

GROUP 00

GENERAL

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HOW TO USE THIS MANUAL

M1001000100682

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).

DANGER, WARNING, AND CAUTION

DANGER, WARNING, and CAUTION call special attention to a necessary action or to an action that must be avoided. The differences among DANGER, WARNING, and CAUTION are as follows:

- If a DANGER is not followed, the result is severe bodily harm or even death.
- If a WARNING is not followed, the result could be bodily injury.
- If a CAUTION is not followed, the result could be damage to the vehicle, vehicle components or service equipment.

INDICATION OF TIGHTENING TORQUE

Tightening torques (units: N·m) are set to take into account the central value and the allowable tolerance. The central value is the target value, and the allowable tolerance provides the checking range for tightening torques. If bolts and nuts are not provided with tightening torques, refer to [P.00-30](#).

MODEL INDICATIONS

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

2400:Indicates an engine with the 2,378mL <4G69> petrol engine.

MPI:Indicates the multipoint injection.

SOHC:Indicates an engine with the single overhead camshaft.

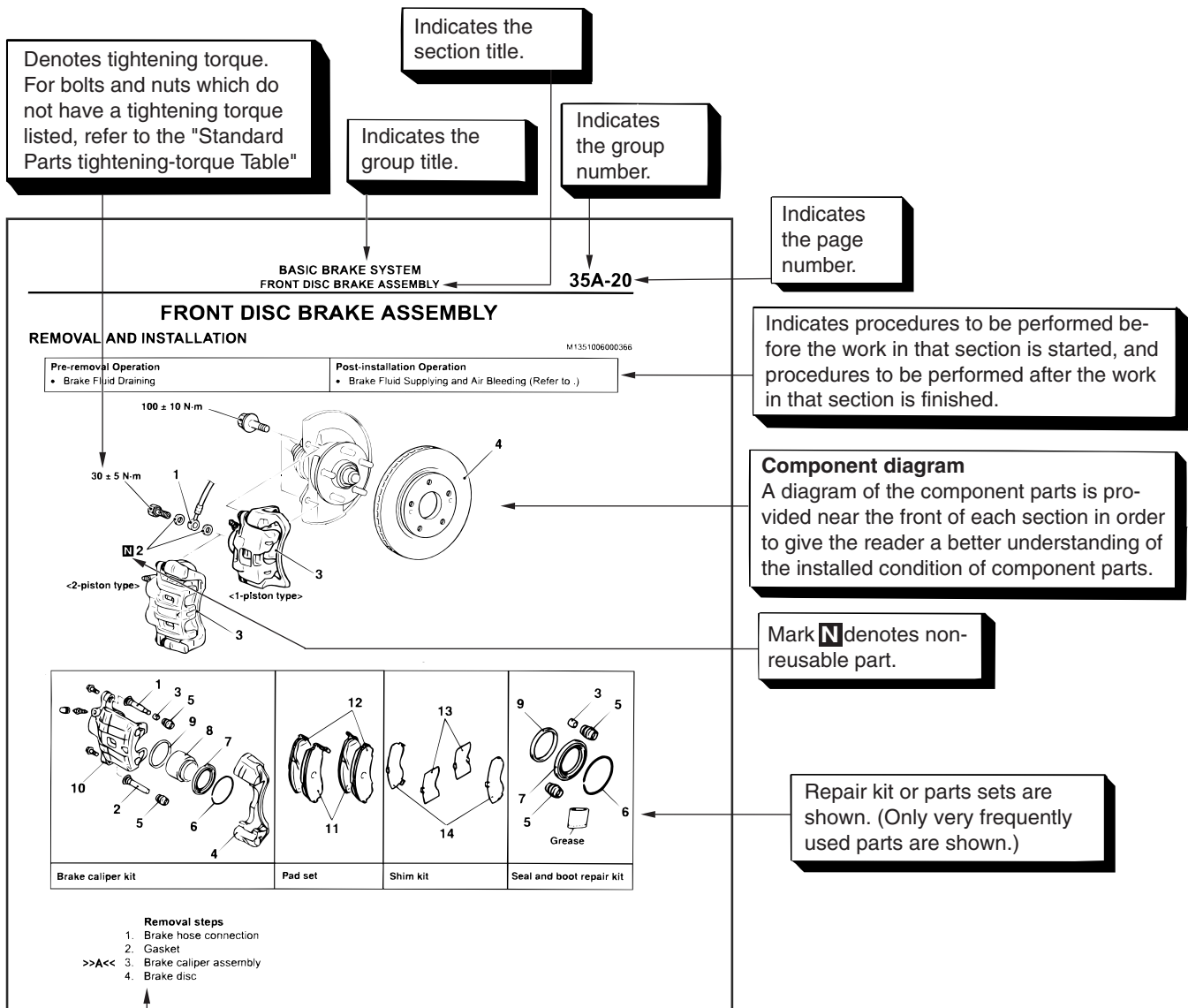
MIVEC:Indicates the mitsubishi innovative valve timing and lift electronic control system

M/T:Indicates the manual transmission.

A/T:Indicates the automatic transmission.

A/C:Indicates the air conditioner.

EXPLANATION OF MANUAL CONTENTS



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 installation is impossible in reverse order of removal 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.

BASIC BRAKE SYSTEM
FRONT DISC BRAKE ASSEMBLY

35A-21

INSTALLATION SERVICE POINT

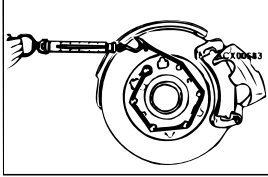
>>A<< DISC BRAKE ASSEMBLY INSTALLATION

1. To check the brake drag force after mounting the pad, measure the hub torque in the advancing direction using a spring balance with the pad is removed.

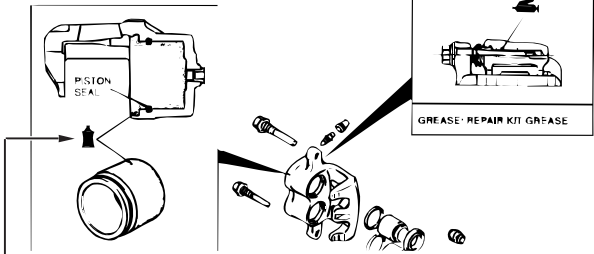
CAUTION
Do not allow any oil, grease or other contamination to contact the friction surfaces of the pads and brake discs.

2. After re-installing the caliper support to the knuckle, install the pad clips and the pads to the caliper support.

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



LUBRICATION AND SEALING POINTS








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.

Indicates (by symbols) where lubrication is necessary.

Symbols for lubrication, sealants and adhesives

Symbols are used to show the locations for lubrication and for application of sealants and adhesives.

These symbols are included in the diagram of component parts or on the page following the component parts page. The symbols do not always have accompanying text to support that symbol.

-  : Grease
(Multi-purpose grease unless there is a brand or type specified)
-  : Sealant or adhesive
-  : Brake fluid or automatic transmission fluid
-  : Engine oil, gear oil or air conditioning compressor oil
-  : Adhesive tape or butyl rubber tape

HOW TO USE TROUBLESHOOTING/INSPECTION SERVICE POINTS

M1001000200593

CONTENTS OF TROUBLESHOOTING

⚠ CAUTION

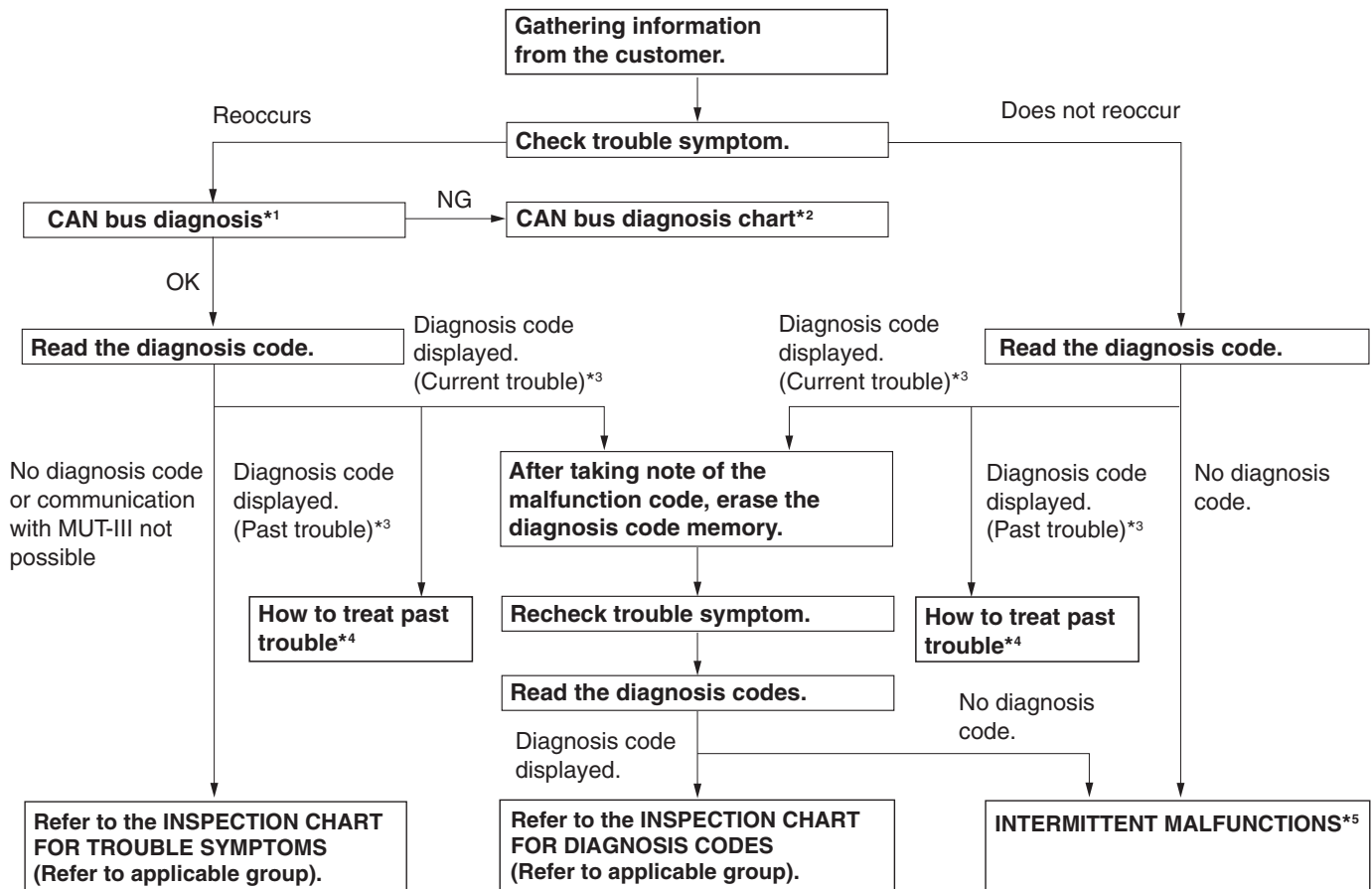
During diagnosis, a diagnosis code associated with other system may be set when the ignition switch is turned on with connector(s) disconnected. On completion, confirm all systems for diagnosis code(s). If diagnosis code(s) are set, erase them all.

