

GROUP 00

GENERAL <BODY AND CHASSIS>

CONTENTS

HOW TO USE THIS MANUAL	00-3	TIRE AND LOADING INFORMATION PLACARD	00-19
TROUBLESHOOTING GUIDELINES	00-6	ENGINE MODEL STAMPING	00-19
HOW TO USE TROUBLESHOOTING/ INSPECTION SERVICE POINTS	00-6	GENERAL DATA AND SPECIFICATIONS	00-20
TROUBLESHOOTING CONTENTS	00-6	PRECAUTIONS BEFORE SERVICE	00-22
HOW TO USE THE INSPECTION PROCEDURES	00-7	SUPPLEMENTAL RESTRAINT SYSTEM (SRS)	00-22
CONNECTOR MEASUREMENT SERVICE POINTS	00-10	SCAN TOOL [MULTI USE TESTER (M.U.T.-III) SUB ASSEMBLY]	00-23
CONNECTOR INSPECTION SERVICE POINTS	00-12	SERVICING ELECTRICAL SYSTEM	00-24
HOW TO COPE WITH INTERMITTENT MALFUNCTIONS	00-13	HOW TO SHIFT LOCK FORCED RELEASE <CVT>	00-25
HOW TO TREAT PAST TROUBLE	00-14	HOW TO PERFORM VIN WRITING FOR ENGINE CONTROL MODULE, KOS&OSS-ECU AND ETACS-ECU	00-26
INSPECTION SERVICE POINTS FOR A BLOWN FUSE	00-15	CODING LIST	00-33
VEHICLE IDENTIFICATION	00-15	INITIALIZATION PROCEDURE FOR LEARNING VALUE IN MFI ENGINE	00-41
VEHICLE IDENTIFICATION NUMBER PLATE	00-15	ENGINE IDLING LEARNING PROCEDURE	00-41
CHASSIS NUMBER	00-17	TIMING CHAIN LEARNED VALUE RESET	00-42
VEHICLE IDENTIFICATION CODE PLATE	00-18	PRE-INSPECTION CONDITION	00-43
CERTIFICATION LABEL	00-18	ENGINE OILS	00-43

Continued on next page

FORM-IN-PLACE GASKET (FIPG)	00-44	6. INTAKE AND EXHAUST VALVE CLEARANCE	00-65
BOLTS AND NUTS WITH STABILIZER FOR COEFFICIENT OF FRICTION	00-46	7. DRIVE BELTS (FOR THE GENERATOR AND POWER STEERING OIL PUMP)	00-68
APPLICATION OF ANTI-CORROSION AGENTS AND UNDERCOATS.	00-46	8. EXHAUST SYSTEM (CONNECTION PORTION OF MUFFLER, MUFFLER PIPES AND CONVERTER HEAT SHIELDS)	00-71
VEHICLE WASHING.	00-46	9. ENGINE OIL	00-71
TOWING AND HOISTING	00-47	10. ENGINE OIL FILTER.	00-72
LUBRICATION AND MAINTENANCE	00-51	11. TRANSAXLE OIL <M/T>	00-74
RECOMMENDED LUBRICANTS AND LUBRICANT CAPACITIES TABLE	00-53	12. TRANSMISSION FLUID <CVT>	00-75
SCHEDULED MAINTENANCE TABLE	00-55	13. ENGINE COOLANT	00-77
<VEHICLES FOR USA>	00-55	14. COOLANT HOSES (RADIATOR HOSE, HEATER HOSE).	00-78
<VEHICLES FOR CANADA>	00-60	15. DISK BRAKE PADS AND ROTORS	00-78
MAINTENANCE SERVICE	00-64	16. REAR DRUM BRAKE LININGS AND REAR WHEEL CYLINDERS.	00-81
1. FUEL SYSTEM (TANK, PIPE LINE AND CONNECTION, AND FUEL TANK FILLER TUBE CAP)	00-64	17. BRAKE HOSES.	00-82
2. FUEL HOSES	00-64	18. BRAKE FLUID	00-83
3. AIR CLEANER ELEMENT	00-64	19. BALL JOINT AND STEERING LINKAGE SEALS	00-84
4. EVAPORATIVE EMISSION CONTROL SYSTEM (EXCEPT EVAPORATIVE EMISSION CANISTER)	00-64	20. DRIVE SHAFT BOOTS	00-84
5. SPARK PLUGS (IRIDIUM-TIPPED TYPE)	00-65	21. SUSPENSION SYSTEM	00-84
		22. TIRES	00-84
		23. CLEAN AIR FILTER (AIR REFRESHER)	00-85
		24. TIRE REPAIR KIT	00-86
		MAIN SEALANT AND ADHESIVE TABLE	00-87

HOW TO USE THIS MANUAL

M1001000103454

MAINTENANCE, REPAIR AND SERVICING EXPLANATIONS

This manual provides explanations, etc. concerning procedures for the inspection, maintenance, repair and servicing of the subject model. Unless otherwise specified, each service procedure covers all models. Procedures covering specific models are identified by the model codes, or similar designation (engine type, transaxle type, etc.). A description of these designations is covered in this manual under "VEHICLE IDENTIFICATION."

ON-VEHICLE SERVICE

The "ON-VEHICLE SERVICE" section has procedures for performing inspections and adjustments of particularly important components. These procedures are done with regard to maintenance and servicing, but other inspections (looseness, play, cracking, damage, etc.) must also be performed.

SERVICE PROCEDURES

The service steps are arranged in numerical order. Attention to be paid in performing vehicle service are described in detail in SERVICE POINTS.

DEFINITION OF TERMS

STANDARD VALUE

Indicates the value used as the standard for judging whether or not a part or adjustment is correct.

LIMIT

Shows the maximum or minimum value for judging whether or not a part or adjustment is acceptable.

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.

TIGHTENING TORQUE INDICATION

The tightening torque indicates a median and its tolerance by a unit of N·m (in-lb) or N·m (ft-lb).

SPECIAL TOOL NOTE

Only MMC special tool part numbers are called out in the repair sections of this manual. Please refer to the special tool cross-reference chart located at the beginning of each group, for the special tool number that is available in your market.

ABBREVIATIONS

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

1.2L ENGINE:Indicates the 1,193 cm³ (72.8 cu in) <3A92> engine, or a model equipped with such an engine.

A/C: Indicates the air conditioning.

CVT: Indicates the continuously variable transaxle.

DOHC:Indicates an engine with the double overhead camshaft, or models equipped with such an engine.

