

GENERAL

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WARNINGS REGARDING SERVICING OF SUPPLEMENTAL RESTRAINT SYSTEM (SRS) EQUIPPED VEHICLES

WARNING!

- (1) Improper service or maintenance of any component of the SRS, or any SRS-related component, can lead to personal injury or death to service personnel (from inadvertent firing of the air bag) or to the driver and passenger (from rendering the SRS inoperative).
- (2) If it is possible that the SRS components are subjected to heat over 93°C in baking or drying after painting, remove the SRS components (air bag module and SRS-ECU) beforehand.
- (3) Service or maintenance of any SRS component or SRS-related component must be performed only at an authorised MITSUBISHI dealer.
- (4) MITSUBISHI dealer personnel must thoroughly review this manual, and especially its GROUP 52B – Supplemental Restraint System (SRS) before beginning any service or maintenance of any component of the SRS or any SRS-related component.

NOTE

Section titles with the asterisk (*) in the table of contents in each group indicate operations requiring warnings.

In Order to Prevent Vehicles From Fire	22	SUPPORT LOCATIONS FOR LIFTING AND JACKING	27
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HOW TO USE THIS MANUAL

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

INSPECTION

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

INDICATION OF DESTINATION

General Export and GCC are used for convenience to indicate destination.

NOTE

1. “General Export” means territories other than Europe, GCC, China, Australia, New Zealand, the U.S.A. and Canada.
2. “GCC” indicates countries that are members of the (Persian) Gulf Cooperation Council of nations.

3. In some instances, vehicles with other specifications may be shipped to some countries.

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 $\pm 10\%$ except the following cases when the upper and lower limits of tightening torque are given.

- (1) The tolerance of the basic value is within $\pm 10\%$.
- (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 manual transmission or vehicle equipped with a manual transmission.

A/T: Indicates automatic transmission, or models equipped with an automatic transmission.

SOHC: Indicates an engine with the single overhead camshaft, or a model equipped with such an engine.

MPI: Indicates multipoint fuel 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 the reader a better understanding of the installed condition of component parts.

Indicates (by symbols) where lubrication is necessary.

Maintenance and Servicing Procedures

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

- Removal steps :

The part designation number corresponds to the number in the illustration to indicate removal steps.

- Disassembly steps :

The part designation number corresponds to the number in the illustration to indicate disassembly steps.

- Installation steps :

Specified in case installation is impossible in reverse order of removal steps. Omitted if installation is possible in reverse order of removal steps.

- Reassembly steps :

Specified in case reassembly is impossible in reverse order of disassembly steps. Omitted if reassembly is possible in reverse order of disassembly steps.

Classifications of Major Maintenance / Service points

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

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

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

Symbols for Lubrication, Sealants and Adhesives

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



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



: Sealant or adhesive



: Brake fluid or automatic transmission fluid



: Engine oil, gear oil or air conditioner compressor oil



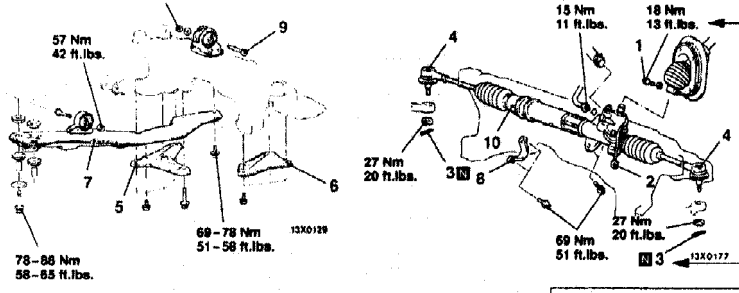
: Adhesive tape or butyl rubber tape

Indicates the group title. Indicates the section title. Indicates the group number. Indicates the page number.

STEERING - Power Steering Gear Box 37A-23

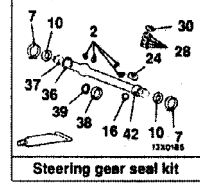
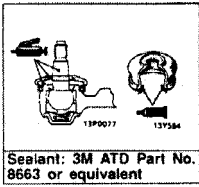
**POWER STEERING GEAR BOX
REMOVAL AND INSTALLATION** 11000628

Pre-removal Operation
 • Power Steering Fluid Draining (Refer to P.37A-15.)
 • Stabilizer Bar Removal (Refer to GROUP 33A - Stabilizer Bar)



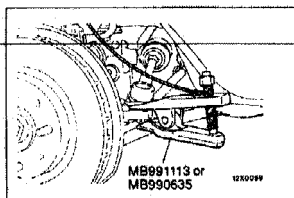
Denotes tightening torque.

Denotes non-reusable part.



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

- Removal steps**
1. Joint assembly and gear box connecting bolt
 2. Solenoid valve connector <Vehicles with EPS>
 3. Cotter pin
 4. Connection for tie-rod end and knuckle
 5. Stay (L.H.)
 6. Stay (R.H.)
 7. Center member assembly
 8. Clamp
 9. Bolt
 10. Gear box assembly

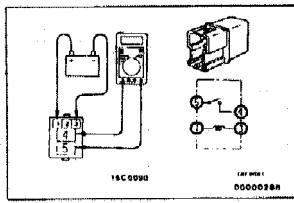


REMOVAL SERVICE POINTS
 <A> TIE-ROD END DISCONNECTION

Caution

1. Be sure to tie the cord of the special tool to the nearby part.
2. Loosen the nut but do not remove it.

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



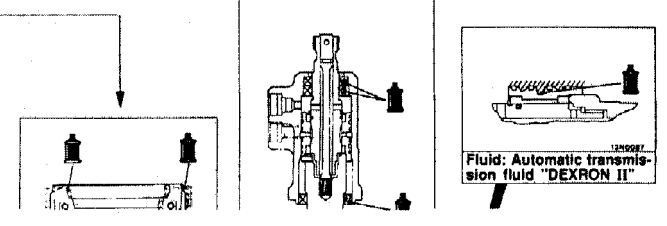
FOG LIGHT RELAY CONTINUITY CHECK

Battery voltage	Terminal			
	1	3	4	5
Power is not supplied	○	○		
Power is supplied	⊕	⊖	○	○