Troubleshooting of electronic control systems for which the MUT-III can be used follows the basic outline described below. Even in systems for which the MUT-III cannot be used, some of these systems still follow this outline.

1. STANDARD FLOW OF DIAGNOSIS TROUBLESHOOTING

Troubleshooting sections are based on the diagnostic flow as below. If the diagnostic 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



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- *1: For how to diagnose CAN bus lines, refer to GROUP 54 [P.54D-9](#).

- *2: For the CAN bus diagnostics table, refer to GROUP 54 [P.54D-16](#).
- *3: When the MUT-III detects a diagnosis code, its display informs users whether a mechanical problem currently exists or whether it existed before but normal operation has been restored. The message for the former state identifies it as a "current trouble" and the message for the latter identifies it as a "past trouble". However, if MPI and SRS airbag diagnosis codes are set, "current trouble/past trouble" will not be displayed. In this case, follow the diagnosis procedure for current trouble.
- *4: For how to handle past trouble, refer to .
- *5: For how to cope with intermittent malfunctions, refer to .

2. SYSTEM OPERATION AND SYMPTOM VERIFICATION TESTS

If verification of the symptom(s) is difficult, procedures for checking operation and verifying symptoms are shown.

3. DIAGNOSIS FUNCTION

Details which are different from those in the "Diagnosis Function " section are described.

4. DIAGNOSIS CODE CHART

Diagnostic trouble codes and diagnostic items are shown.

5. DIAGNOSIS CODE PROCEDURES

Indicates the inspection procedures corresponding to each diagnosis code (Refer to How to Use Inspection Procedures).

6. TROUBLE SYMPTOM CHART

If there are trouble symptoms even though the MUT-III does not find any diagnosis codes, Inspection procedures for each trouble symptom will be found by means of this chart.

7. SYMPTOM PROCEDURES

Indicates the inspection procedures corresponding to each symptoms classified in the Symptom Chart (Refer to How to Use Inspection Procedures).

8. SERVICE DATA REFERENCE TABLE

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

9. ACTUATOR TEST TABLE

The Actuator Test item numbers, inspection items, and judgment values have been provided in this chart as reference information.

10. CHECK AT ECU TERMINALS

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

11. INSPECTION PROCEDURE BY USING AN OSCILLOSCOPE

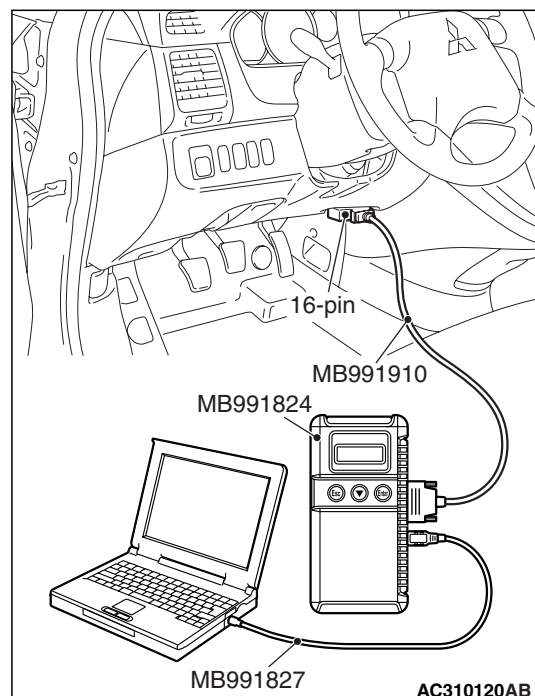
When there are inspection procedures using an oscilloscope, these are described here.

DIAGNOSIS FUNCTION

1. HOW TO READ DIAGNOSIS CODE

CAUTION

Before connecting or disconnecting the MUT-III, turn the ignition switch to the "LOCK" (OFF) position.



Connect the MUT-III to the 16-pin diagnosis connector, and read the diagnosis code.

NOTE: For details on how to use the MUT-III, refer to the "MUT-III operation manual."

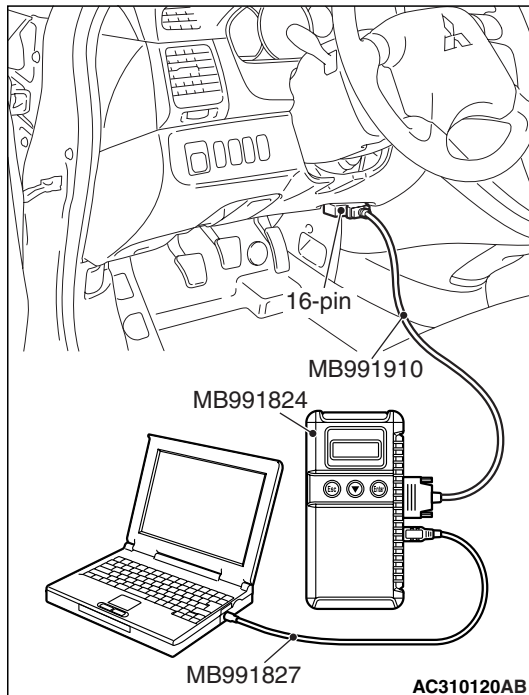
1. Ensure that the ignition switch is at the "LOCK" (OFF).
2. Start up the personal computer.
3. Connect MUT-III USB cable MB991827 to special tool Vehicle Communication Interface (V.C.I.) MB991824 and the personal computer.

4. Connect MUT-III main harness A MB991910 to the V.C.I.
5. Connect the MUT-III main harness A to the diagnosis connector.
6. Turn the V.C.I. power switch to the "ON" position.
NOTE: When the V.C.I. is energized, the V.C.I. indicator lamp will be illuminated in a green colour.
7. Start the MUT-III system on the personal computer and turn the ignition switch to the "ON" position.
8. Read the diagnosis code.
9. Disconnecting the MUT-III is the reverse of the connecting sequence, making sure that the ignition switch is at the "LOCK" (OFF).

2. ERASING DIAGNOSIS CODE

⚠ CAUTION

Before connecting or disconnecting the MUT-III, turn the ignition switch to the "LOCK" (OFF) position.

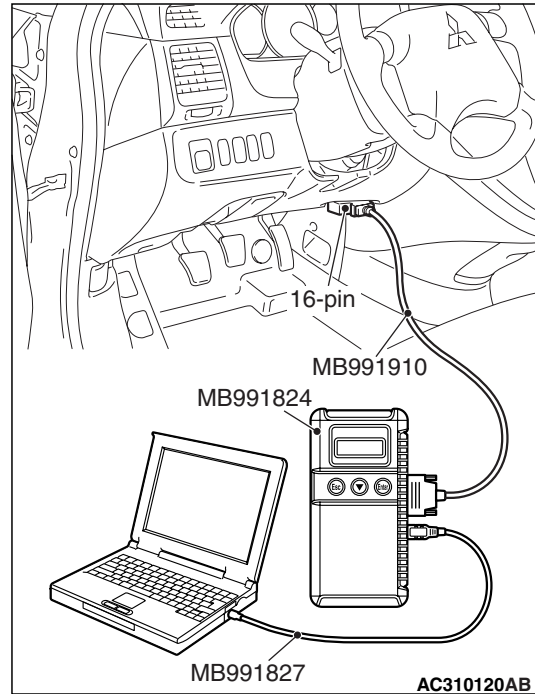


Connect the MUT-III to the diagnosis connector, and erase the diagnosis code. The procedure is the same as "How to Read Diagnosis Code ."

3. INPUT SIGNAL CHECK (WHEN USING THE MUT-III) <SWS>

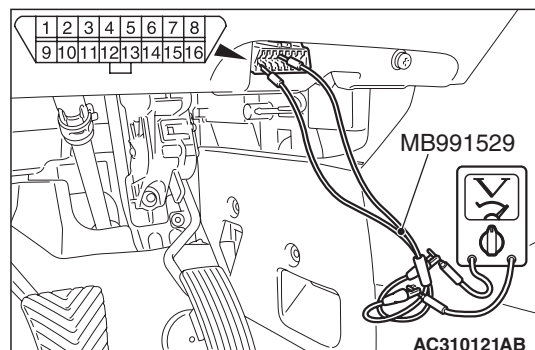
⚠ CAUTION

Before connecting or disconnecting the MUT-III, turn the ignition switch to the "LOCK" (OFF) position.



1. Connect the MUT-III to the diagnosis connector, and erase the diagnosis code.
2. If the MUT-III buzzer sounds once when each switch is operated (ON/OFF), the input signal for that switch circuit system is normal.

3. INPUT SIGNAL CHECK (WHEN USING A VOLTMETER) <SWS>



1. Use the special tool diagnosis code check harness (MB991529) to connect the ETACS terminal (terminal 9) and the earth terminals (terminals 4 and 5) of the diagnosis connector to the voltage meter.