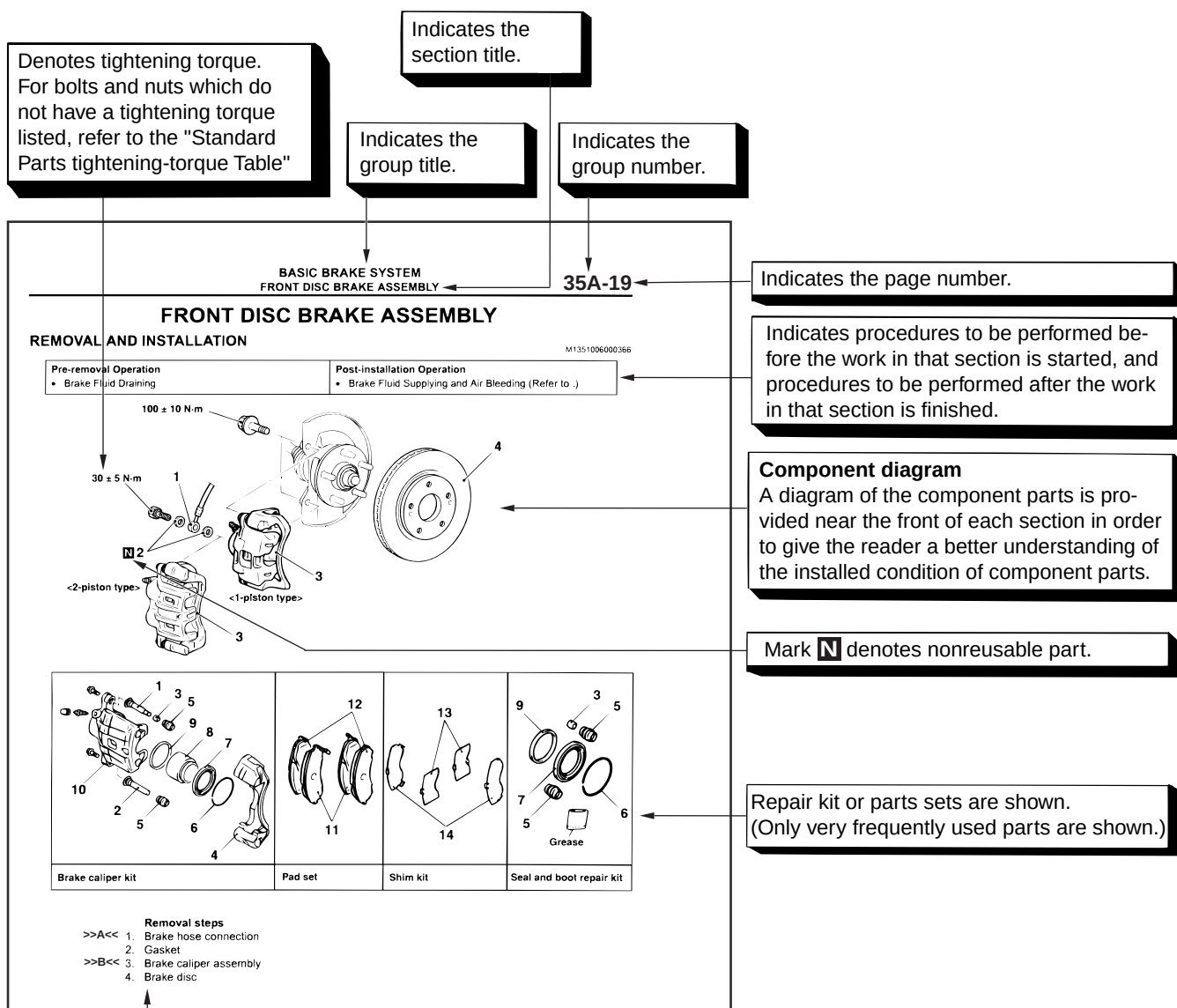
FWD: Indicates the front wheel drive vehicles.

MFI: Multiport fuel injection, or engines equipped with multiport fuel injection.

MIVEC:Indicates the Mitsubishi innovative valve timing electronic control system.

M/T:Indicates manual transaxle, or models equipped with manual transaxle.

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.

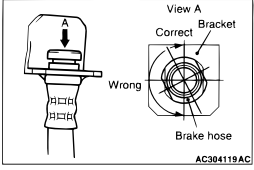
>>A<< : Indicates that there are essential points for installation or reassembly.

**BASIC BRAKE SYSTEM
FRONT DISC BRAKE ASSEMBLY** **35A-21**

INSTALLATION SERVICE POINTS

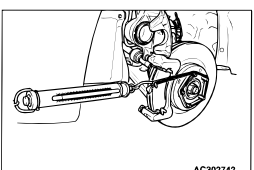
>>A<< BRAKE HOSE INSTALLATION

1. Install the brake hose end on the bracket and another end on the front brake assembly.



2. Twist the brake hose towards the lesser torsion between the brake hose and bracket as shown and secure it to the bracket.

>>B<< BRAKE CALIPER ASSEMBLY INSTALLATION



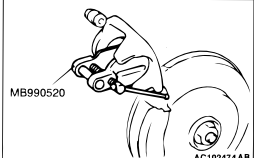
1. In order to measure the brake drag torque, measure the hub torque with the pads removed by the following procedure.

(1) Use a spring balance to measure the hub torque in the forward direction.

(2) Record hub torque with pads removed.

CAUTION
Do not let any oil, grease or other contamination get onto 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.



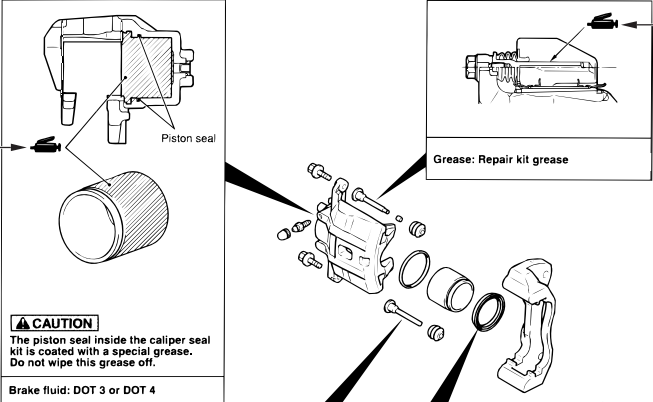
3. Clean the piston and insert into cylinder with special tool disc brake piston expander (MB990520).

4. Install the pad clips and the pads to the caliper support and tighten the pin bolt to the specified torque.

Tightening torque : 38 ± 4 N·m

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

LUBRICATION POINTS



CAUTION
The piston seal inside the caliper seal kit is coated with a special grease. Do not wipe this grease off.