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

37A-28 STEERING - Power Steering Gear Box

LUBRICATION AND SEALING POINTS
 <Conventional power steering gear box>



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

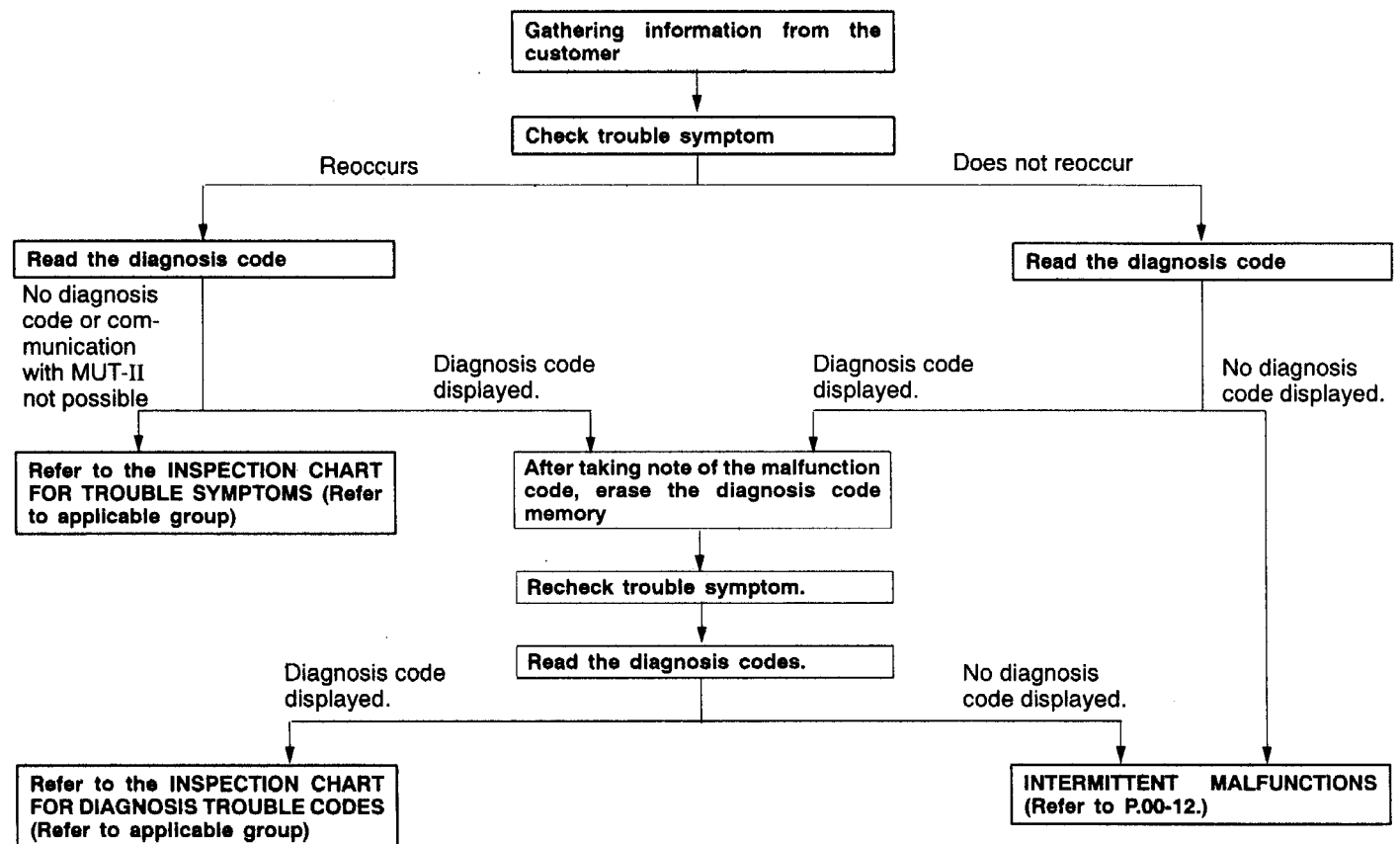
Troubleshooting of electronic control systems for which the MUT-II can be used follows the basic outline described below. Furthermore, even in systems for which the MUT-II cannot be used, part of these systems still follow this outline.

TROUBLESHOOTING CONTENTS

1. STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

The 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 P.00-9 for How to Use 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 TROUBLE SYMPTOM

Indicates the inspection procedures corresponding to each trouble symptoms classified in the Inspection Chart for Trouble Symptoms. (Refer to P.00-9 for How to Use the Inspection Procedures.)

8. SERVICE DATA REFERENCE TABLE

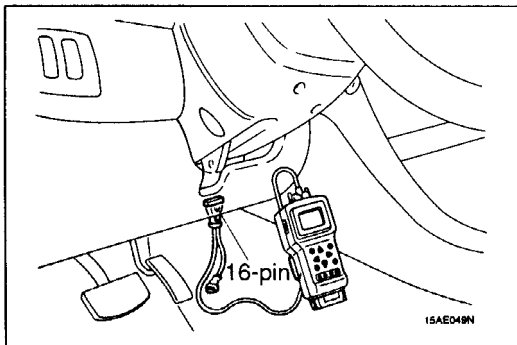
Inspection items and normal judgement values have been provided in this chart as reference information.

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.



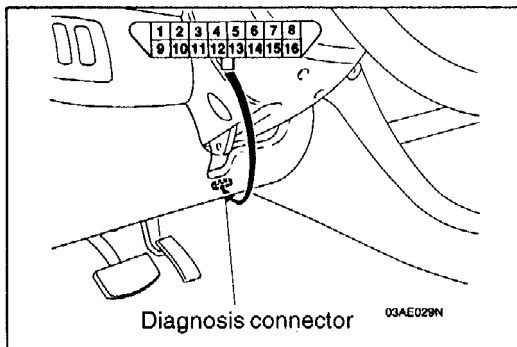
DIAGNOSIS FUNCTION

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

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



WHEN USING THE WARNING LAMP

1. Use the special tool to earth No.1 terminal (diagnosis control terminal) of the diagnosis connector.
2. Turn the ignition switch on.
3. Read out a diagnosis code by observing how the warning lamp flashes.

Applicable system

System name	Warning lamp name
MPI	Engine warning lamp
A/T	Neutral position indicator lamp
ABS	ABS warning lamp

Indications of diagnosis code by warning lamp

When the diagnosis code No.24 is output	When no diagnosis code is output

METHOD OF ERASING DIAGNOSIS CODES WHEN USING THE MUT-II

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

Caution

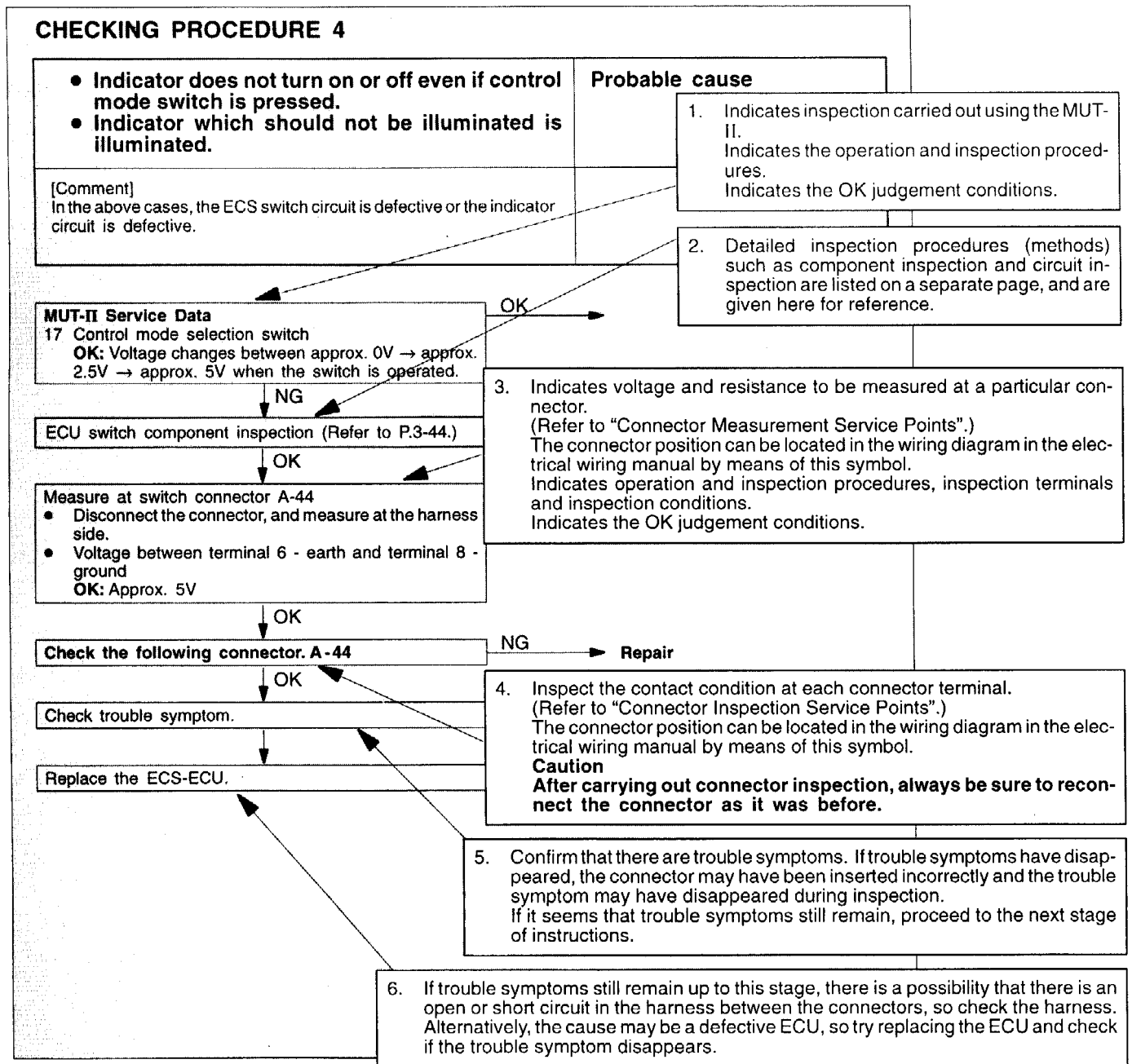
Turn off the ignition switch before connecting or disconnecting the MUT-II.