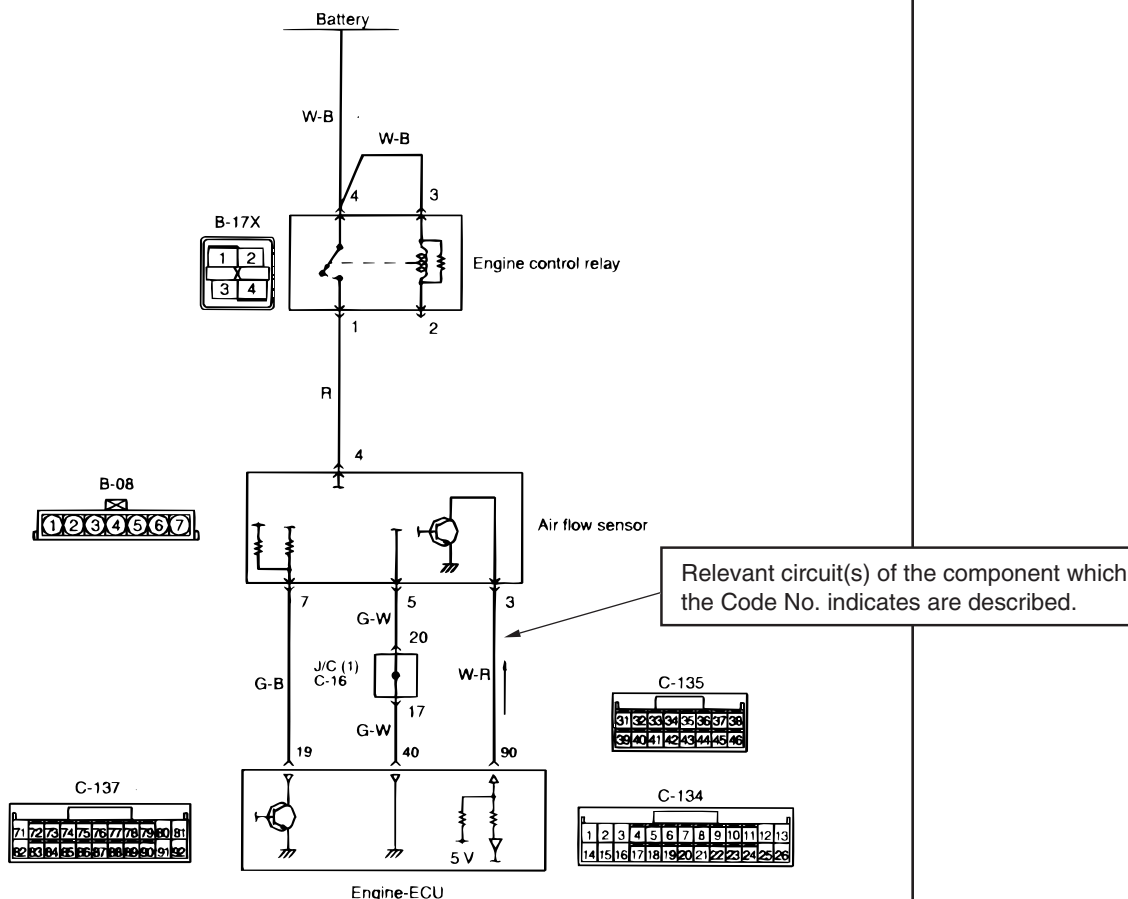
2. If the needle of the voltage meter flickers once when each switch is operated (ON/OFF), the input signal for that switch circuit system is normal.

HOW TO USE THE INSPECTION PROCEDURES

The causes of many of the problems occurring in electric circuitry are generally the connectors, components, the ECU, the wiring harnesses between connectors, in that order. These inspection procedures follow this order. They first try to discover a problem with a connector or a defective component.

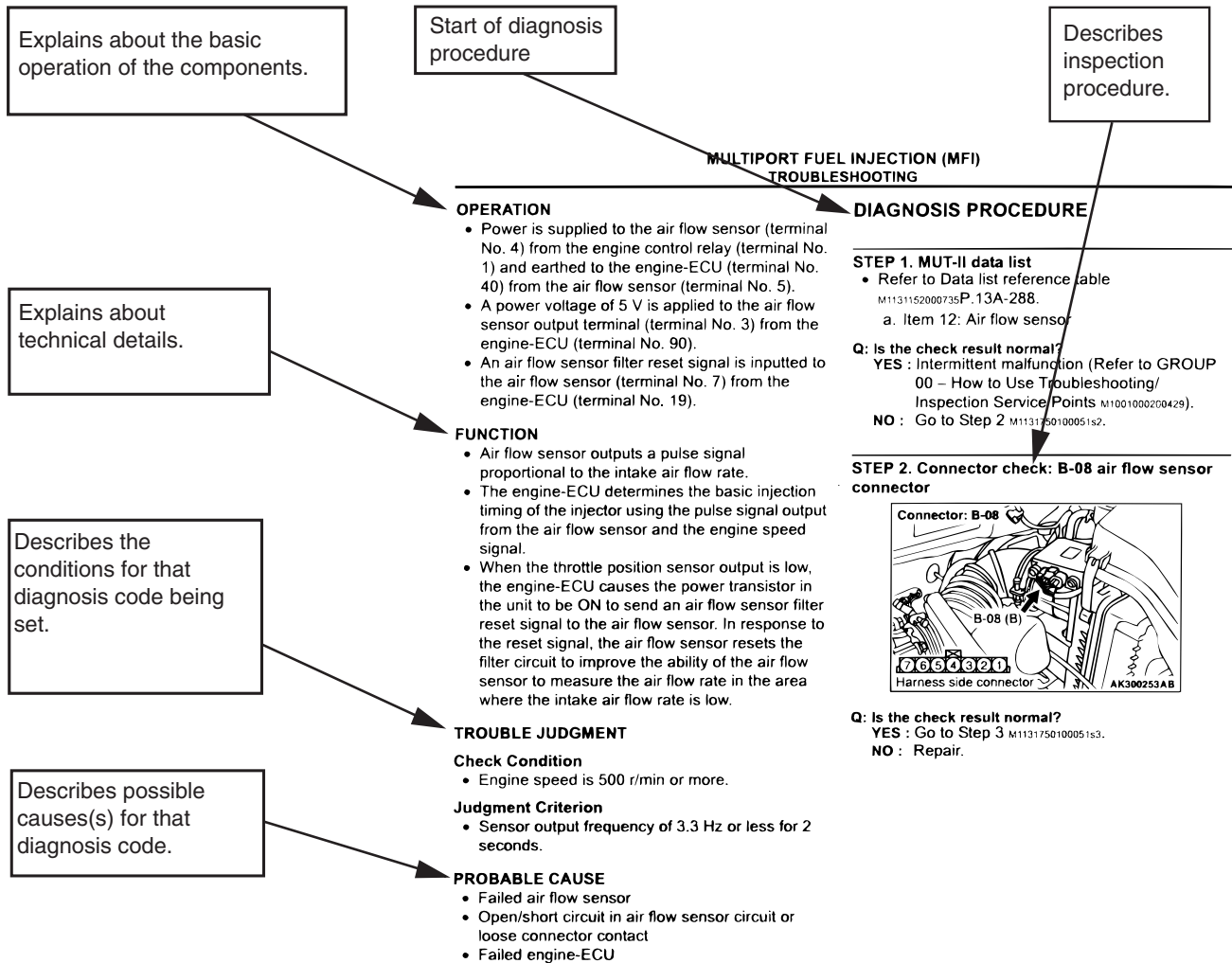
Code No. P0100 Air Flow Sensor System

Air flow sensor circuit



Wire colour code

B: Black LG: Light green G: Green L: Blue W: White Y: Yellow SB: Sky blue BR: Brown O: Orange GR: Gray
R: Red P: Pink V: Violet



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CURRENT TROUBLE

Indicates that the trouble is currently present. Carry out troubleshooting as described in the applicable inspection procedure.

PAST TROUBLE

Indicates that the trouble is historic, but normal operation has been restored. Observe the applicable inspection procedure with particular emphasis on connector(s) and wiring harness.

HARNESS CHECK

Check for an open or short circuit in the harness between the terminals which were faulty according to the connector measurements. Carry out this inspection while referring to the Electrical Wiring Manual. Here, "Check the wiring harness between the power supply and terminal xx" also includes checking for blown fuse. 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

⚠ CAUTION

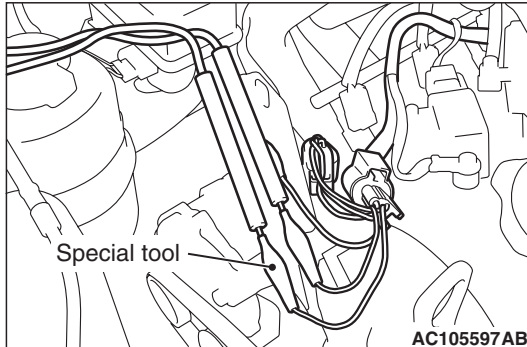
During diagnosis, a diagnosis code associated with other system may be set when the ignition switch is turned on with connector(s) disconnected. On completion, confirm all systems for diagnosis code(s). If diagnosis code(s) are set, erase them all.

Turn the ignition switch to the "LOCK" (OFF) position when connecting and disconnecting the connectors. Turn the ignition switch to "ON" when measuring, unless there are instructions to the contrary.

IF INSPECTING WITH THE CONNECTOR CONNECTED <WATERPROOF CONNECTORS>

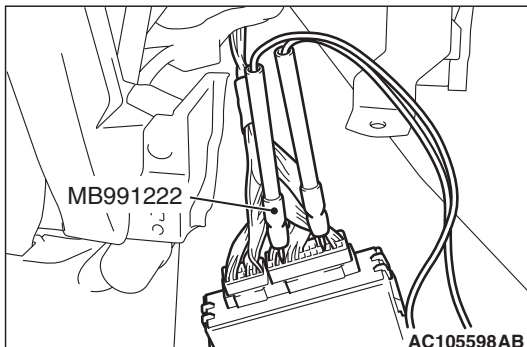
⚠ CAUTION

Never insert a test probe from the harness side, as this will reduce the waterproof performance and result in corrosion.



Use the special tools such as test harness, harness connector or check harness.

IF INSPECTING WITH THE CONNECTOR CONNECTED <ORDINARY (NON-WATERPROOF) CONNECTORS>

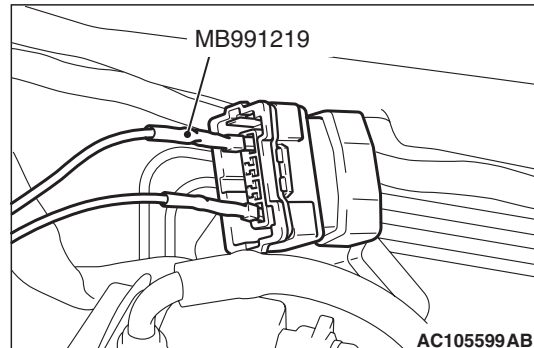


Insert a test bar from the wiring harness side. If a test bar cannot be inserted due to a too small pin cell (e.g. control unit connector pins), use the probe (MB991222) of the special tool Harness Set (MB991223). Never attempt to insert the test bar into a too small pin cell forcibly.

IF INSPECTING WITH THE CONNECTOR DISCONNECTED <WHEN INSPECTING A FEMALE PIN>

⚠ CAUTION

- Use the special tool Check Harness (MB991219). If the test bar is inserted forcibly, it will cause a poor contact.
- If the connector is disconnected, a diagnosis code may be stored for the system to be checked or other systems.

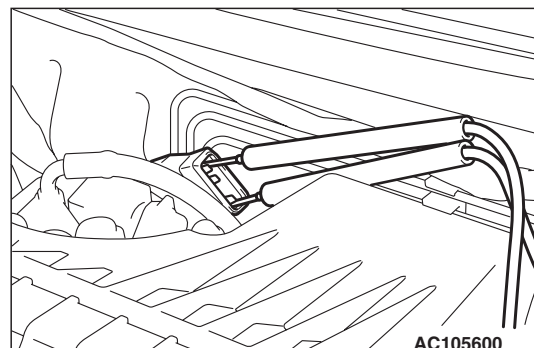


Use the Check Harness (MB991219) of the special tool Harness Set (MB991223).