Brake fluid: DOT 3 or DOT 4

Grease: Repair kit grease

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
-  : Automatic transmission fluid, brake fluid, power steering fluid or air conditioning compressor oil
-  : Engine oil or gear oil
-  : Adhesive tape or butyl rubber tape

TROUBLESHOOTING GUIDELINES

M1001008800436

VERIFY THE COMPLAINT

- Make sure the customer's complaint and the service writer's work order description are understood before starting work.
- Make sure the correct operation of the system is understood. Read the service manual description to verify normal system operation.
- Operate the system to see the symptoms. Look for other symptoms that were not reported by the customer, or on the work order, that may be related to the problem.

DETERMINE POSSIBLE CAUSES

Compare the confirmed symptoms to the diagnostic symptom indexes to find the right diagnosis procedure.

If the confirmed symptoms cannot be found on any symptom index, determine other possible causes.

- Analyze the system diagrams and list all possible causes for the problem symptoms.
- Rank all these possible causes in order of probability, based on how much of the system they cover, how likely they are to be the cause, and how easy they will be to check. Be sure to take experience into account. Consider the causes of similar problems seen in the past. The list of causes should be ranked in order from general to specific, from most-likely to least-likely, and from easy-to-check to hard-to-check.

FIND THE PROBLEM

After the symptoms have been confirmed, and probable causes have been identified, the next step is to make step-by-step checks of the suspected system components, junctions, and links in logical order.

Use the diagnostic procedures in the service manual whenever possible. Follow these procedures carefully to avoid missing an important step in the diagnosis sequence. It might be the skipped step that leads to the solution of the problem.

If the service manual doesn't have step-by-step procedures to help diagnose the problem, make a series of checks based on the ranked list of probable causes. Troubleshooting checks should be made in the order that the list of causes was ranked:

- General to specific
- Most-likely to least-likely
- Easy-to-check to hard-to-check

REPAIR THE PROBLEM

When the step-by-step troubleshooting checks find a fault, perform the proper repairs. Make sure to fix the root cause of the problem, not just the symptom. Just fixing the symptom, without fixing the root cause, will cause the symptom to eventually return.

VERIFY THE REPAIR

After repairs are made, recheck the operation of the system to confirm that the problem is eliminated. Be sure to check the system thoroughly. Sometimes new problems are revealed after repairs have been made.

HOW TO USE TROUBLESHOOTING/ INSPECTION SERVICE POINTS

TROUBLESHOOTING CONTENTS

Troubleshooting of electronic control systems for which the scan tool can be used follows the basic outline described below. Even in systems for which the scan tool cannot be used, part of these systems still follow this outline.

1. STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

Troubleshooting strategy is shown in each group.

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. DIAGNOSTIC FUNCTION

The following trouble code diagnosis are shown.

- How to read diagnostic trouble codes
- How to erase diagnostic trouble codes
- Input inspection service points

M1001013300998

4. DIAGNOSTIC TROUBLE CODE CHART

If the scan tool displays a diagnostic trouble code, find the applicable inspection procedure according to this chart.

5. SYMPTOM CHART

If there are symptoms, even though the scan tools show that no DTCs are stored, inspection procedures for each symptom will be found by using this chart.

6. DIAGNOSTIC TROUBLE CODE PROCEDURES

Indicates the inspection procedures corresponding to each diagnostic trouble code. (Refer to P.00-7).

7. SYMPTOM PROCEDURES

Indicates the inspection procedures corresponding to each symptom listed in the Symptom Chart. (Refer to P.00-7).

8. SERVICE DATA REFERENCE TABLE

Inspection items and normal judgment 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.

TERMINAL VOLTAGE CHECKS

1. Connect a needle-nosed wire probe to a voltmeter probe.

CAUTION

Short-circuiting the positive (+) probe between a connector terminal and ground could damage the vehicle wiring, the sensor, the ECU, or all three. Use care to prevent this!

2. Insert the needle-nosed wire probe into each of the ECU connector terminals from the wire side, and measure the voltage while referring to the check chart.

HOW TO USE THE INSPECTION PROCEDURES

The causes of many of the problems occurring in electric circuitry are generally the connectors, components, the ECU, and the 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.

NOTE: Measure voltage with the ECU connectors connected.

You may find it convenient to pull out the ECU to make it easier to reach the connector terminals. Checks don't have to be carried out in the order given in the chart.

3. If voltage readings differ from normal condition values, check related sensors, actuators, and wiring. Replace or repair as needed.
4. After repair or replacement, recheck with the voltmeter to confirm that the repair has corrected the problem.

TERMINAL RESISTANCE AND CONTINUITY CHECKS

1. Turn the ignition switch to the "LOCK" (OFF) position.
2. Disconnect the ECU connector.

CAUTION

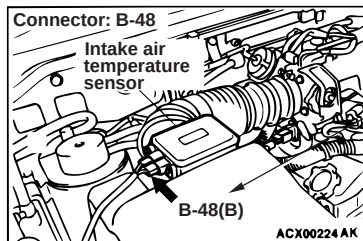
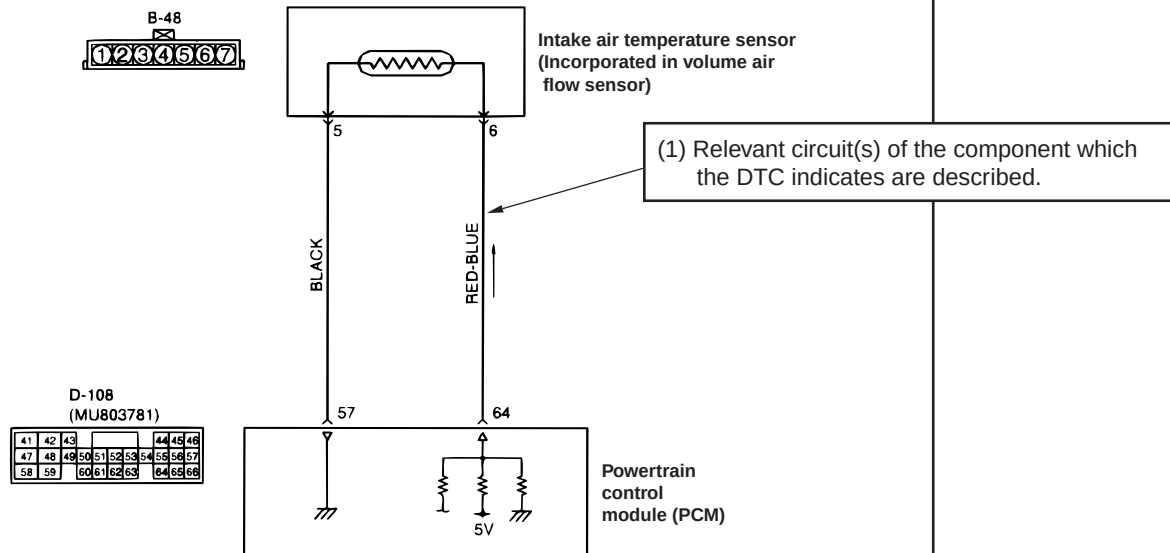
If resistance and continuity checks are performed on the wrong terminals, damage to the vehicle wiring, sensors, ECU, and/or ohmmeter may occur. Use care to prevent this!