WHEN NOT USING THE MUT-II <MPI AND A/T>

1. Turn the ignition switch to 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

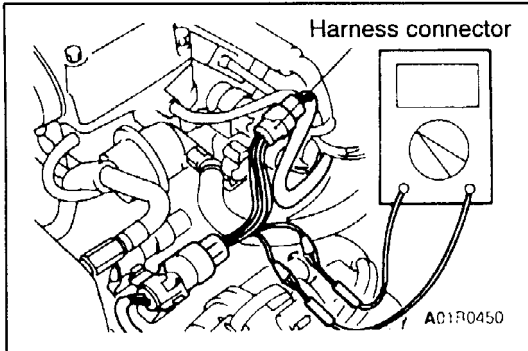
Check for an open or short circuit in the harness between the terminals which were defective according to the connector measurements. Carry out this inspection while referring to the electrical wiring manual. Here, "Check harness between power supply and terminal xx" also includes checking for blown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

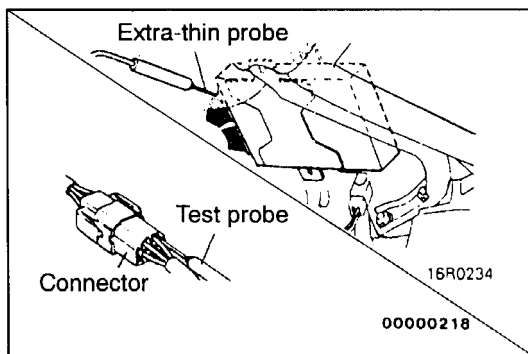
Turn the ignition switch to OFF when connecting and disconnecting the connectors, and turn the ignition switch to ON when measuring if there are no instructions to the contrary.



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

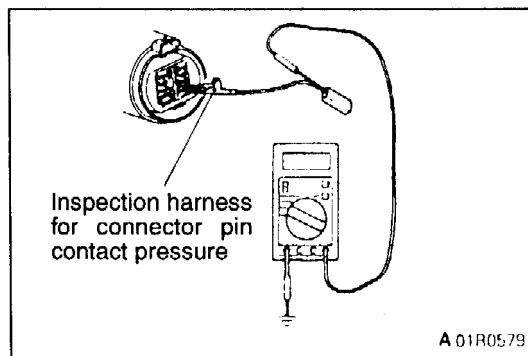
Waterproof Connectors

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



Ordinary (non-waterproof) Connectors

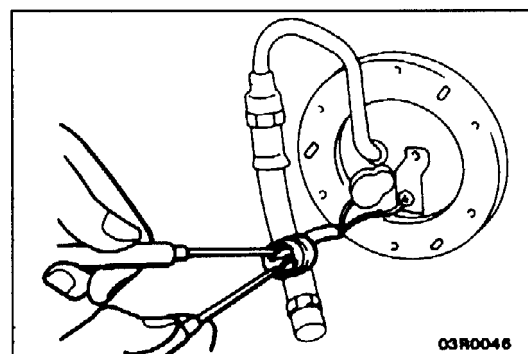
Check by inserting the test probe from the harness side. Note that if the connector (control unit, etc.) is too small to permit insertion of the test probe, it should not be forced; use a special tool (the extra-thin probe in the harness set for checking) for this purpose.



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 probe should never be forcibly inserted, as it may cause a defective contact.

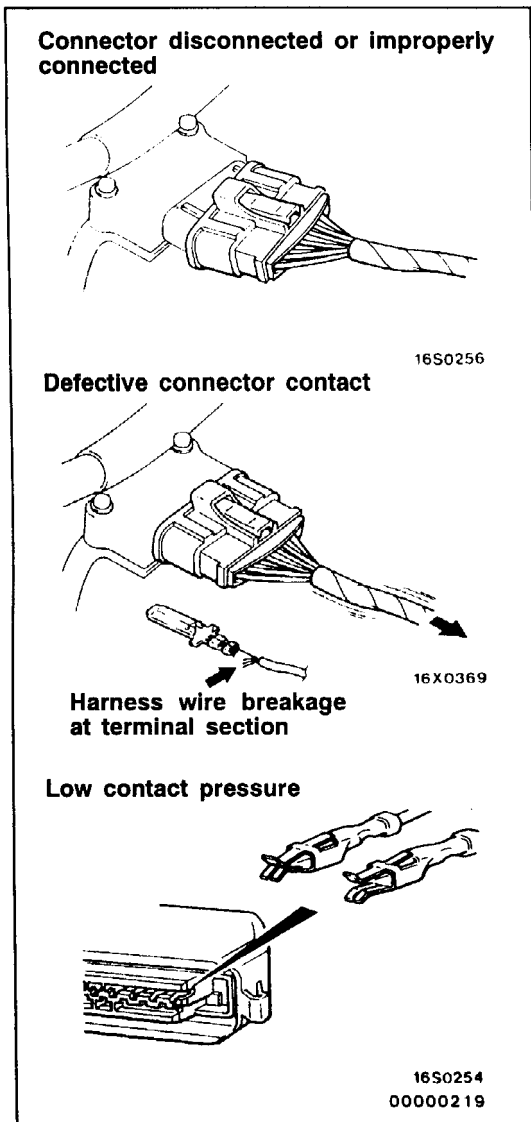


<When Inspecting a Male Pin>

Touch the pin directly with the test bar.

Caution

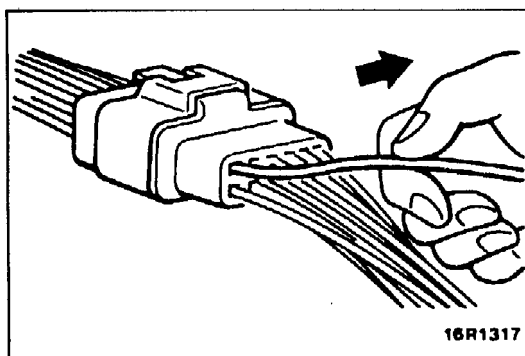
At this time, be careful not to short the connector pins with the test probes. To do so may damage the circuits inside the ECU.



CONNECTOR INSPECTION

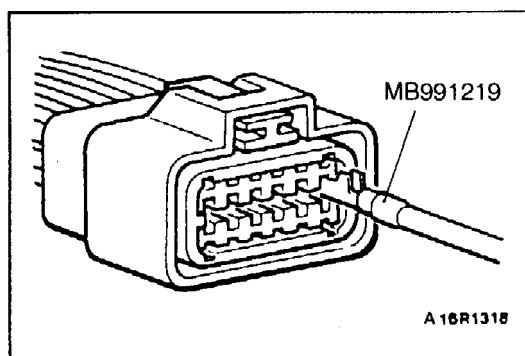
VISUAL INSPECTION

- 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.



