LEARNING FUNCTION

Group: GENERAL

Draft No.: 00AL610610

CORRECTION

INTERNATIONAL CAR ADMINISTRATION OFFICE

T.MASAKI-MANAGER
TECHNICAL SERVICE PLANNING

<Model>	<M/Y>
(EC)PAJERO/MONTERO(V60,70)	01-10
	99-10
(EC)GALANT(EA0)	99-10
(EC)SPACE RUNNER/SPACE WAGON(N60,80,90)	98-10
	99-10
	99-10
(EC)CARISMA	
(EC)SPACE STAR(H60,70)	
(EC)PAJERO PININ	

1. Description:

On the GDI engine equipped cars, an idle learning function that will be required after replacement of the ECU (for engine control) or after resetting of the battery* has been established.

*: Disconnection of ECU (for engine control) battery backup power supply (disconnection of battery terminals or ECU connectors)

2. Applicable Manuals:

Manual	Pub. No.	Language	Page(s)
2001 PAJERO Workshop Manual VOL.1	PWJE0001 (1/2)	(English)	00-29
2001 MONTERO Workshop Manual VOL.1	PWJS0002 (1/2)	(Spanish)	
2001 PAJERO/MONTERO Workshop Manual CD-ROM	PWJT0008R	(English)	
	PWJT0008R	(Spanish)	
	PWJT0008R	(French)	
	PWJT0008R	(German)	
1999 GALANT Workshop Manual Supplement	PWDE9611-A	(English)	00-12
	PWDS9612-A	(Spanish)	
	PWDF9613-A	(French)	
	PWDG9614-A	(German)	
	PWDD9615-A	(Dutch)	
	PWDW9616-A	(Swedish)	
1999 SPACE RUNNER/SPACE WAGON Workshop Manual	PWDE9803	(English)	00-20
	PWDS9804	(Spanish)	
	PWDF9805	(French)	
	PWDG9806	(German)	
	PWDD9807	(Dutch)	
	PWDW9808	(Swedish)	

Manual	Pub. No.	Language	Page(s)
1998 CARISMA	PWDE9502-C	(English)	00-4
Workshop Manual Supplement	PWDS9503-C	(Spanish)	
	PWDF9504-C	(French)	
	PWDG9505-C	(German)	
	PWDD9506-C	(Dutch)	
	PWDW9507-C	(Swedish)	
1999 SPACE STAR	CMXE99E1	(English)	00-18
Workshop Manual	CMXS99E1	(Spanish)	
	CMXF99E1	(French)	
	CMXG99E1	(German)	
	CMXD99E1	(Dutch)	
	CMXW99E1	(Swedish)	
	CMXI99E1	(Italian)	
1999 PAJERO PININ/MONTERO SPORT	CKRE99E1	(English)	00-17
Workshop Manual	CKRS99E1	(Spanish)	
	CKRF99E1	(French)	
	CKRG99E1	(German)	
	CKRD99E1	(Dutch)	
	CKRW99E1	(Swedish)	
	CKRI99E1	(Italian)	

3. Details:
Contents of Attachment are to be added to GROUP 00 (GENERAL).

PRECAUTIONS BEFORE SERVICE
LEARNING FUNCTION OF GDI ENGINE

1. Purpose

On the GDI engine equipped cars, when replacement of the ECU (for engine control) or resetting of the battery* has been performed, an idle learning function of the ECU (for engine control) will be required.
The idle learning function will be completed by running the engine at idle by the following procedure.

NOTE:
*: Disconnection of ECU (for engine control) battery backup power supply (disconnection of battery terminals or ECU connectors)

2. Idle Learning Procedure

(1) Start the engine, and warm up the engine until its coolant temperature reaches 85℃ or higher. When the engine coolant temperature is 85℃ or higher, you have only to turn the ignition switch to the ON position.
(2) Turn the ignition switch to the LOCK (OFF) position, and stop the engine.
(3) After lapse of ten or more seconds, restart the engine.
(4) Run the engine at idle for ten minutes under the following conditions.
- Transmission: Neutral (P range for automatic transmission)
- Air conditioner and heater: Not operational
- Engine coolant temperature: 83℃ or higher

(5) Stop the engine
(6) Restart the engine, and run it at idle for ten minutes under the following condition.
- Transmission: Neutral (P range for automatic transmission)
- Air conditioner: Operational (Temperature set at “maximum cool”, fan at high speed, and windows fully opened)
- Engine coolant temperature: 83℃ or higher

(7) Repeat steps (5) and (6).