IF INSPECTING WITH THE CONNECTOR DISCONNECTED <WHEN INSPECTING A MALE PIN>

⚠ CAUTION

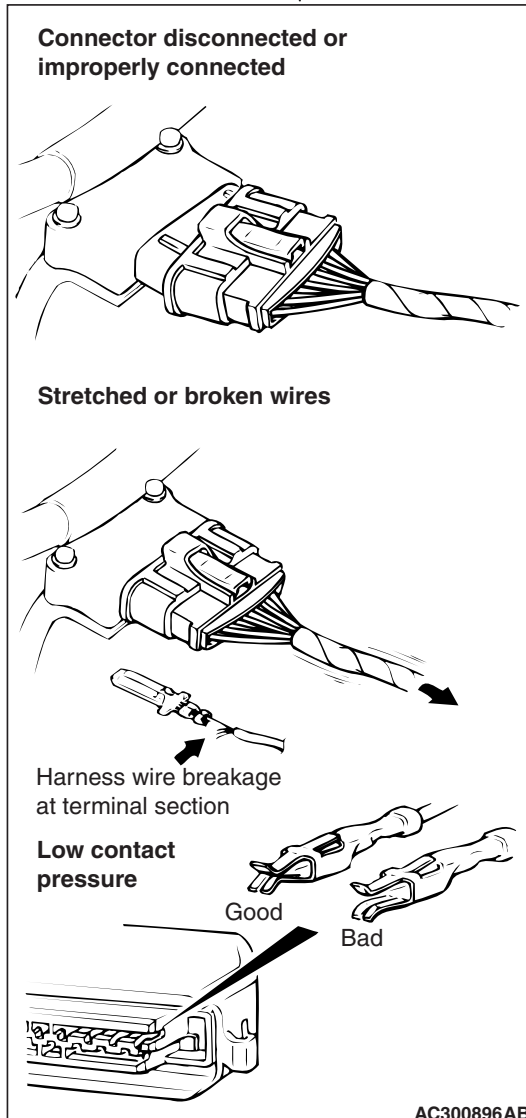
- Be careful not to short the connector pins with the test bars. To do so may damage the circuits inside the ECU.
- If the connector is disconnected, a diagnosis code may be stored for the system to be checked or other systems.



Touch the pin directly with the test bar.

CONNECTOR INSPECTION SERVICE POINTS

VISUAL INSPECTION

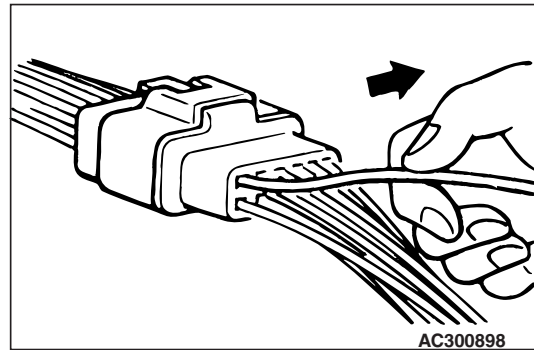


Connector is disconnected or improperly connected

- Connector pins are pulled out
- Due to harness tension at terminal section
- Low contact pressure between male and female terminals

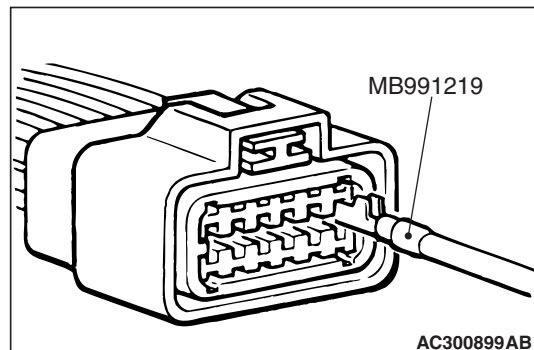
- Low connection pressure due to rusted terminals or foreign matter lodged in terminals

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.

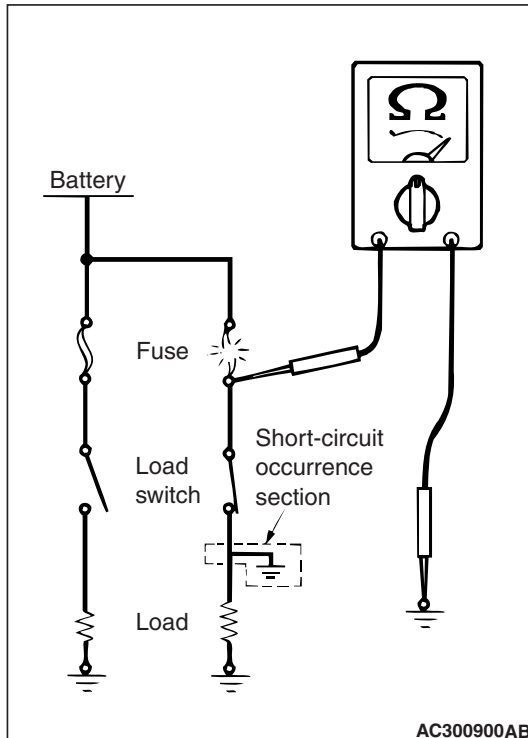
CONNECTOR ENGAGEMENT INSPECTION



Use special tool inspection harness (MB991219) (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**⚠ CAUTION**

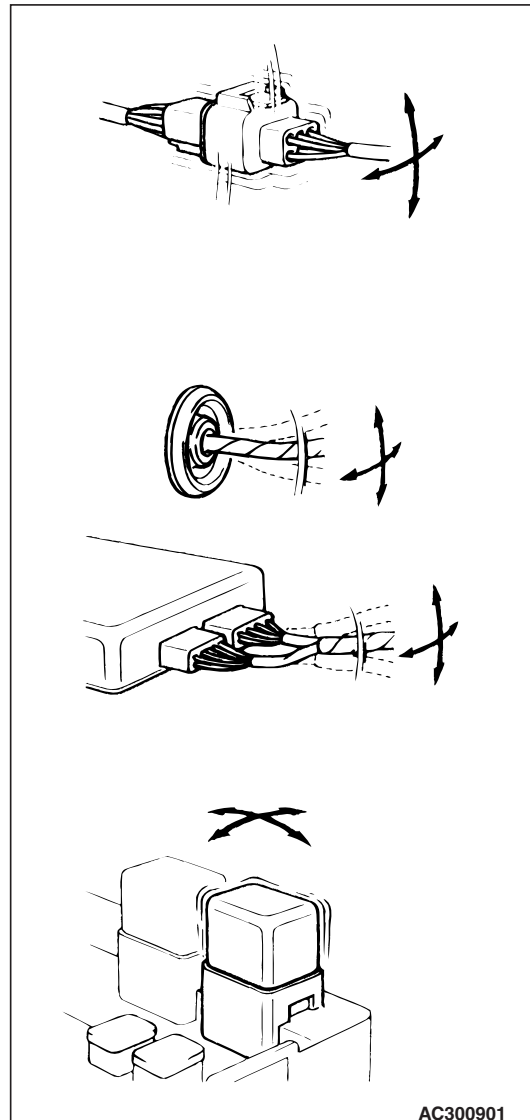
A diagnosis code may be stored due to a blown fuse.



Remove the blown fuse and measure the resistance between the load side of the blown fuse and the earth. Close the switches of all circuits which are connected to this fuse. If the resistance is almost $0\ \Omega$ at this time, there is a short somewhere between these switches and the load. If the resistance is not $0\ \Omega$, 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.)

HOW TO COPE WITH 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 drive recorder function of the MUT-III can also be used. (For details on how to use the MUT-III, refer to the "MUT-III operation manual").

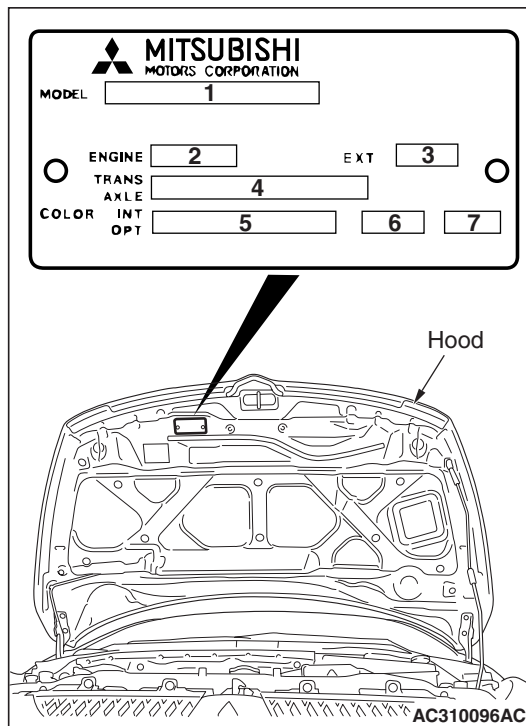
HOW TO TREAT PAST TROUBLE

1. Establish from the customer whether a fuse or connector has been replaced or disconnected.
2. If yes, erase the diagnosis code, and then check that no diagnostic code is reset. If no diagnosis code is reset, the diagnosis is complete.
3. If no, follow the applicable Diagnostic Trouble Code Chart. Then check the wiring harness and connector, and refer to "How to Cope with Intermittent Malfunction ."

VEHICLE IDENTIFICATION

M1001000400768

VEHICLE IDENTIFICATION CODE PLATE



The vehicle information code plate is riveted to the back of the hood.

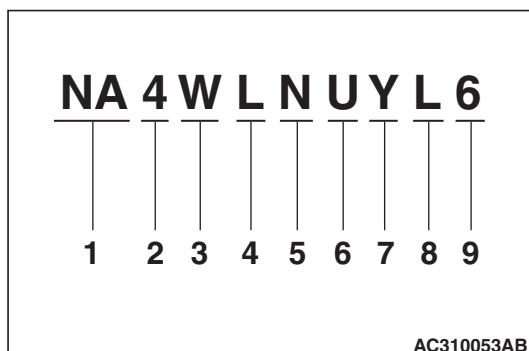
No.	Item	Content	
1	MODEL	NA4W	Vehicle model
		LNHYL6	Model series
2	ENGINE	4G69	Engine model
3	EXT	W32A	Exterior code
4	TRANS AXLE	F5M42	Transmission model
5	COLOR	W32	Body colour code
6	INT	22T	Interior code
7	OPT	Z36	Equipment code

- The plate shows model code, engine model, transmission model and body colour code.
- For monotone colour vehicles, the body colour code shall be indicated.