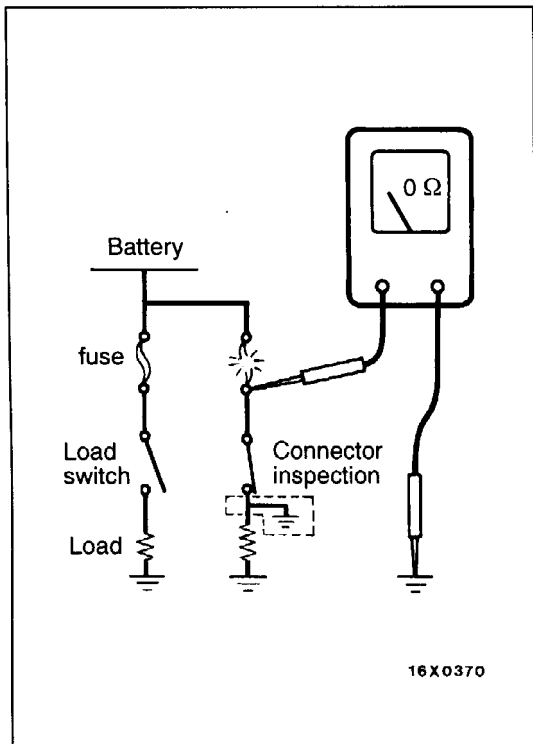
CONNECTOR PIN INSPECTION

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



CONNECTOR ENGAGEMENT INSPECTION

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

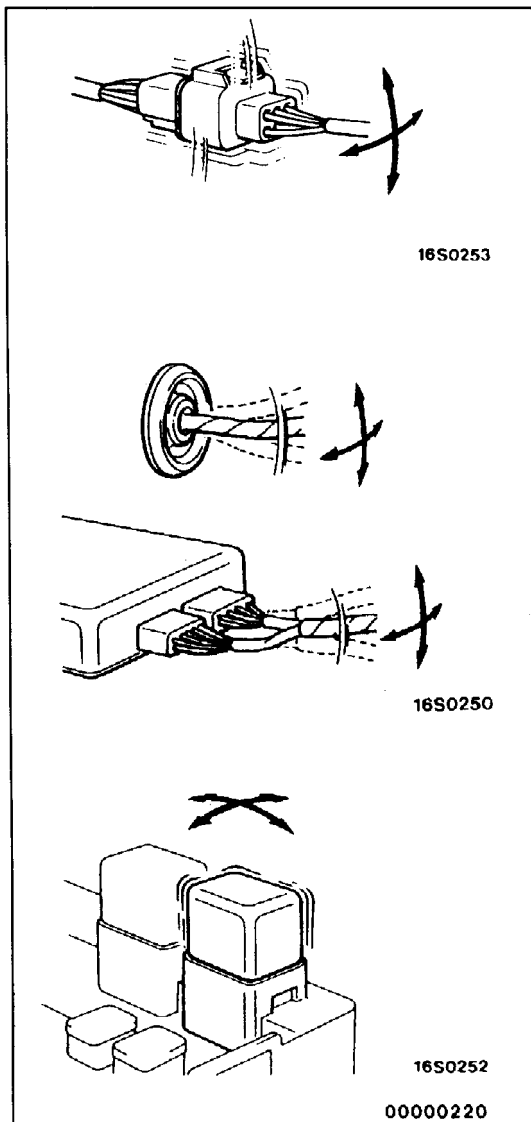


INSPECTION SERVICE POINTS FOR A BLOWN FUSE

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

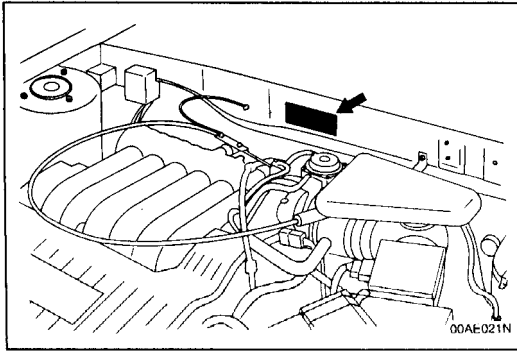
Intermittent malfunctions often occur under certain conditions, and if these conditions can be ascertained, determining the cause becomes simple. In order to ascertain the conditions under which an intermittent malfunction occurs, first ask the customer for details about the driving conditions, weather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

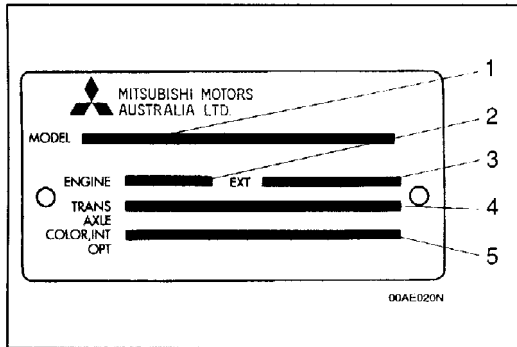
If determining the cause is difficult, the flight recorder function of the MUT-II can also be used.



VEHICLE IDENTIFICATION

VEHICLE INFORMATION CODE PLATE LOCATION

The vehicle information code plate is riveted onto the bulkhead in the engine compartment.



CODE PLATE DESCRIPTION

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

No.	Item	Contents	
1	MODEL	F38AT	F38AT: Vehicle model
		RPELJ2	RPELJ2: Model series
2	ENGINE	6G74	Engine model
3	EXT	CA6A	Exterior code
4	TRANS	F4A51	Transmission code
5	COLOUR, INT OPT	W4587V 03V	W45: Body colour code
			87V: Interior code
			03V: Equipment code

MODELS

VEHICLES FOR GCC

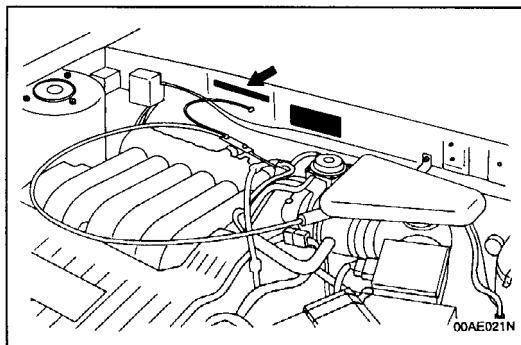
Model code		Engine model	Transmission model	Fuel supply system
F36A	TNHELJW	6G72-SOHC (2,972ml)	F5M51 (2WD-5M/T)	MPI
	TNXELJW			
	TRHELJW		F4A51 (2WD-4A/T)	
	TRXELJW			

VEHICLES FOR GENERAL EXPORT

Model	Model code		Engine model	Transmission model	Fuel supply system
Except vehicles for Hong Kong, Singapore etc.	F36A	TRHERJ1	6G72-SOHC (2,972mℓ)	F4A51 (2WD-4A/T)	MPI
		TRXERJ1			
Vehicles for Hong Kong, Singapore etc.	TRHERJD				
	TRXERJD				

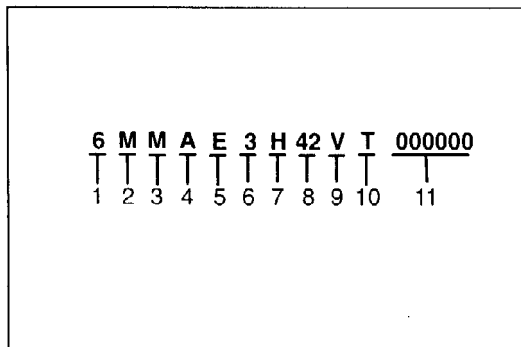
VEHICLES FOR CHINA

Model code		Engine model	Transmission model	Fuel supply system
F36A	TNXELJC	6G72-SOHC (2,972mℓ)	F5M51 (2WD-5M/T)	MPI
	TRXELJC		F4A51 (2WD-4A/T)	



CHASSIS NUMBER

The chassis number is stamped on the engine bulkhead next to the vehicle information code plate.