3. Measure the resistance and check for continuity between the terminals of the ECU harness-side connector while referring to the check chart.
NOTE: Checks don't have to be carried out in the order given in the chart.
4. If the ohmmeter shows any deviation from the Normal Condition value, check the corresponding sensor, actuator and related electrical wiring, then repair or replace.
5. After repair or replacement, recheck with the ohmmeter to confirm that the repair has corrected the problem.

10. INSPECTION PROCEDURES USING AN OSCILLOSCOPE

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

M1001013500925

DTC P0110: Intake Air Temperature Circuit Malfunction

(2) For connector color, refer to GROUP 80A, How to read configuration diagrams.

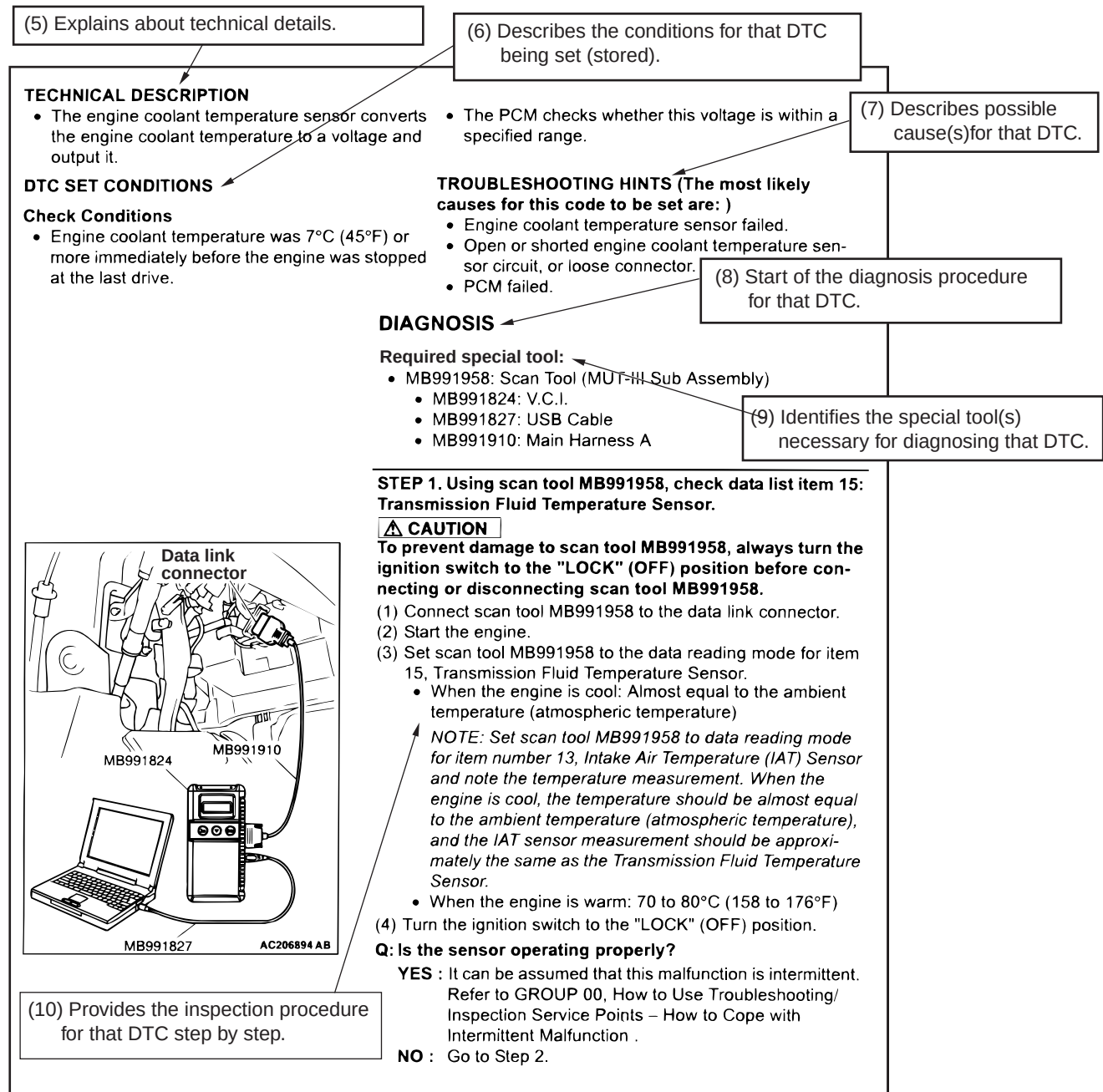
(3) Shows the location of the connector(s) from the circuit(s) above.

(4) Explains about the operation principle of the component or its relevant parts in that circuit.

CIRCUIT OPERATION

- Approximately 5 volts are applied to the intake air temperature sensor output terminal (terminal 6) from the PCM (terminal 64) via the resistor in the PCM. The ground terminal (terminal 5) is grounded with or PCM (terminal 57).
- The intake air temperature sensor is a negative temperature coefficient type of resistor. When the intake air temperature rises, the resistance decreases.
- The intake air temperature sensor output voltage increases when the resistance increases and decreases when the resistance decreases.

AC610770AB



AC210616 AD

HARNESS INSPECTION

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 GROUP 00E, Harness Connector Inspection [P.00E-2](#). Here, "Check harness between 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 [P.00-15](#)."

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.

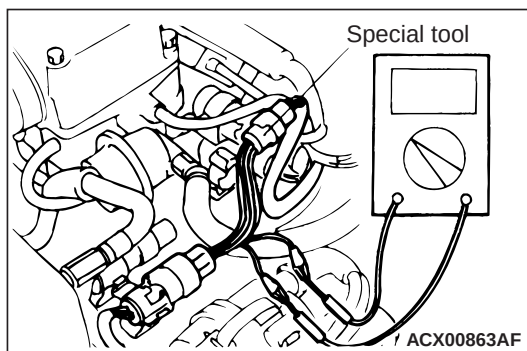
CONNECTOR MEASUREMENT SERVICE POINTS

M1001013600610

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.