MODELS

Model code		Engine model	Transmission model	Fuel supply system
NA4W	LNUYL6/R6	4G69-SOHC-MIVEC (2,378 mL)	F5M42 <2WD, 5M/T>	MPI
	LRUYL6/R6		F4A4B <2WD, 4A/T with sport mode>	
	LNHYL6/R6		F5M42 <2WD, 5M/T>	
	LRHYL6/R6		F4A4B <2WD, 4A/T with sport mode>	

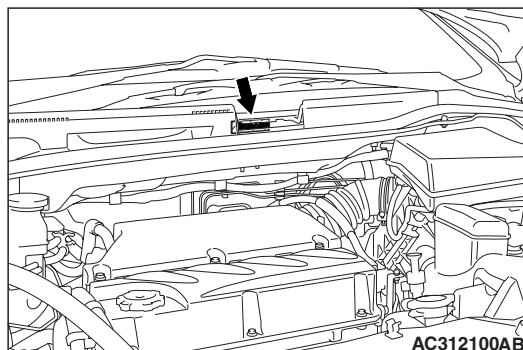
MODEL CODE



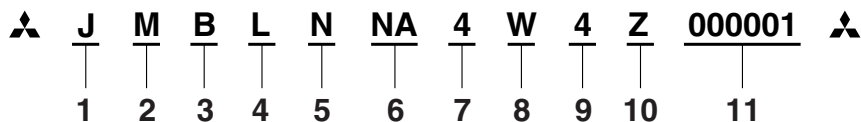
No.	Item		Content
7	Specification engine feature	Y	MPI-SOHC-MIVEC
8	Steering wheel location	L	Left hand
		R	Right hand
9	Destination	6	For Europe

No.	Item		Content
1	Development	NA	GRANDIS
2	Engine type	4	2,378mL
3	Sort	W	Wagon
4	Body style	L	4-door station wagon
5	Transmission type	N	5-speed manual transmission
		R	4-speed automatic transmission
6	Trim level	U	7 seating
		H	6 seating

CHASSIS NUMBER



The chassis number is stamped inside the bulkhead as shown in the illustration.

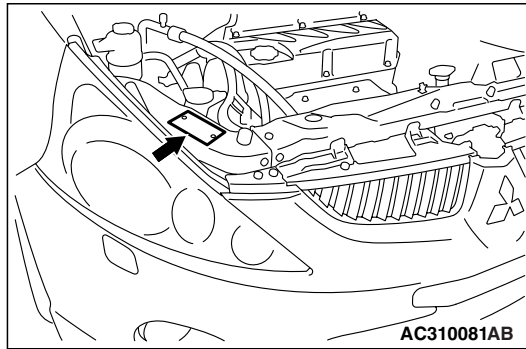




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No.	Item		Content
1	Fixed figure	J	Asia
2	Distribution channel	M	Japan
3	Destination	A	For Europe, right hand drive
		B	For Europe, left hand drive
4	Body style	L	4-door station wagon
5	Transmission type	N	5-speed manual transmission
		R	4-speed automatic transmission
6	Development order	NA	GRANDIS
7	Engine	4	4G69: 2,378 mL petrol engine
8	Soft	W	Station wagon
9	Model year	4	2004
10	Plant	Z	Okazaki Motor Vehicle Works
11	Serial number		000001 to 999999

VEHICLE NAME PLATE

The name plate is riveted to the front end upper bar in the engine room.




J **M** **B** **L** **N** **NA** **4** **W** **4** **Z** **000001**


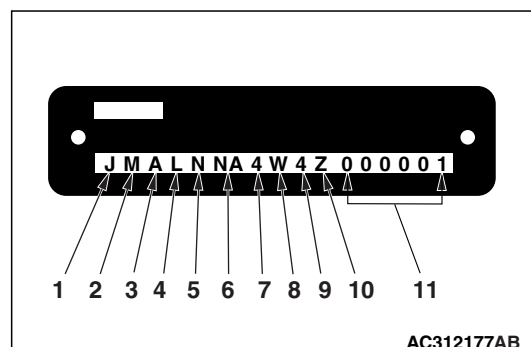
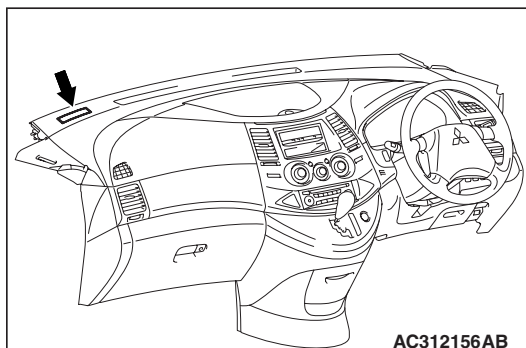
1 2 3 4 5 6 7 8 9 10 11

AC310082AB

No.	Item	Content
1	Fixed figure	J Asia
2	Distribution channel	M Japan
3	Destination	A For Europe, right hand drive B For Europe, left hand drive
4	Body style	L 4-door station wagon
5	Transmission type	N 5-speed manual transmission R 4-speed automatic transmission
6	Development order	NA GRANDIS
7	Engine	4 4G69: 2,378 mL petrol engine
8	Soft	W Station wagon
9	Model year	4 2004
10	Plant	Z Okazaki Motor Vehicle Works
11	Serial number	000001 to 999999

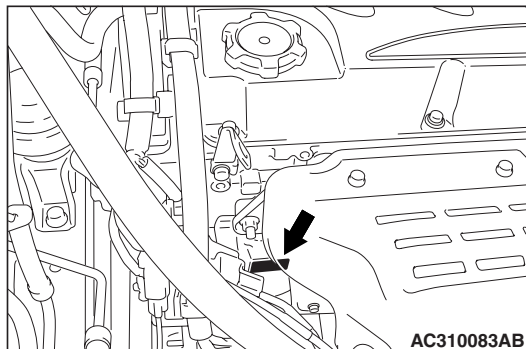
VEHICLES IDENTIFICATION NUMBER LOCATION <VEHICLES FOR ENGLAND>

The vehicle identification number (VIN) is located on a plate attached to the left top side of the instrument panel.



No.	Item		Content
1	Fixed figure	J	ASIA
2	Distribution channel	M	JAPAN
3	Destination	A	Vehicles for right hand
4	Body style	L	4-door station wagon
5	Transmission type	N	5-speed manual transmission
		R	4-speed automatic transmission
6	Development order	NA	GRANDIS
7	Engine	4	4G69: 2,378 mL petrol engine
8	Sort	W	Station wagon
9	Model year	4	2004
10	Plant	Z	Okazaki Motor Vehicle Works
11	Serial number		000001 to 999999

ENGINE MODEL STAMPING



The engine model is stamped on the cylinder block. This engine model numbers is as shown as follow.

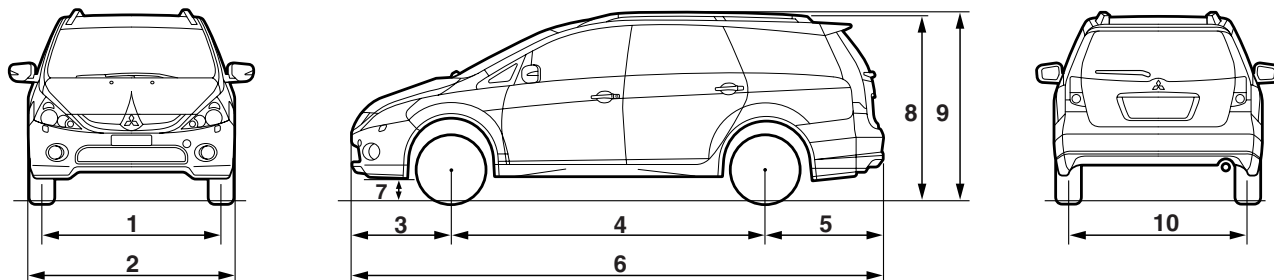
Engine model	Engine displacement
4G69	2,378 mL

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

Engine serial number	AA0201 to YY9999
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GENERAL DATA AND SPECIFICATIONS

M1001000900592



AC311125AB

Item			NA4W				
			LNUYL6/R6	LRUYL6/R6	LNHYL6/R6	LRHYL6/R6	
Vehicle dimensions mm	Front track		1	1,550	1,550	1,550	1,550
	Overall width		2	1,795	1,795	1,795	1,795
	Front overhang		3	900	900	900	900
	Wheelbase		4	2,830	2,830	2,830	2,830
	Rear overhang		5	1,035	1,035	1,035	1,035
	Overall length		6	4,765	4,765	4,765	4,765
	Ground clearance		7	155 165*	155 165*	155 165*	155 165*
	Overall height	Without roof rails	8	1,655 1,665*	1,655 1,665*	1,655 1,665*	1,655 1,665*
		With roof rails	9	1,690 1,700*	1,690 1,700*	1,690 1,700*	1,690 1,700*
Rear track		10	1,555	1,555	1,555	1,555	
Vehicle weight kg	Kerb weight			1,645	1,655	1,625	1,635
	Max. gross vehicle weight			2,250	2,250	2,250	2,250
	Max. axle weight rating-front			1,100	1,100	1,100	1,100
	Max. axle weight rating-rear			1,190	1,190	1,190	1,190
Seating capacity			7	7	6	6	
Engine	Model code			4G69	4G69	4G69	4G69
	Total displacement mL			2,378	2,378	2,378	2,378
	Maximum output kW(PS)/rpm			121(165)/6,000	121(165)/6,000	121(165)/6,000	121(165)/6,000
	Maximum torque N·m(kg-m)/rpm			217(22.1)/4,000	217(22.1)/4,000	217(22.1)/4,000	217(22.1)/4,000
Transmission	Model code			F5M42	F4A4B	F5M42	F4A4B
	Type			5-speed manual	4-speed automatic	5-speed manual	4-speed automatic
Fuel system	Fuel supply system			MPI	MPI	MPI	MPI
Performance	Maximum speed km/h			200	190	200	190
	Minimum turning radius m	With 16-inch wheel		5.5	5.5	5.5	5.5
		With 17-inch wheel		5.8	5.8	5.8	5.8

NOTE: *: Vehicles with high earth suspensions <LH drive vehicles>

PRECAUTIONS BEFORE SERVICE

M1001000500549

SUPPLEMENTAL RESTRAINT SYSTEM (SRS)

CAUTION

1. Items to review when servicing SRS:

- a. Be sure to read GROUP 52B – Supplemental Restraint System (SRS). For safe operation, please follow the directions and heed all warnings.
- b. 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.
- c. Warning labels must be heeded when servicing or handling SRS components. Warning labels can be found in the following locations.
 - Air bag module (Driver's and front passenger's)
 - Clock spring
 - Curtain air bag module (Driver's side and front passenger's side)
 - Front impact sensor
 - Glove box
 - Hood
 - Instrument panel
 - Passengers air bag cut off switch
 - Seat belt pre-tensioner
 - Side air bag module (Driver's side and front passenger's side)
 - Side impact sensor
 - SRS-ECU
 - Steering wheel
 - Steering joint cover
 - Sun visor
- d. Always use the designated special tools and test equipment.
- e. 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.
- f. Never attempt to disassemble or repair the

SRS components (SRS-ECU, air bag module and clock spring).