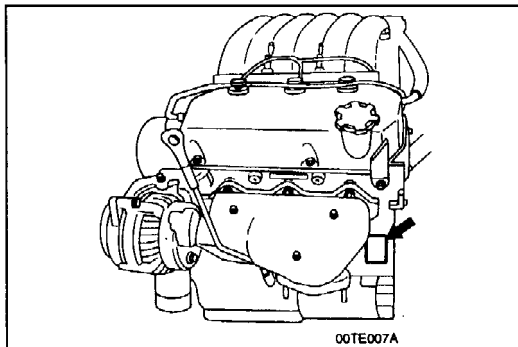


No.	Items		Contents
1-3	Fixed figure	6MM	Manufacturers identification
4	Car line	A	Sigma (LHD)
		K	Sigma (RHD)
5	Development order	E	E-Series
6	Engine/transmission combination	3	6G72: 2,972mℓ leaded petrol engine, M/T
		4	6G72: 2,972mℓ leaded petrol engine, A/T
		5	6G72: 2,972mℓ unleaded petrol engine, M/T
		6	6G72: 2,972mℓ unleaded petrol engine, A/T
7	Price line	C	LS (China specification)
		H	High (General export [Except vehicles for Hong Kong, Singapore etc.] and GCC)
		X	LS (General export [Except vehicles for Hong Kong, Singapore etc.] and GCC)
		G	High (Hong Kong, Singapore etc.)
		L	LS (Hong Kong, Singapore etc.)
8	Body type	42	4-door hardtop sedan
9	Model year	V	1997
10	Plant	T	Tonsley Park
11	Serial number	–	–

F	36	A	T	N	H	E	L	J	W
1	2	3	4	5	6	7	8	9	10

MODEL CODE

No.	Items	Contents
1	Development	F: MITSUBISHI SIGMA
2	Engine type	36: 2,972 ml petrol engine
3	Sort	A: Passenger car
4	Body style	T: 4-door hardtop
5	Transmission type	N: 5-speed manual transmission R: 4-speed automatic transmission
6	Trim level	H: – X: LS
7	Specified engine feature	E: SOHC-MPI
8	Steering wheel location	L: Left hand R: Right hand
9	Source	J: Mitsubishi Motors Australia Ltd.
10	Destination	1: For General Export (Except vehicles for Hong Kong, Singapore, etc.) W: For GCC C: For China D: Hong Kong, Singapore etc.

**ENGINE MODEL NUMBER**

- The engine model number is stamped at the front side on the top edge of the cylinder block as shown in the following.

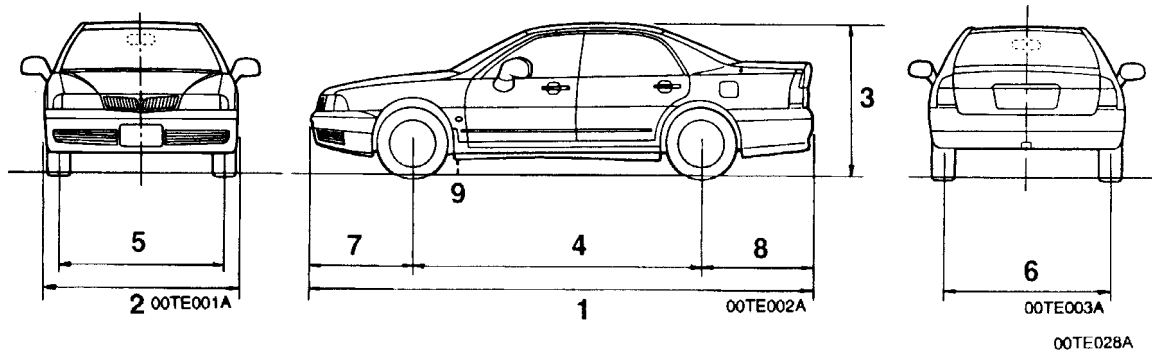
Engine model	Engine displacement ml
6G72	2,972

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

Engine serial number	6G72M: 000001–999999
----------------------	-------------------------

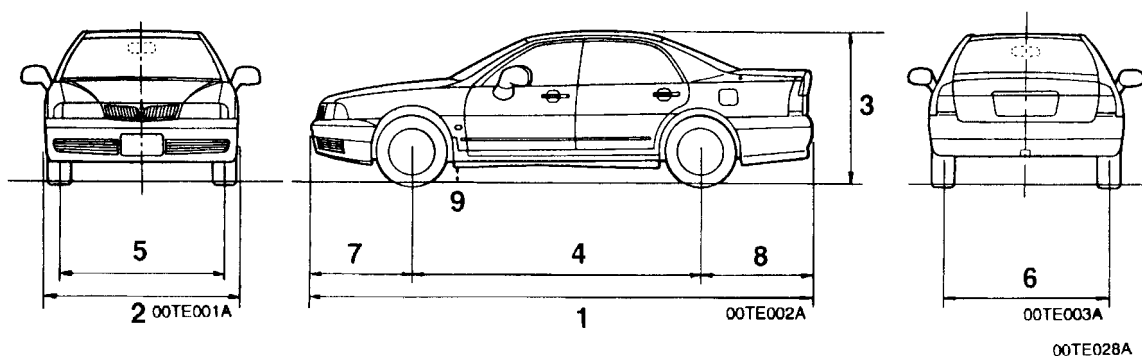
MAJOR SPECIFICATIONS

<VEHICLES FOR GENERAL EXPORT>



Items		F36AT RHERJ1	F36AT RXERJ1	F36AT RHERJD	F36AT RXERJD	
Vehicle dimensions	Overall length mm	1	4,785			
	Overall width mm	2	1,785			
	Overall height (Unladen) mm	3	1,435			
	Wheelbase mm	4	2,720			
	Tread-front mm	5	1,545			
	Tread-rear mm	6	1,535			
	Overhang-front mm	7	970			
	Overhang-rear mm	8	1,103			
	Minimum running ground clearance mm	9	165			
Vehicle weight kg	Curb weight	1,510	1,520	1,505	1,515	
	Gross vehicle weight rating	1,990	1,990	1,990	1,990	
	Gross axle weight rating-front	955	970	950	965	
	Gross axle weight rating-rear	555	550	555	550	
Seating capacity		5				
Engine	Model No.	6G72 (SOHC)				
	Piston displacement cm ³	2,972				
Transmission	Model No.	F5M51	F4A51	F5M51	F4A51	
	Type	5-speed man.	4-speed auto.	5-speed man.	4-speed auto.	
Fuel system	Fuel supply system	Electronic control multipoint fuel injection				