NOTE
1) When the atmospheric temperature is 20℃ or more and the air conditioner has continuously been operated, step (7) may be omitted.
2) During idling operation of the engine in steps (4) and (6), when engine operation switches from lean operation to stoichiometric operation, engine stall can occur. In this case, clean the throttle body (throttle valve) thoroughly, and then repeat step (1) and the subsequent steps.

SERVICE BULLETIN

QUALITY INFORMATION ANALYSIS
OVERSEAS SERVICE DEPT. MITSUBISHI MOTORS CORPORATION

SERVICE BULLETIN	**No.:** ESB-01E00-011		
	Date: 2002-03-19	**<Model>**	**<M/Y>**
Subject:	ADDITION OF SPECIAL MODEL FOR 2002 SPACE STAR	(EC)SPACE STAR (DG0A)	02-02
Group: GENERAL	**Draft No.:** 01CH006		
INFORMATION	**INTERNATIONAL CAR ADMINISTRATION OFFICE**	O. Kai - E.V.P. & G.M. After Sales Service Dept.	

1. Description:

This Service Bulletin informs you of addition of the special model <Joint Action Model (JAM)> for the 2002 SPACE STAR.

2. Applicable Manuals:

Manual	Pub. No.	Language	Page(s)
'02 SPACE STAR Workshop Manual chassis SUPPLEMENT	CMXE99E1-B	(English)	
	CMXS99E1-B	(Spanish)	
	CMXF99E1-B	(French)	
	CMXG99E1-B	(German)	
	CMXD99E1-B	(Dutch)	
	CMXW99E1-B	(Swedish)	
'99-'02 SPACE STAR CD-ROM	CMXX99E3-CD	(English)	
	CMXX99E3-CD	(Spanish)	
	CMXX99E3-CD	(Swedish)	
	CMXZ99E3-CD	(French)	
	CMXZ99E3-CD	(German)	
	CMXZ99E3-CD	(Dutch)	
	CMXZ99E3-CD	(Italian)	

SPACE STAR

WORKSHOP MANUAL SUPPLEMENT

FOREWORD

This manual outlines changes in servicing procedures related to the chassis including vehicle inspections, adjustments and improvements in the newly equipped models. Use the following manuals in combination with this manual required.

TECHNICAL INFORMATION MANUAL
IMXE99E1(Basic)
IMXE99E1-A (Supplement)
WORKSHOP MANUAL
CHASSIS GROUP
CMXE99E1(Basic)
CMXE99E1-A (Supplement)
CMXE99E1-B (Supplement)
ENGINE GROUP
PWEE_____
(Looseleaf edition)
ELECTRICAL WIRING
EMXE99E1(Basic)
EMXE99E1-A (Supplement)
EMXE99E1-B (Supplement)
BODY REPAIR MANUAL
BMXE99E1
PARTS CATALOGUE
C606H502D_

All information, illustrations and product descriptions contained in this manual are current as at the time of publication. We, however, reserve the right to make changes at any time without prior notice or obligation.

MITSUBISHI MOTOR SALES
Europe B.V.