- g. Whenever you finish servicing the SRS, check the SRS warning lamp operation to make sure that the system functions properly.
 - h. 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 [P.52B-246](#)).
- #### 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.
- a. When removing or installing parts, do not allow any impact or shock to the SRS components.
 - b. If heat damage may occur during paint work, remove the SRS-ECU, the air bag module, clock spring, the front impact sensor, the side impact sensor, and the seat belt pre-tensioner.
 - SRS-ECU, air bag module, clock spring, front impact sensor, the side impact sensor: 93 °C or more
 - Seat belt pre-tensioner: 90 °C or more

INITIALIZATION PROCEDURE FOR LEARNING VALUE IN MPI ENGINE INITIALIZATION PROCEDURE

1. After the ignition switch is in "LOCK" (OFF) position, connect MUT-III with the diagnosis connector.
2. Select the item on the screen of the initialisation for learning, and perform the initialisation.

Service	Item
At replacing engine assembly *1,*2	All ranges
_ *3	Misfire-related
At replacing injector and at cleaning *2	Learning value for air/fuel ratio
At replacing throttle body and at cleaning *2	Idle speed control-related
At replacing detonation sensor	Learning value for knocking

NOTE: *1: Initialize A/T-related learning value.

*NOTE: *²: After initialising the learning value, the idling learning in MPI engine is required (Refer to LEARNING PROCEDURE FOR IDLING IN MPI ENGINE).*

*NOTE: *³: The datum items on MUT-III display are shown, but do not use them.*

LEARNING PROCEDURE FOR IDLING IN MPI ENGINE

PURPOSE

When the engine-ECU <M/T> or the engine-A/T-ECU <A/T> is replaced, or when the learning value is initialized, the idling is not stabilized because the learning value in MPI engine is not completed. In this case, carry out the learning method for the idling through the following procedures.

LEARNING PROCEDURE

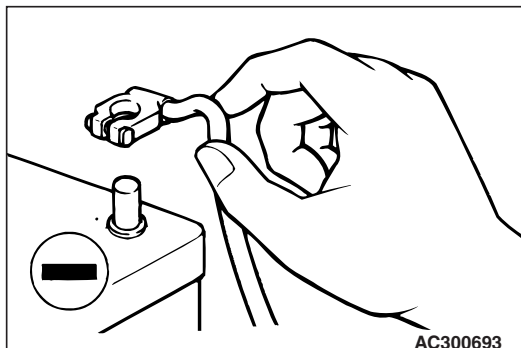
1. Start the engine and carry out the warm-up for the engine coolant temperature to reach 80°C or more.
2. When the engine coolant temperature is 80°C or more, the warm-up is not needed if the ignition switch is in "ON" position once.
3. Place the ignition switch in "LOCK" (OFF) position and stop the engine.
4. After 10 seconds or more, start the engine again.
5. For 10 minutes, carry out the idling under the condition shown below and then confirm the engine has the normal idling.
 - Transmission: Neutral (A/T: "P" range)
 - Operation in ignition-related, fan and attachments: Not to be operated
 - Engine coolant temperature: 80°C or more

NOTE: When the engine stalls during the idling, check the dirtiness (on the throttle valve) of the throttle body and then perform the service from Procedure 1 again.

SERVICING ELECTRICAL SYSTEM

⚠ 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).



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.

APPLICATION OF ANTI-CORROSION AGENTS AND UNDERCOATS

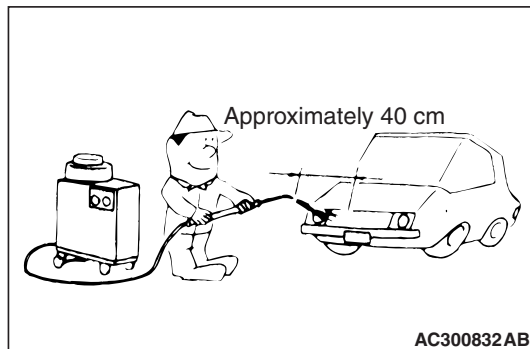
If oil or grease gets onto the oxygen sensor, it will cause a drop in the performance of the sensor. Cover the oxygen sensor with a protective cover when applying anti-corrosion agents and undercoats.

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 to 90°C
- Lamps, electric cooling fan and all accessories: OFF
- M/T: Neutral
- A/T: N range

VEHICLE WASHING



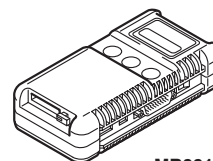
If high-pressure car-washing equipment or steam car-washing equipment is used to wash the vehicle, be sure to note the following information in order to avoid damage to plastic components, etc.

- Spray nozzle distance: Approx. 40 cm 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-III

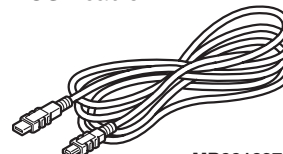
MUT-III sub assembly

Vehicle communication interface (V.C.I.)



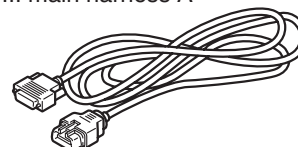
MB991824

MUT-III USB cable



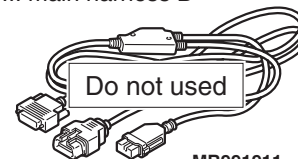
MB991827

MUT-III main harness A



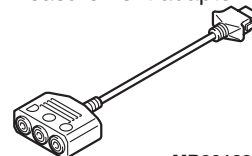
MB991910

MUT-III main harness B



MB991911

MUT-III measurement adapter



MB991825

MUT-III trigger harness

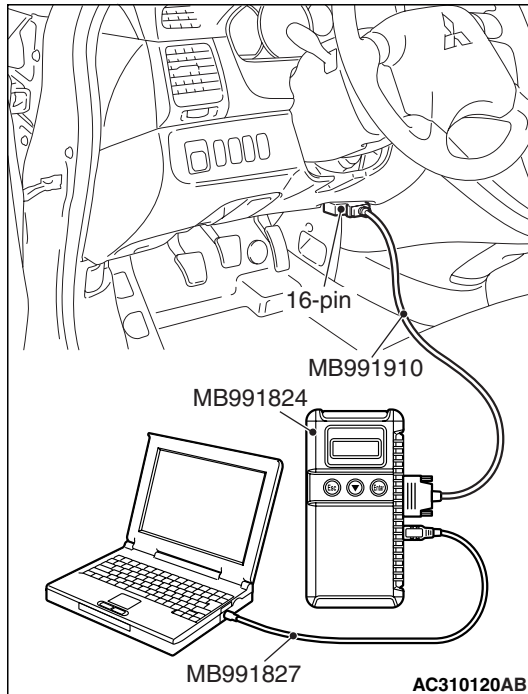


MB991826

AC305090AC

Refer to the "MUT-III OPERATING INSTRUCTIONS" for instructions on handling the MUT-III.

CAUTION



Turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting the MUT-III.

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

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

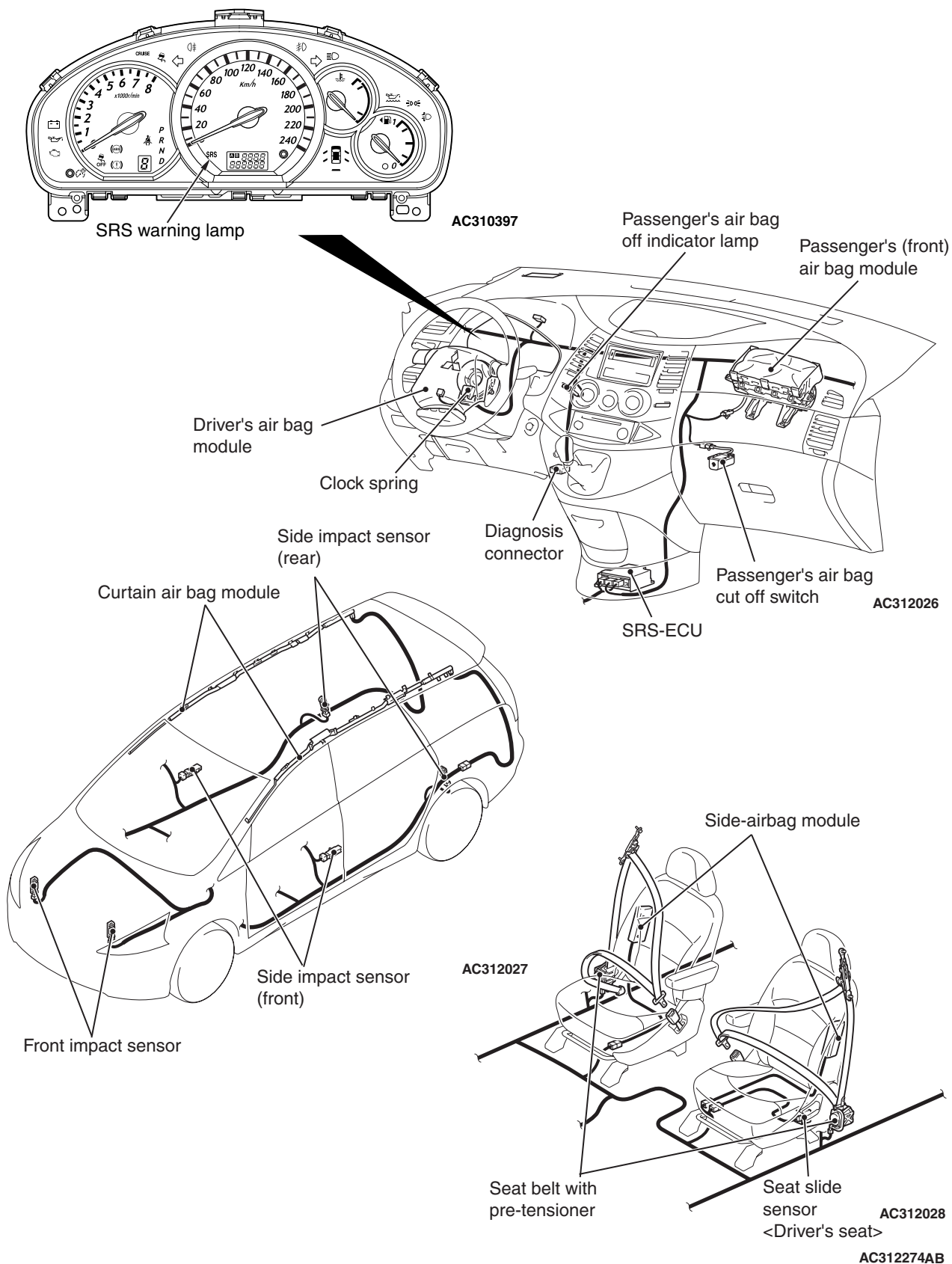
M1001009800053

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

The SRS and seat belt pre-tensioner systems consist of air bag modules, SRS-ECU, two front impact sensors, four side impact sensors, SRS warning lamp, clock spring, seat slide sensor, passenger air bag cut off switch, passenger air bag off indicator lamp and seat belt pre-tensioner. Airbag modules are installed at the centre of the steering wheel, on the glove box, in the front seatback and the roof-side area (from the front pillars of driver- and passenger-side to the rear pillar in rear area of vehicle). Each air bag has a safely folded air bag and an inflator. SRS-ECU, installed at the depths of the centre console, monitors the system. The front

impact sensor is assembled in the radiator support panel to monitor collision upon frontal impact. The side impact sensor is assembled in the centre pillar and quarter panel lower to monitor collision upon side impact. The warning lamp on the instrument panel indicates the operational status of the SRS. The clock spring is installed in the steering column. The seat slide sensor is attached to the seat rail and provides the air bag control unit with information on the seat position. The passenger air bag cut off switch is located above inside the glove box. The passenger air bag off indicator lamp is located above the centre panel in the instrument panel. The seat belt pre-tensioner is incorporated in the seat belt retractor.