MAJOR SPECIFICATIONS

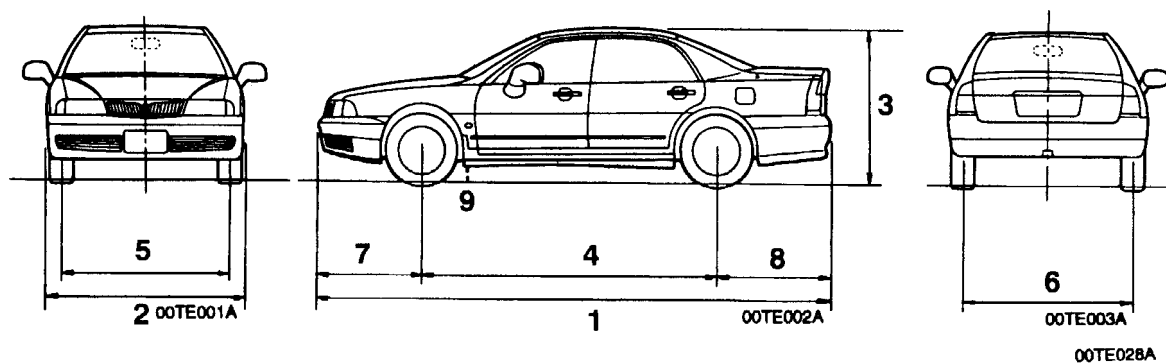


<VEHICLES FOR GCC>

Items		F36AT NHELJW	F36AT RHELJW	F36AT NXELJW	F36AT RXELJW
Vehicle dimen- sions	Overall length mm	1	4,785		
	Overall width mm	2	1,785		
	Overall height (Unladen) mm	3	1,435		
	Wheelbase mm	4	2,720		
	Tread-front mm	5	1,545		
	Tread-rear mm	6	1,535		
	Overhang-front mm	7	970		
	Overhang-rear mm	8	1,103		
	Minimum running ground clearance mm	9	165		
Vehicle weight kg	Curb weight	1,481	1,511	1,490	1,520
	Gross vehicle weight rating	1,990	1,990	1,990	1,990
	Gross axle weight rating-front	926	956	940	970
	Gross axle weight rating-rear	555	555	550	550
Seating capacity		5			
Engine	Model No.	6G72 (SOHC)			
	Piston displacement cm ³	2,972			
Trans- mission	Model No.	F5M51	F4A51	F5M51	F4A51
	Type	5-speed man.	4-speed auto.	5-speed man.	4-speed auto.
Fuel system	Fuel supply system	Electronic control multipoint fuel injection			

MAJOR SPECIFICATIONS

<VEHICLES FOR CHINA>

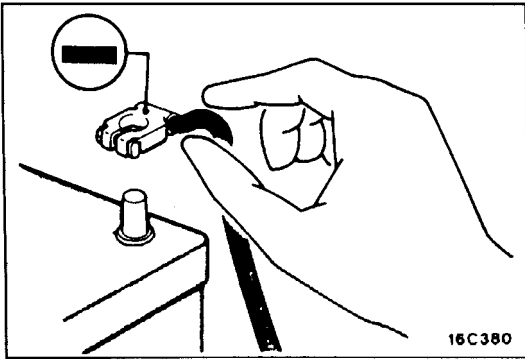


Items		F36AT NXELJC	F36AT RXELJC
Vehicle dimensions	Overall length mm	1 4,785	
	Overall width mm	2 1,785	
	Overall height (Unladen) mm	3 1,435	
	Wheelbase mm	4 2,720	
	Tread-front mm	5 1,545	
	Tread-rear mm	6 1,535	
	Overhang-front mm	7 970	
	Overhang-rear mm	8 1,103	
	Minimum running ground clearance mm	9 165	
Vehicle weight kg	Curb weight	1,490	1,520
	Gross vehicle weight rating	1,990	1,990
	Gross axle weight rating-front	940	970
	Gross axle weight rating-rear	550	550
Seating capacity		5	
Engine	Model No.	6G72 (SOHC)	
	Piston displacement cm ³	2,972	
Transmission	Model No.	F5M51	F4A51
	Type	5-speed manual	4-speed automatic
Fuel system	Fuel supply system	Electronic control multipoint fuel injection	

PRECAUTIONS BEFORE SERVICE

SUPPLEMENTAL RESTRAINT SYSTEM (SRS)

1. Items to follow when servicing SRS
 - (1) Be sure to read GROUP 52B – Supplemental Restraint System (SRS).
For safe operations, please follow the directions and heed all warnings.
 - (2) Always use the designated special tools and test equipment.
 - (3) Wait at least 60 seconds after disconnecting the battery cable before doing any further work.
The SRS system is designed to retain enough voltage to deploy the air bag even after the battery has been disconnected. Serious injury may result from unintended air bag deployment if work is done on the SRS system immediately after the battery cable is disconnected.
 - (4) Never attempt to disassemble or repair the SRS Airbag components (SRS-ECU, air bag module and clock spring). If faulty, replace them.
 - (5) Warning labels must be heeded when servicing or handling SRS components. Warning labels are located in the following locations.
 - Hood
 - Sun visor
 - Glove box
 - SRS-ECU
 - Steering wheel
 - Air bag module
 - Clock spring
 - Steering gear and linkage clamp
 - (6) Store components removed from the SRS in a clean and dry place.
The air bag module should be stored on a flat surface and placed so that the pad surface is facing upward.
Do not place anything on top.
 - (7) When discarding an airbag module or disposing of a vehicle with an SRS air bag, ensure that you first activate the airbag.
 - (8) Whenever you finish servicing the SRS, check the SRS warning lamp operation to make sure that the system functions properly.
2. Observe the following when carrying out operations on places where SRS components are installed, including operations not directly related to the SRS air bag.
 - (1) When removing or installing parts do not allow any impact or shock to the SRS components.
 - (2) If there is any possibility that the SRS airbag component parts will be subjected to heat over 93°C, remove the component parts.
After installing the component parts, test the SRS warning lamp operation to confirm that the airbag system is normal.



SERVICING THE ELECTRICAL SYSTEM

1. Note the following before proceeding with work on the electrical system.
Note that the following must never be done:
Unauthorised modifications of any electrical device or wiring, because such modifications might lead to a vehicle malfunction, over-capacity or short-circuit that could result in a fire in the vehicle.
2. When servicing the electrical system, disconnect the negative cable terminal from the battery.

Caution

1. **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 semi-conductor parts being damaged.)
2. **After completion of the work steps [when the battery's negative (-) terminal is connected], warm up the engine and allow it to idle for approximately ten minutes under the conditions described below, in order to stabilise the engine control conditions, and then check to be sure that idling is satisfactory.**
Engine coolant temperature: 80–95°C
Lights, electric fans, accessories: OFF
Transmission: "N" or "P"
Steering wheel: neutral (centre) position

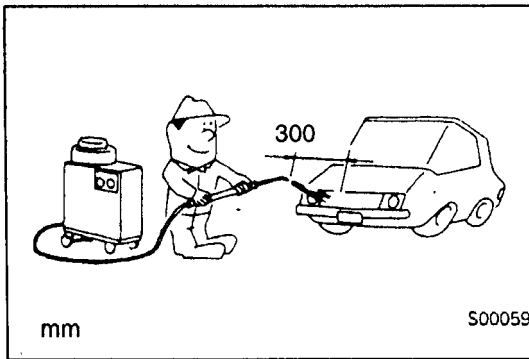
APPLICATION OF ANTI-CORROSION AGENTS AND UNDERCOATS

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

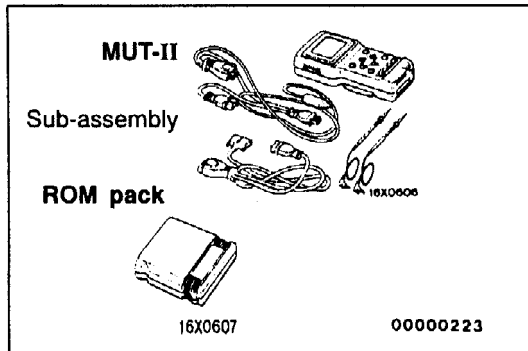
"Pre-inspection condition" refers to the condition that the vehicle must be in before proper engine inspection can be carried out. If you see the words "Set the vehicle to the pre-inspection condition" in this manual, it means to set the vehicle to the following condition.