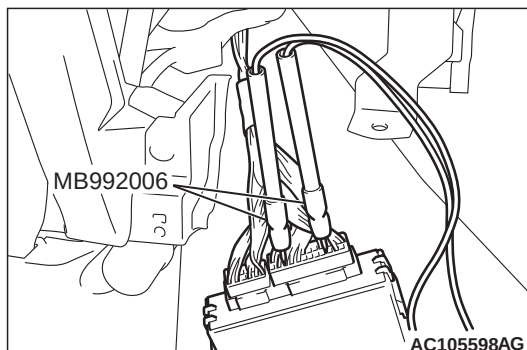
IF INSPECTING WITH THE CONNECTOR CONNECTED <WATERPROOF CONNECTORS>

Be sure to use special tool. Never insert a test probe from the harness side, as this will reduce the waterproof performance and result in corrosion.

**IF INSPECTING WITH THE CONNECTOR CONNECTED <ORDINARY (NON-WATERPROOF) CONNECTORS>****Required Special Tool:**

- MB992006: Extra Fine Probe

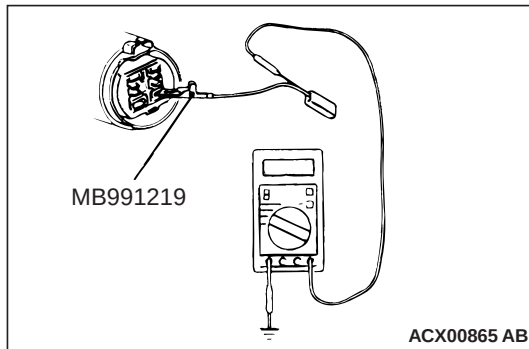
Inspect by inserting a test probe from the harness side. If the connector is too small to insert a test probe (e.g. control unit connector), do not insert it forcibly. Use special tool MB992006 (extra fine probe).

**IF INSPECTING WITH THE CONNECTOR DISCONNECTED****<When Inspecting a Female Pin>**

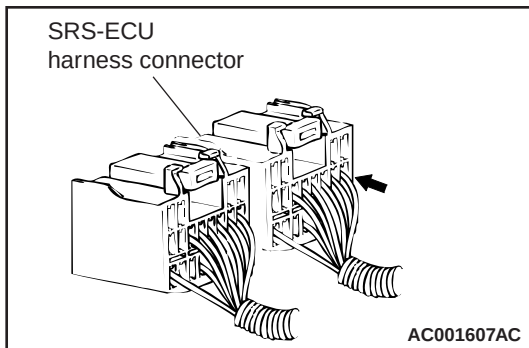
- From front side of the connector

Required Special Tool:

MB991219: Inspection Harness (Included in MB991223, Harness Set)



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.



- From back side of the connector (SRS-ECU harness side connector)
Since the SRS-ECU harness connector is plated to improve conductivity, observe the warning below when checking this connector.

⚠ WARNING

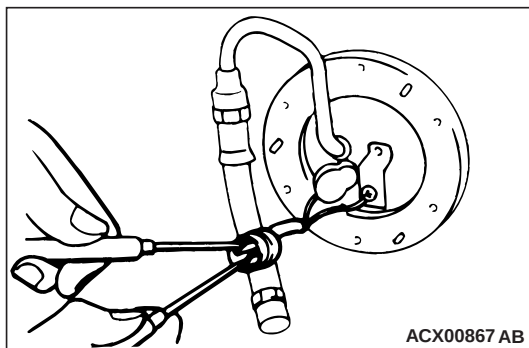
Insert the backprobing tool into the connector from the harness side, and connect the tester to the backprobing tool. If any tool other than the backprobing tool is used, it may cause damage to the harness and other components. Furthermore, measurement should not be carried out by touching the backprobing tool directly against the terminals from the front of the connector. The terminals are plated to increase their conductivity, so that if they are touched directly by the backprobing tool, the plating may break, which will decrease reliability.

<When Inspecting a Male Pin>

⚠ CAUTION

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

Touch the pin directly with the test probe.

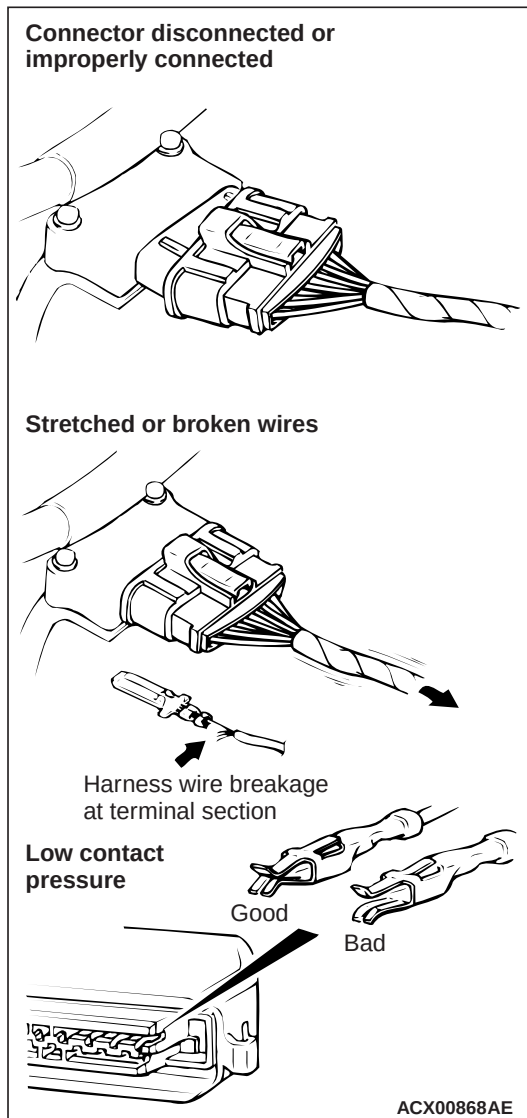


CONNECTOR INSPECTION SERVICE POINTS

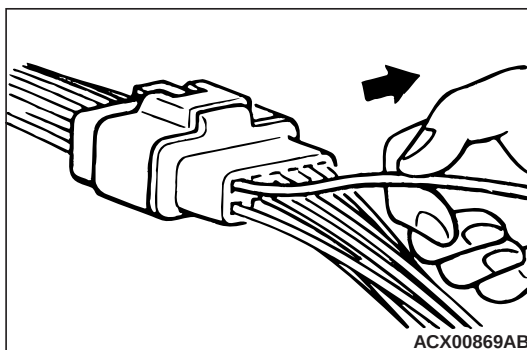
M1001013700424

VISUAL INSPECTION

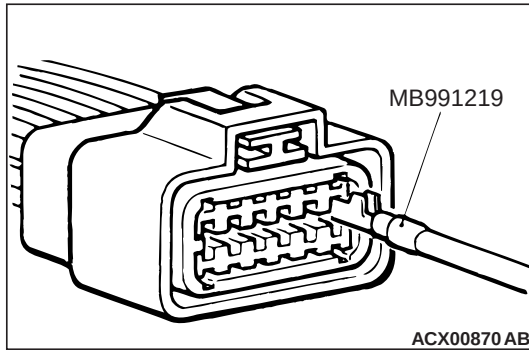
- Connector is disconnected or improperly connected
- Connector pins are pulled out
- Stretched or broken wires at terminal section
- Low contact pressure between male and female terminals
- Low connection pressure due to rusted terminals or foreign matter lodged in terminals

**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**

Required Special Tool:
MB991219: Inspection Harness



(contained in MB991223 Test Harness)
Use special tool, MB991219 to inspect the engagement of the male pins and female pins. [Pin drawing force: 1 N (0.2 pound) or more]

HOW TO COPE WITH INTERMITTENT MALFUNCTIONS

M1001013900525

Most intermittent malfunctions occur under certain conditions. If those conditions can be identified, the cause will be easier to find.