Only authorized service personnel should do work on or around the SRS components. Those service personnel should read this manual carefully before starting any such work.



SERVICE PRECAUTIONS

M1001006000069

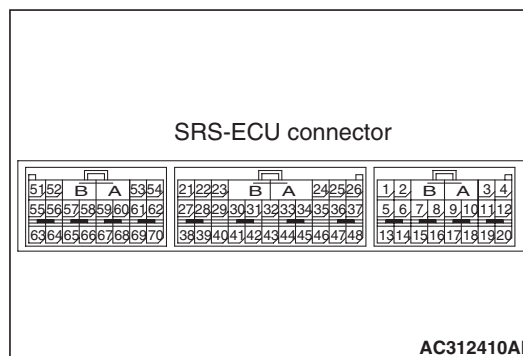
⚠ DANGER

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.

⚠ CAUTION

- Do not use any electrical test equipment on or near SRS components, except those specified on [P.52B-12](#).
- Never Attempt to Repair the Following Components:
 1. SRS air bag control unit (SRS-ECU)
 2. Clock spring
 3. Driver's and front passenger's air bag modules
 4. Side air bag module
 5. Curtain air bag module
 6. Front impact sensor
 7. Side impact sensor
 8. 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 page [P.52B-218](#).

⚠ CAUTION

Do not attempt to repair the wiring harness connectors of the SRS. If a defective wiring harness is found, repair or replace it by referring to the table below.

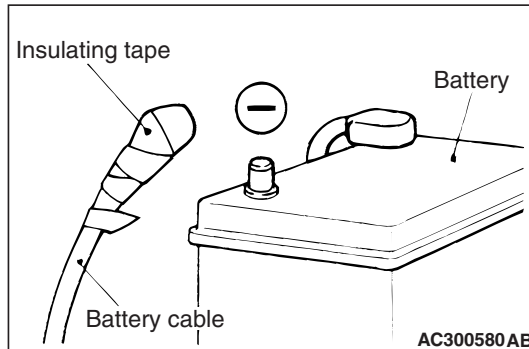
SRS-ECU terminal No.	Destination of harness	Remedy
1, 2	Floor wiring harness → Seat slide sensor	Correct or replace the floor wiring harness.
5, 6	Floor wiring harness → Rear floor wiring harness → Curtain air bag module (LH)	Correct or replace each wiring harness.
7, 8	Floor wiring harness → Seat belt pre-tensioner (LH)	Correct or replace the floor wiring harness.
9, 10	Floor wiring harness → Side air bag module (LH)	Correct or replace the floor wiring harness.
15, 16	Floor wiring harness → Side impact sensor (rear) (LH)	Correct or replace the floor wiring harness.
19, 20	Floor wiring harness → Side impact sensor (front) (LH)	Correct or replace the floor wiring harness.
21	Instrument panel wiring harness → Passenger's air bag off indicator lamp	Correct or replace the instrument panel wiring harness.
23	Instrument panel wiring harness → Junction block (fuse No.3)	Correct or replace the instrument panel wiring harness.

SRS-ECU terminal No.	Destination of harness	Remedy
24	Instrument panel wiring harness → Junction block (fuse No.2)	Correct or replace the instrument panel wiring harness.
27, 28	Instrument panel wiring harness → Air bag module (Front passenger's side) <1st squib side>	Correct or replace the instrument panel wiring harness.
29	Instrument panel wiring harness → Passenger's air bag cut off switch ON terminal	Correct or replace the instrument panel wiring harness.
30, 31	Instrument panel wiring harness → Air bag module (Front passenger's side) <2nd squib side>	Correct or replace the instrument panel wiring harness.
32	Instrument panel wiring harness → Can_H line	Correct or replace the can line.
33, 34	Instrument panel wiring harness → Clock spring → Air bag module (Driver's side) <2nd squib side>	Correct or replace instrument panel wiring harness. Replace the clock spring.
35	Instrument panel wiring harness → Passenger's air bag cut off switch COM terminal	Correct or replace the instrument panel wiring harness.
36, 37	Instrument panel wiring harness → Clock spring → Air bag module (Driver's side) <1st squib side>	Correct or replace instrument panel wiring harness. Replace the clock spring.
38, 39	Front wiring harness → Instrument panel wiring harness → Front impact sensor (LH)	Correct or replace each wiring harness.
40	Instrument panel wiring harness → Earth	Correct or replace the instrument panel wiring harness.
41	Instrument panel wiring harness → Passenger's air bag cut off switch OFF terminal	Correct or replace the instrument panel wiring harness.
43	Instrument panel wiring harness → Can_L line	Correct or replace the can line.
44	Instrument panel wiring harness → Diagnosis connector	Correct or replace the instrument panel wiring harness.
47, 48	Front wiring harness → Instrument panel wiring harness → Front impact sensor (RH)	Correct or replace each wiring harness.
57, 58	Floor wiring harness → Side air bag module (RH)	Correct or replace the floor wiring harness.
59, 60	Floor wiring harness → Seat belt pre-tensioner (RH)	Correct or replace the floor wiring harness.

SRS-ECU terminal No.	Destination of harness	Remedy
61, 62	Floor wiring harness → Curtain air bag module (RH)	Correct or replace the floor wiring harness.
63, 64	Floor wiring harness → Side impact sensor (front) (RH)	Correct or replace the floor wiring harness.
67, 68	Floor wiring harness → Side impact sensor (rear) (RH)	Correct or replace the floor wiring harness.

⚠ DANGER

to retain enough voltage to deploy the air bag for a short time even after the battery



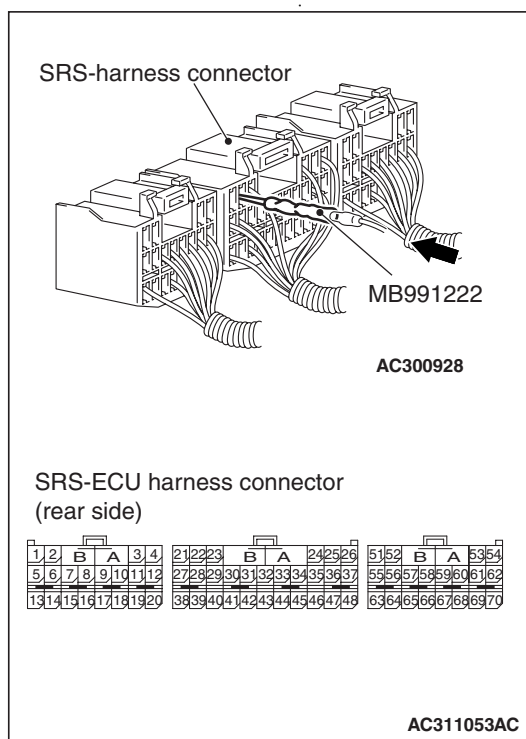
After disconnecting the battery cable, wait 60 seconds or more before proceeding with the following work. In addition, insulate the negative battery terminal with a tape. The condenser inside the SRS-ECU is designed

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.

touched directly by the probe, the plating may break, which will cause drops in reliability.

⚠ CAUTION

- The SRS components and seat belt with pre-tensioner should not be subjected to heat, so remove the SRS-ECU, driver's and front passenger's air bag modules, clock spring, side air bag modules, and seat belt pre-tensioner before drying or baking the vehicle after painting.
 1. SRS-ECU, air bag modules, clock spring, impact sensors: 93°C or more
 2. Seat belt with pre-tensioner: 90°C or more
- Whenever you finish servicing the SRS, always erase the diagnosis code and check warning lamp operation to make sure that the system functions properly.



If checks are carried out by using the SRS-ECU harness connector, observe the following procedures: Insert the special tool probe in the harness set (MB991222) into connector from harness side (rear side), and connect the tester to this probe. If any tool than special tool is used, damage to the harness and other components will result. Never insert the probe directly to the terminals from the front of the connector. The terminals are plated to increase their conductivity, so that if they are

SUPPORT LOCATIONS FOR LIFTING AND JACKING

M1001000700145

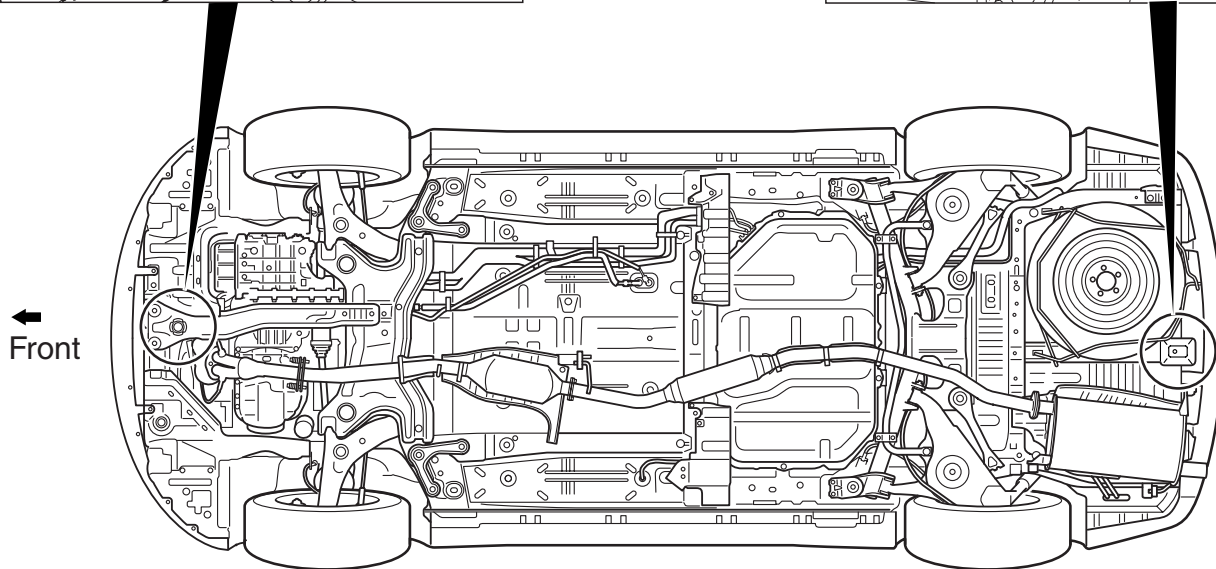
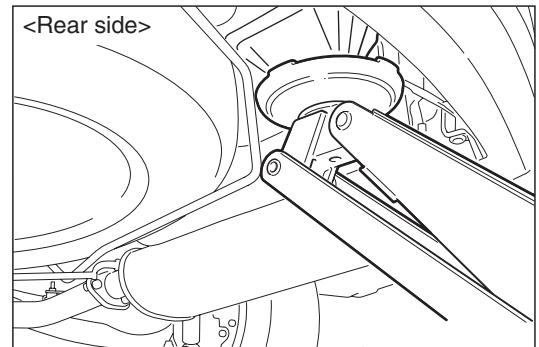
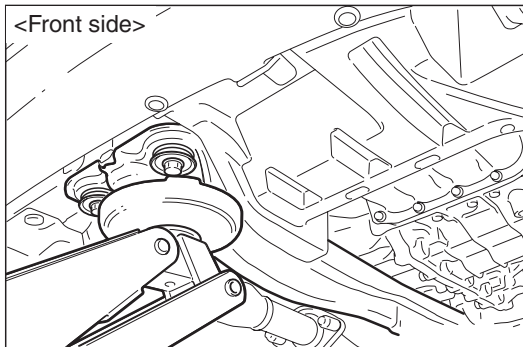
SUPPORT POSITIONS FOR A GARAGE JACK, AXLE STANDS, SINGLE-POST LIFT OR DOUBLE-POST LIFT AND PLATE TYPE LIFT