GENERAL

CONTENTS

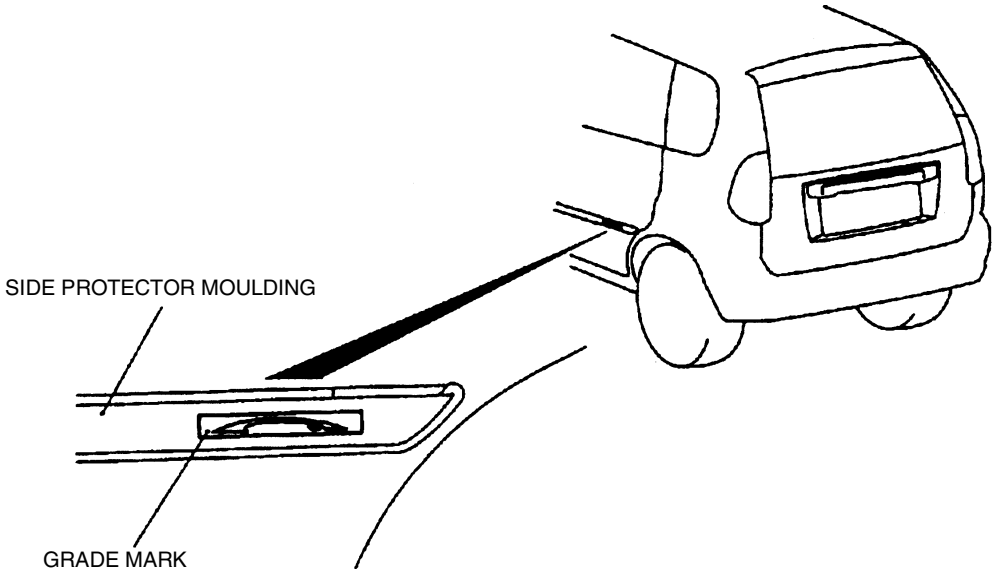
TARGETS OF DEVELOPMENT

The SPACE STAR has attained a good reputation since it has been launched in the market. In order to meet more needs in the market, a special model <Joint Action Model (JAM)> has been added. This is to diversify the launched models and to attain their improved marketability.

TECHNICAL FEATURES

A new model (JAM) has been added. The new model has the following features.

1. Interior trim exclusively for the JAM has been employed.
2. Color center panel exclusively for the JAM has been employed.
3. Color combination meter panel exclusively for the JAM has been employed.
4. Color inner door handles exclusively for the JAM have been employed.
5. 15-inch aluminium wheels exclusively for the JAM have been employed.
6. As a grade mark on the side protector moulding, the grade mark exclusively for the JAM has been added.



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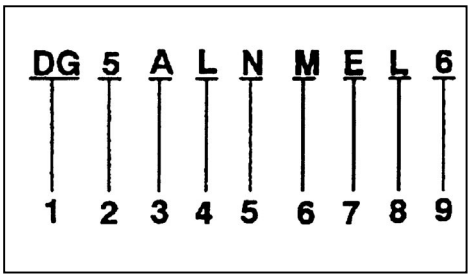
7. The color key door mirror has been employed.
8. The roof rails have been made standard equipment.

VEHICLE IDENTIFICATION

MODELS

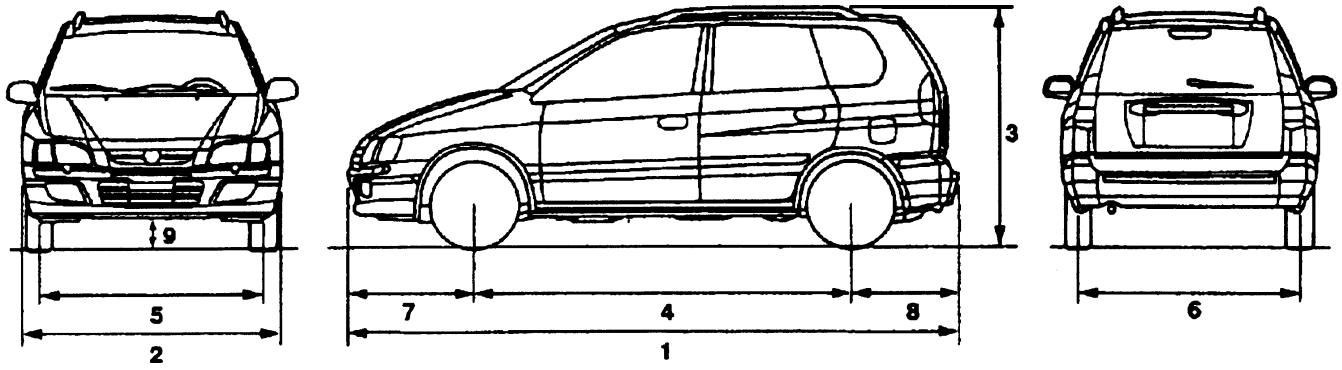
Model code		Engine Model	Transmission model	Fuel supply system
DG3A	LNMEL6/R6	4G18 MPI (1,584 mL)	F5MR1 <5M/T>	MPI (Electronically Controlled Multi Point Fuel Injection)
DG4A	LNMFL6/R6	F9Q1(1,870 mL)	F5MV1 <5M/T>	DI-D (Direct Injection Diesel)
DG5A	LNMCL6/R6	4G93 GDI (1,834 mL)	F5M42 <5M/T>	GDI (Gasoline Direct Injection)
	LRMCL6/R6		F4A42 <INVECS-II 4A/T>	