TO COPE WITH INTERMITTENT MALFUNCTION; 1. ASK THE CUSTOMER ABOUT THE MALFUNCTION

Ask what it feels like, what it sounds like, etc. Then ask about driving conditions, weather, frequency of occurrence, and so on.

2. DETERMINE THE CONDITIONS FROM THE CUSTOMER'S RESPONSES

Typically, almost all intermittent malfunctions occur from conditions like vibration, temperature and/or moisture change, poor connections. From the customer's responses, it should be reasoned which condition is most likely.

3. USE SIMULATION TEST

Use the simulation tests below to attempt to duplicate the customer's complaint. Determine the most likely circuit(s) and perform the simulation tests on the connectors and parts of that circuit(s). Be sure to use the inspection procedures provided for diagnostic trouble codes and trouble symptoms.

For temperature and/or moisture condition related intermittent malfunctions, try to change the conditions of the suspected circuit components, then use the simulation tests below.

4. VERIFY THE INTERMITTENT MALFUNCTION IS ELIMINATED

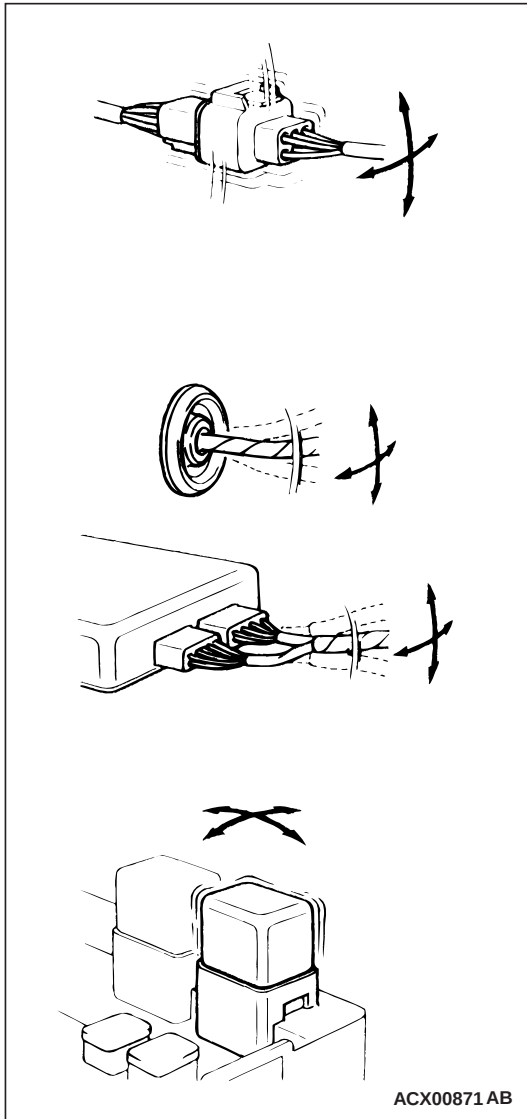
Repair the malfunctioning part and try to duplicate the condition(s) again to verify the intermittent malfunction has been eliminated.

SIMULATION TESTS

NOTE: In case of difficulty in finding the cause of the intermittent malfunction, the data recorder function in the scan tool is effective.

For these simulation tests, shake, then gently bend, pull, and twist the wiring of each of these examples to duplicate the intermittent malfunction.

- Shake the connector up-and-down, and right-and-left.
- Shake the wiring harness up-and-down, and right-and-left. Especially, check the splice points of wiring harnesses carefully. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).
- Shake the part or sensor.

**HOW TO TREAT PAST TROUBLE**

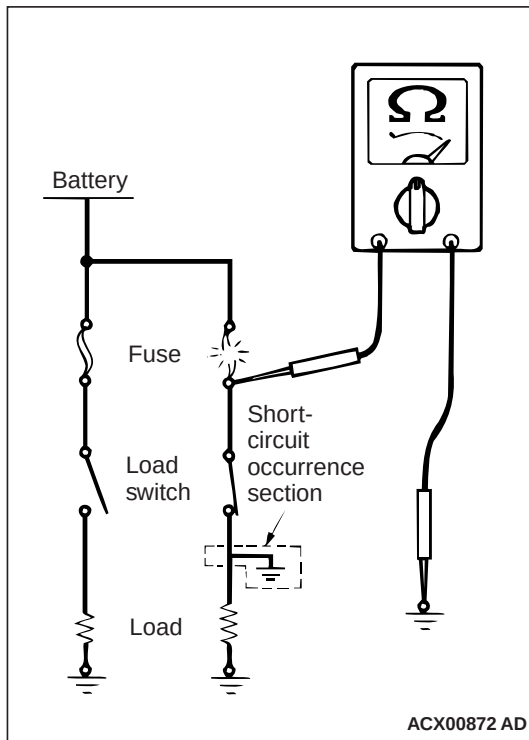
M1001014100481

Since the trouble may still be present even the status is "Stored", set the vehicle to the diagnostic trouble code detection condition and check that the status changes to "Active". If the status does not change from "Stored", carry out the following procedure.

1. Establish from the customer whether a fuse or connector has been replaced or disconnected.
2. If yes, erase the diagnostic trouble code, and then check that no diagnostic code is reset. If no diagnostic trouble 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 [P.00-13](#)."