- 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 maintain the spray nozzle at a distance of at least 300 mm from any plastic parts and all opening parts (doors, luggage compartment, etc.).

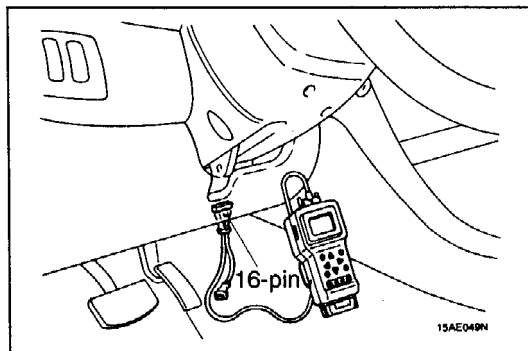


MUT-II

To operate the MUT-II, refer to the "MUT-II OPERATING INSTRUCTIONS".

Caution

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



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 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 MMAL'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, kerosene, 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)

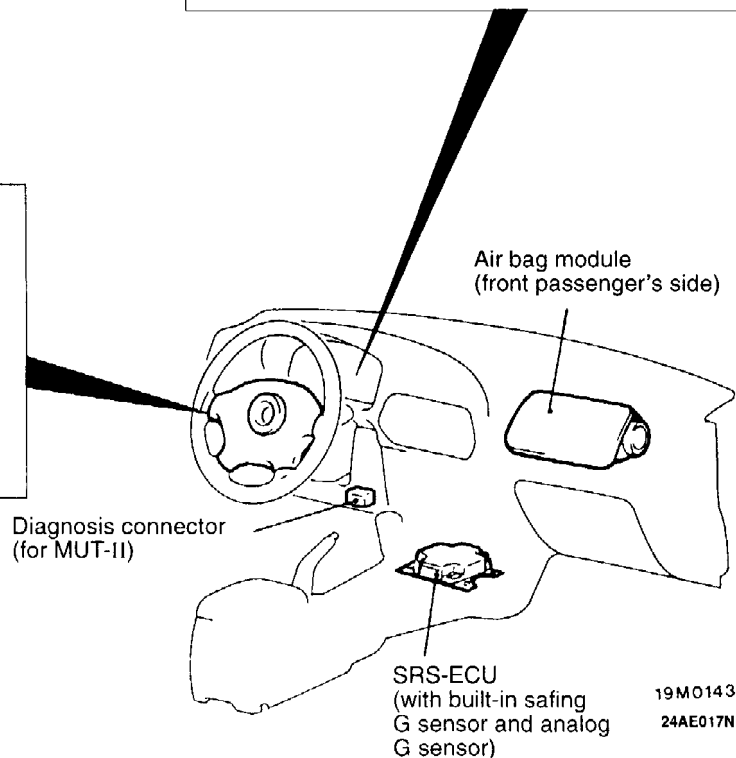
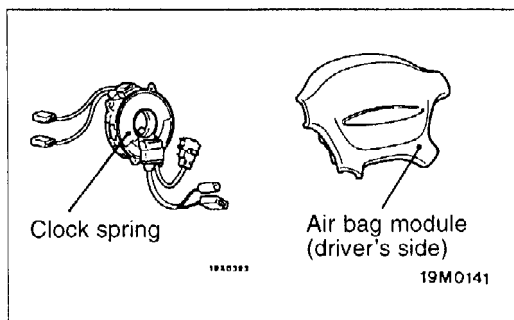
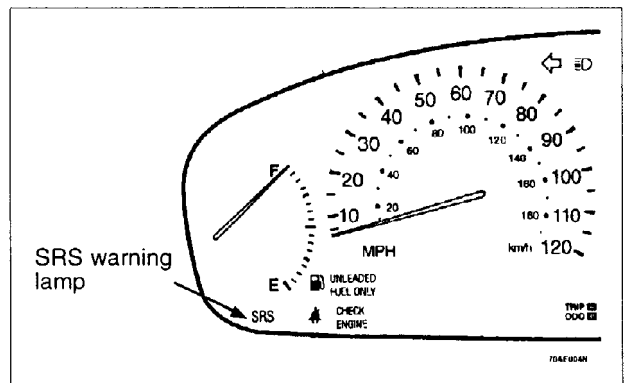
GENERAL INFORMATION

To improve safety, the SRS is available as optional parts.

The SRS consists of two air bag modules, SRS air bag control unit (SRS-ECU), SRS warning lamp and clock spring.

One air bag is located in the centre of the steering wheel and the other above the glove box. Each air bag has a folded air bag and an inflator unit. The control unit under the floor console monitors the system and has a safing G sensor and an analog G sensor. The warning lamp on the instrument panel indicates the operational status of the SRS. The clock spring is installed in the steering column.

Only authorised service personnel should do work on or around the SRS components. 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 service personnel (by inadvertent deployment of the air bags) or the driver (by rendering the SRS inoperative).



SRS-ECU terminal No.	Harness connector (No. of terminals, colour)	Destination of harness	Corrective action
1 to 4	21 pins, yellow	–	–
5		Body wiring harness → Clock spring → Air bag module (Driver's side)	Correct or replace each wiring harness. Replace clock spring.
6			
7*		Body wiring harness → Air bag module (Front passenger's side)	Correct or replace each wiring harness.
8*			
9, 10		–	–
11		Body wiring harness → Diagnosis connector	Correct or replace each wiring harness.
12		–	–
13		Body wiring harness → Junction block (fuse No. 2)	Correct or replace each wiring harness.
14		Body wiring harness → Junction block (fuse No. 4)	
15		Body wiring harness → SRS warning lamp	
16 to 19		–	–
20		Body wiring harness → Earth	Correct or replace body wiring harness.
21			

NOTE

*: Vehicles with front passenger's air bag

6. SRS components should not be subjected to heat over 93°C; so remove the SRS-ECU, air bag module and clock spring before drying or baking the vehicle after painting.
7. Whenever you finish servicing the SRS, check warning lamp operation to make sure that the system functions properly. (Refer to GROUP 52B – SRS Maintenance.)
8. Make certain that the ignition switch is OFF when the MUT-II is connected or disconnected.
9. If you have any questions about the SRS, please contact your local distributor.

NOTE

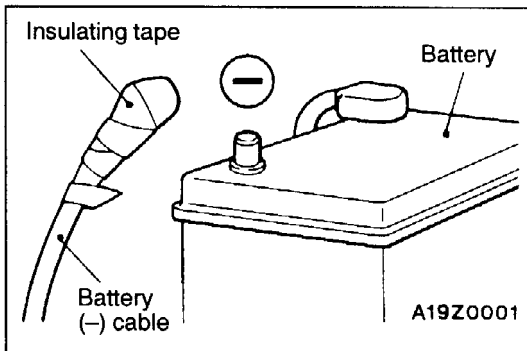
SERIOUS INJURY CAN RESULT FROM UNINTENDED AIR BAG DEPLOYMENT, SO USE ONLY THE PROCEDURES AND EQUIPMENT SPECIFIED IN THIS MANUAL.