MODEL CODE

No.	Items	Contents
1	Development	DG: MISTUBISHI SPACE STAR
2	Engine type	3: 1,584 mL petrol engine 4: 1,870 mL diesel engine 5: 1,834 mL petrol engine
3	Sort	A: Passenger car
4	Body style	L: 5-door
5	Transmission type	N: 5-speed manual transmission R: 4-speed automatic transmission
6	Trim level	M: JAM
7	Specification engine feature	C: GDI E: MPI F: DI-D
8	Steering wheel location	L: Left hand R: Right hand
9	Destination	6: For Europe

MAJOR SPECIFICATIONS



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Items			DG3A LNMEL6, LNMER6	DG5A LNMCL6, LNMCR6
Vehicle dimensions mm	Overall length	1	4,030	4,030
	Overall width	2	1,715	1,715
	Overall height (unladen)	3	1,555	1,555
	Wheelbase	4	2,490	2,490
	Track-front	5	1,475	1,475
	Track-rear	6	1,470	1,470
	Overhang-front	7	835	835
	Overhang-rear	8	695	695
	Ground clearance (unladen)	9	155	150
Vehicle weight kg	Kerb weight		1,175	1,240
	Max. gross vehicle weight rating		1,690	1,730
	Max. axle weight rating-front		880	920
	Max. axle weight rating-rear		850	850
Seating capacity			5	
Engine	Model No.		4G18	4G93
	Total displacement mL		1,584	1,834
Transmis-sion	Model No.		F5MR1	F5M42
	Type		5 speed-manual	
Fuel system	Fuel supply system		MPI	GDI

Items			DG5A LRMCL6, LRMCR6	DG4A LNMFL6, LNMFR6
Vehicle dimensions mm	Overall length	1	4,030	4,030
	Overall width	2	1,715	1,715
	Overall height (unladen)	3	1,555	1,555
	Wheelbase	4	2,490	2,490
	Track-front	5	1,475	1,475
	Track-rear	6	1,470	1,470
	Overhang-front	7	835	835
	Overhang-rear	8	695	695
	Ground clearance (unladen)	9	150	145
Vehicle weight kg	Kerb weight		1,255	1,260
	Max. gross vehicle weight rating		1,730	1,730
	Max. axle weight rating-front		920	920
	Max. axle weight rating-rear		850	850
Seating capacity			5	
Engine	Model No.		4G93	F9QT
	Total displacement mL		1,834	1,870
Transmis-sion	Model No.		F4A42	F5MV1
	Type		4 speed-automatic	5 speed-manual
Fuel system	Fuel supply system		GDI	DI-D

GROUP 31
WHEEL AND TYRE

GENERAL
OUTLINE OF CHANGE
With addition of a special model <Joint Action Model (JAM)>, the specifications have been established as follows:

GENERAL INFORMATION
SPECIFICATIONS

Items		Special model <Joint Action Model (JAM)>	Base model (COMFORT)
Wheel	Type	Aluminium type	Steel type Aluminium type*
	Size	15 x 6.0J	14 x 5.5J, 14 x 5.5JJ*, 15 x 6.0J*
	Amount of wheel offset mm	46	46
	Pitch circle diameter (P.C.D.) mm	114.3	114.3
Tyre	Size	195/55R15 85H	185/65R14 86H, 195/55R15 85H*
Spare wheel	Type	Steel type	Steel type
	Size	15 x 4.0T, 15 x 6.0J*	15 x 4.0T, 14 x 5.5J*, 15 x 6.0J*
	Amount of wheel offset mm	46	46
	Pitch circle diameter (P.C.D.) mm	114.3	114.3
Spare tyre	Size	T125/70 D15 (High pressure) 195/55R15 85H*	T125/70 D15(High pressure) 185/65R14 86H*, 195/55R15 85H*

NOTE
*: Optional items