INSPECTION SERVICE POINTS FOR A BLOWN FUSE

M1001013800409



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

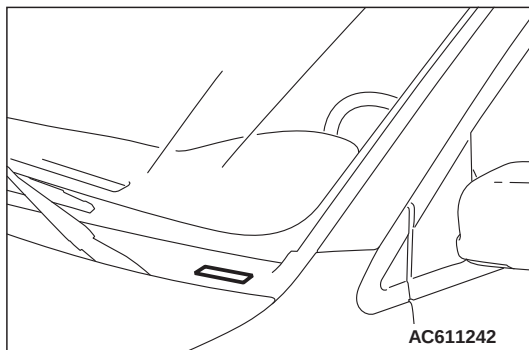
VEHICLE IDENTIFICATION

VEHICLE IDENTIFICATION NUMBER PLATE

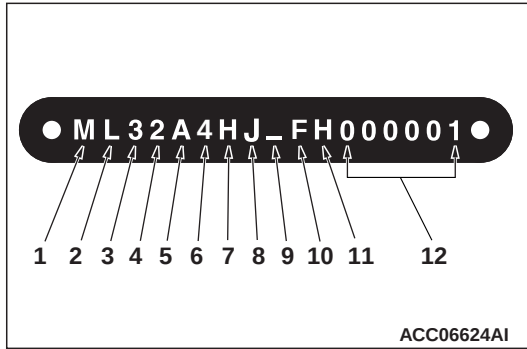
M1001005502959

VEHICLES IDENTIFICATION NUMBER LOCATION

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



CODE CHART



No.	Item	Content	
1	Country	M	Thailand
2	Make	L	Mitsubishi motors Thailand
3	Vehicle type	3	Passenger car
4	Others	2	Air bags (driver, passenger, side curtain, driver knee)
5	Line	A	MIRAGE
6	Price class	3	Medium
		4	High
7	Body	H	5-door hatchback
8	Engine	J	1.2L DOHC (3A92) MIVEC
9	Check digits*	0, 1, 2, 3, -----9, X	
10	Model year	F	2015 year
11	Plant	H	Laemchabang-3 (Thailand motor vehicle works)
12	Serial number	000001 to 999999	

NOTE: *: Check digit means a single number, or letter X, used to verify the accuracy of transcription of vehicle identification number.

VEHICLE IDENTIFICATION NUMBER LIST

VEHICLES FOR USA

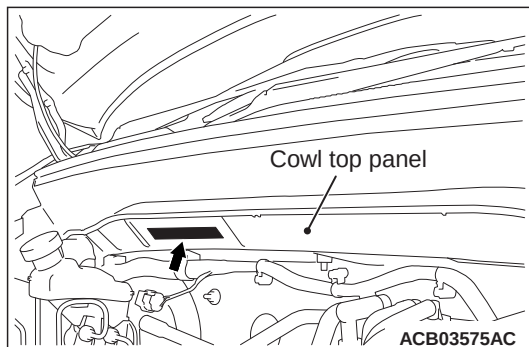
VIN (Except serial number)	Model code	Engine model	Transaxle model	Fuel system
ML32A3HJ_FH	A03AXNMHL2M	3A92 [1,193 cm ³ (72.8 cu in) DOHC MIVEC gasoline engine]	F5MBD (FWD, 5 M/T)	MFI
	A03AXTMHL2M		F1CJB (FWD, INVECS-III CVT)	
ML32A4HJ_FH	A03AXNHHL2M		F5MBD (FWD, 5 M/T)	
	A03AXTHHL2M		F1CJB (FWD, INVECS-III CVT)	

VEHICLES FOR CANADA

VIN (Except serial number)	Model code	Engine model	Transaxle model	Fuel system
ML32A3HJ_FH	A03AXNMHL3M	3A92 [1,193 cm ³ (72.8 cu in) DOHC MIVEC gasoline engine]	F5MBD (FWD, 5 M/T)	MFI
	A03AXTMHL3M		F1CJB (FWD, INVECS-III CVT)	
ML32A4HJ_FH	A03AXNHHL3M		F5MBD (FWD, 5 M/T)	
	A03AXTHHL3M		F1CJB (FWD, INVECS-III CVT)	

VEHICLES FOR PUERTO RICO, GUAM AND SAIPAN

VIN (Except serial number)	Model code	Engine model	Transaxle model	Fuel system
ML32A3HJ_FH	A03AXNMHL2M	3A92 [1,193 cm ³ (72.8 cu in) DOHC MIVEC gasoline engine]	F5MBD (FWD, 5 M/T)	MFI
	A03AXTMHL2M		F1CJB (FWD, INVECS-III CVT)	
ML32A4HJ_FH	A03AXNHHL2M		F5MBD (FWD, 5 M/T)	
	A03AXTHHL2M		F1CJB (FWD, INVECS-III CVT)	



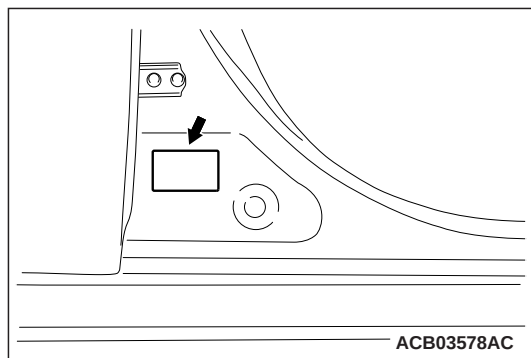
CHASSIS NUMBER

M1001005603829

The vehicle identification number (chassis number) is stamped scribed on the cowl top panel behind the engine compartment.

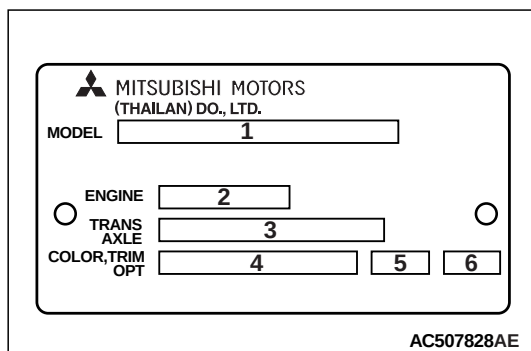
CHASSIS NUMBER CODE CHART

Chassis number code	Example	Content
A03AFH00001	A03A	MIRAGE
	FH000001	Refer to 10th thru 17th digits of VIN plate

**VEHICLE IDENTIFICATION CODE PLATE**

M1001005403502

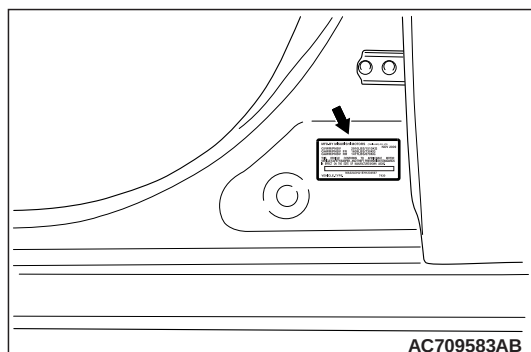
The vehicle information code plate is riveted to the face of the passenger's door sill.