SERVICE PRECAUTIONS

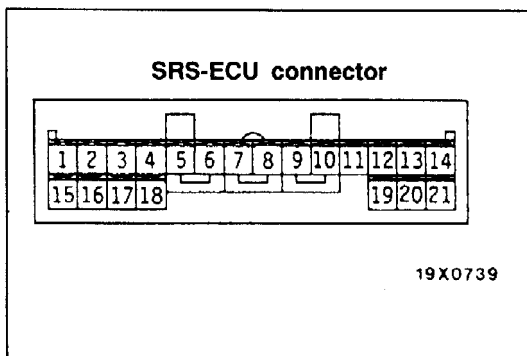
1. In order to avoid injury to yourself or others from accidental deployment of the air bag during servicing, read and carefully follow all the precautions and procedures described in this manual.
2. Do not use any electrical test equipment on or near SRS components, except those specified on GROUP 52B.
3. **Never Attempt to Repair the Following Components:**
 - SRS air bag control unit (SRS-ECU)
 - Clock spring
 - Air Bag Module
(Driver's side or front passenger's side*)

NOTE

*: Vehicles with front passenger's air bag.
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. (Refer to GROUP 52B.)



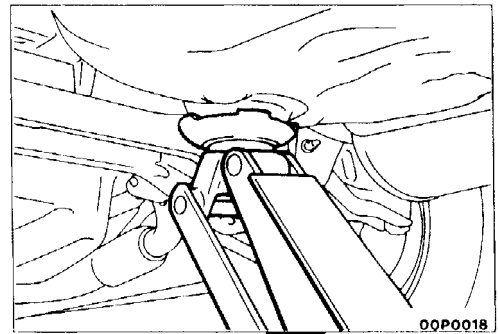
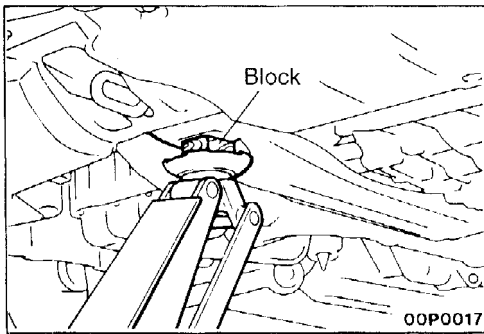
4. **After disconnecting the battery cable, wait 60 seconds or more before proceeding with the following work. The SRS system is designed to retain enough voltage to deploy the air bag for a short time even after the battery has been disconnected, so serious injury may result from unintended air bag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



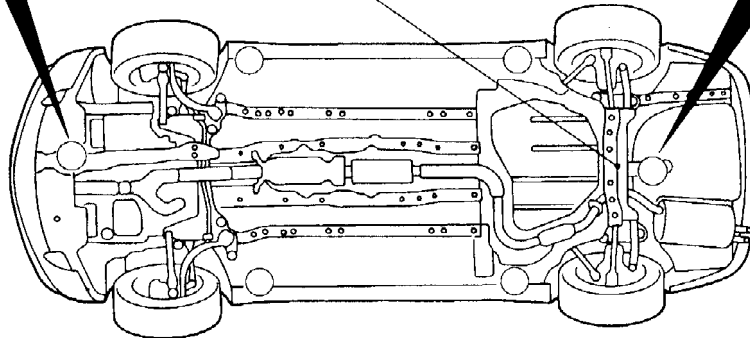
5. Do not attempt to repair the wiring harness connectors of the SRS. If any of the connectors are diagnosed as faulty, replace the wiring harness. If the wires are diagnosed as faulty, replace or repair the wiring harness according to the following table.

SUPPORT LOCATIONS FOR LIFTING AND JACKING

GARAGE JACK

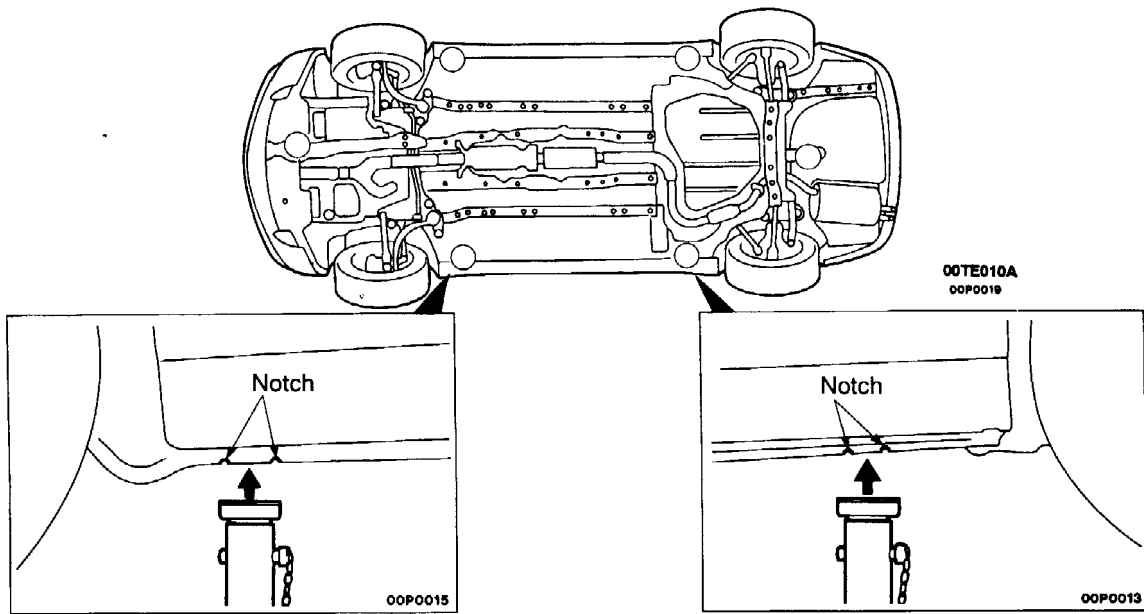


Caution
Never support the vehicle by
the rear floor cross member.



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

RIGID RACK



Caution

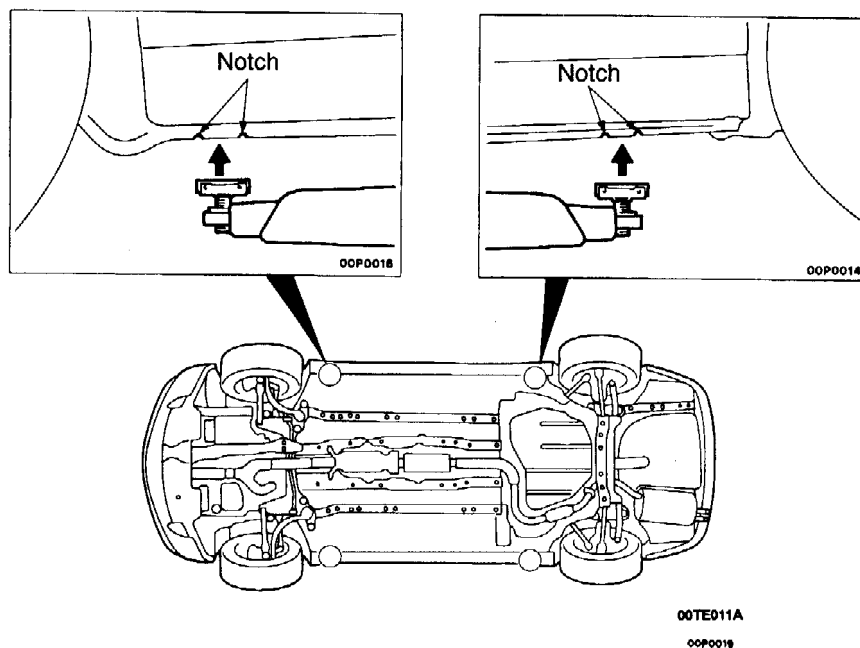
For lifting, put rubber or similar between the side sill and rigid rack, or the side sill area will be damaged.

POST TYPE

Special care should be taken when raising the vehicle on a frame contact type hoist. The hoist must be equipped with the proper adaptors in order to support the vehicle at the proper locations.

Caution

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



TIGHTENING TORQUE

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	5	6
M6	1.0	5	9	10
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	5	10	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