⚠ CAUTION

Do not support the vehicles at locations other than specified supporting points. Doing so will cause damage, etc.

Garage jack**⚠ CAUTION**

Never support any point other than the specified one, or that point will be deformed.



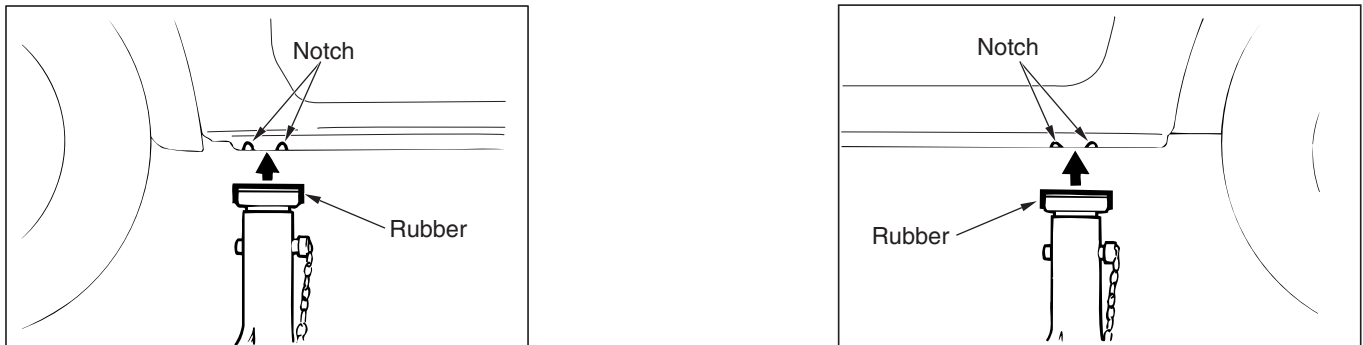
AC309954AB

Axle stands and a single-post lift or double-post lift

⚠ CAUTION

- If rubber attachments with grooves that are too thick are used at the front support positions, the front fender may become bent, so be sure to use rubber attachments with groove thicknesses of 18 mm or less.
- If attachments which are not high enough are used, they may damage areas such as the side sill garnish. Be sure to use attachments which are high enough, or remove the side sill garnish if not using attachments.

<Axle stands>



←
Front

<Single-post lift or double-post lift>

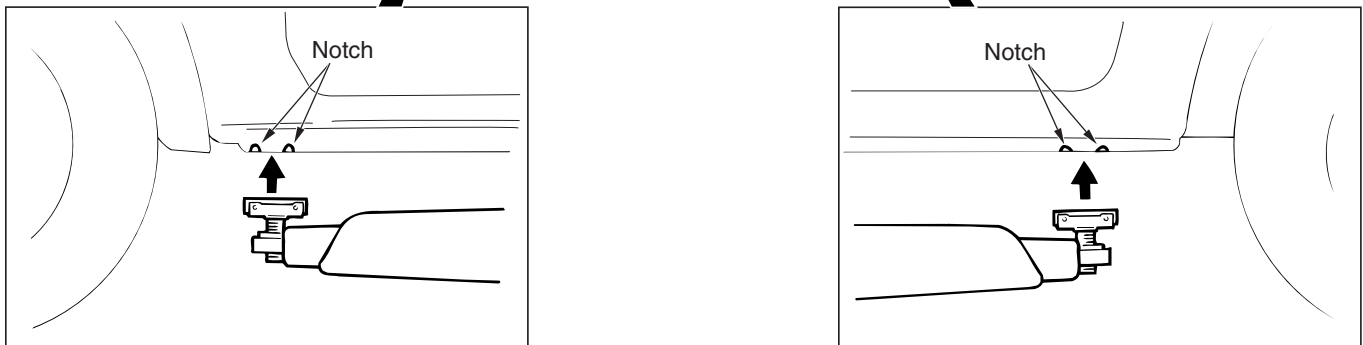


Plate type lift**⚠ CAUTION**

Insert a spacer between the notch and the lift to avoid damage to the side sill garnish. Be careful not to contact the spacer against the side sill.

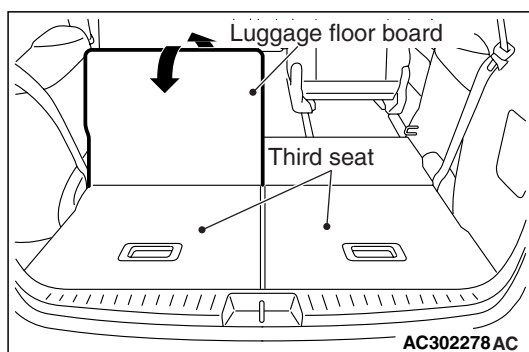
Support the notch with a spacer (100-mm width, 100-mm height and 200-mm depth).

TOWING AND HOISTING

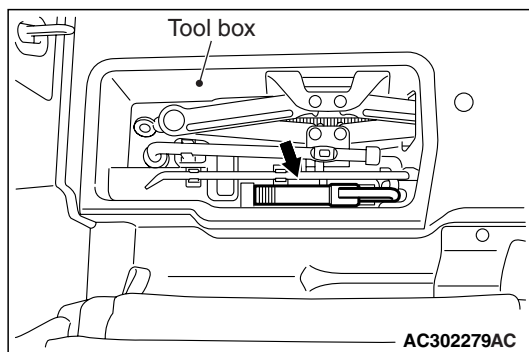
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HOW TO SECURE THE TOWING HOOK

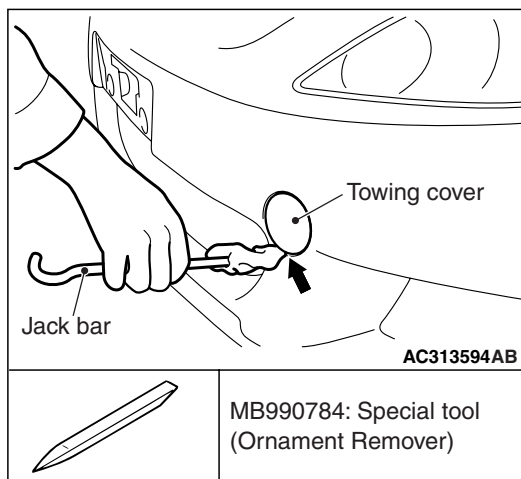
When towing this vehicle, attach the towing hook according to the procedure below.



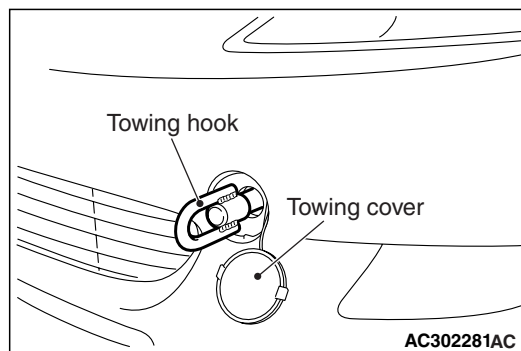
1. Fold the third seat and open the luggage floor board.



2. Withdraw the towing hook and jack bar from the tool box under the luggage floor.



3. Insert special tool MB990784 (Ornament Remover) or a jack bar as shown, and remove the towing cover from the front bumper.



4. Secure the towing hook.

STANDARD PART/TIGHTENING-TORQUE TABLE

M1001001100447

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 N·m		
Bolt nominal diameter (mm)	Pitch (mm)	Head mark "4"	Head mark "7"	Head mark "8"
M5	0.8	2.5 ± 0.5	5.0 ± 1.0	6.0 ± 1.0
M6	1.0	5.0 ± 1.0	9.0 ± 2.0	10 ± 2
M8	1.25	12 ± 2	22 ± 4	25 ± 4
M10	1.25	24 ± 4	44 ± 10	53 ± 7
M12	1.25	41 ± 8	83 ± 12	98 ± 12
M14	1.5	73 ± 12	140 ± 20	155 ± 25
M16	1.5	110 ± 20	210 ± 30	235 ± 35
M18	1.5	165 ± 25	300 ± 40	340 ± 50
M20	1.5	225 ± 35	410 ± 60	480 ± 70
M22	1.5	300 ± 40	555 ± 85	645 ± 95
M24	1.5	395 ± 55	735 ± 105	855 ± 125

FLANGE BOLT AND NUT TIGHTENING TORQUE

Thread size		Torque N·m		
Bolt nominal diameter (mm)	Pitch (mm)	Head mark "4"	Head mark "7"	Head mark "8"
M6	1.0	5.0 ± 1.0	10 ± 2	12 ± 2
M8	1.25	13 ± 2	24 ± 4	27 ± 5
M10	1.25	26 ± 4	49 ± 9	58 ± 7
M10	1.5	24 ± 4	45 ± 8	55 ± 10
M12	1.25	46 ± 8	95 ± 15	105 ± 15
M12	1.75	43 ± 8	83 ± 12	98 ± 12

NOTE:

- Be sure to use only the specified bolts and nuts, and always tighten them to the specified torques.
- Bolts marked with indications such as 4T or 7T are reinforced bolts. The larger the number, the greater the bolt strength.