CODE CHART

No.	Item	Example	Content
1	MODEL	A03A	Vehicle model
		XTMHL2M	Model series
2	ENGINE	3A92	Engine model
3	TRANS AXLE	F1CJB	Transmission model and final gear ratio
4	COLOR	A66	Body color code
5	INT	61X-X	Interior code
6	OPT	W54	Equipment code

CERTIFICATION LABEL

M1001017300398

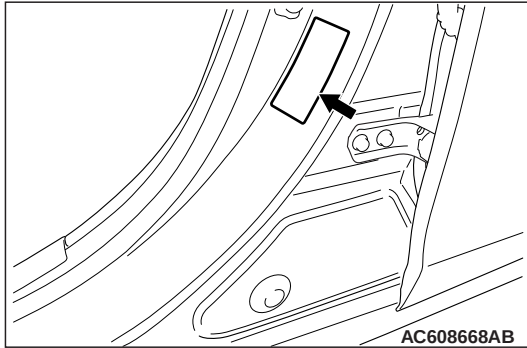


1. The certification label is attached to the face of the left door pillar.
2. This label indicates Gross Vehicle Weight Rating (G.V.W.R.), Gross Axle Weight Rating (G.A.W.R.) front, rear and Vehicle Identification Number (V.I.N.).

TIRE AND LOADING INFORMATION PLACARD

M1001015800290

The tire and loading information placard is located on the inside sill of the driver's door.



ENGINE MODEL STAMPING

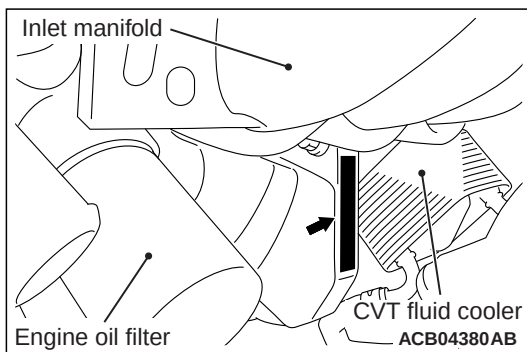
M1001005701206

The engine model is stamped on the cylinder block. These engine model numbers are as shown as follows.

Engine model	Engine displacement
3A92	1,193 mL

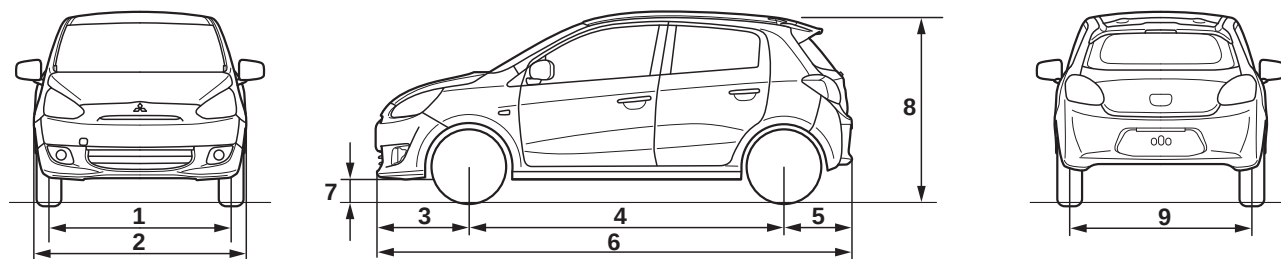
The engine serial number is stamped near the engine model number.

Engine number	AA0201 to YY9999
---------------	------------------



GENERAL DATA AND SPECIFICATIONS

M1001000908790



ACB03621AB

Item			A03A	
			XNMHL2M/3M	XNHHL2M/3M
Vehicle dimension mm (in)	Front track	1	1,430 (56.3)	1,430 (56.3)
	Overall width	2	1,665 (65.6)	1,665 (65.6)
	Front overhang	3	730 (28.7)	730 (28.7)
	Wheelbase	4	2,450 (96.5)	2,450 (96.5)
	Rear overhang	5	600 (23.6)	600 (23.6)
	Overall length	6	3,780 (148.8)	3,780 (148.8)
	Ground clearance (unladen)	7	160 (6.3)	160 (6.3)
	Overall height (unladen)	8	1,510 (59.4)	1,510 (59.4)
	Rear track	9	1,415 (55.7)	1,415 (55.7)
Vehicle weight kg (lb)	Kerb weight	Without optional parts	895 (1,973)	905 (1,996)
		With full optional parts	914 (2,015)	922 (2,033)
	Gross vehicle weight rating		1,320 (2,910)	1,320 (2,910)
	Gross axle weight rating-front		730 (1,609)	730 (1,609)
	Gross axle weight rating-rear		670 (1,477)	670 (1,477)
Seating capacity			5 persons	5 persons
Engine	Model code		3A92	3A92
	Type		DOHC MIVEC (12-valves 3-cylinders) petrol engine	DOHC MIVEC (12-valves 3-cylinders) petrol engine
	Total displacement cm ³ (cu in)		1,193 (72.8)	1,193 (72.8)
	Maximum output kW/r/min (HP/r/min)		55/6,000 (74/6,000)	55/6,000 (74/6,000)
	Maximum torque N·m/r/min (ft·lb/r/min)		100/4,000 (74/4,000)	100/4,000 (74/4,000)
Fuel system	Fuel supply system		MFI	MFI
Transmission	Model code		F5MBD	F5MBD
	Type		Front wheel drive 2WD, 5M/T	Front wheel drive 2WD, 5M/T
Minimum turning radius m (ft)	Body		4.9 (16.08)	4.9 (16.08)
	Wheel		4.6 (15.09)	4.6 (15.09)

Item			A03A	
			XTMHL2M/3M	XTHHL2M/3M
Vehicle dimension mm (in)	Front track	1	1,430 (56.3)	1,430 (56.3)
	Overall width	2	1,665 (65.6)	1,665 (65.6)
	Front overhang	3	730 (28.7)	730 (28.7)
	Wheelbase	4	2,450 (96.5)	2,450 (96.5)
	Rear overhang	5	600 (23.6)	600 (23.6)
	Overall length	6	3,780 (148.8)	3,780 (148.8)
	Ground clearance (unladen)	7	160 (6.3)	160 (6.3)
	Overall height (unladen)	8	1,510 (59.4)	1,510 (59.4)
	Rear track	9	1,415 (55.7)	1,415 (55.7)
Vehicle weight kg (lb)	Kerb weight	Without optional parts	920 (2,029)	930 (2,051)
		With full optional parts	939 (2,071)	947 (2,088)
	Gross vehicle weight rating		1,370 (3,020)	1,370 (3,020)
	Gross axle weight rating-front		730 (1,609)	730 (1,609)
	Gross axle weight rating-rear		670 (1,477)	670 (1,477)
Seating capacity			5 persons	5 persons
Engine	Model code		3A92	3A92
	Type		DOHC MIVEC (12-valves 3-cylinders) petrol engine	DOHC MIVEC (12-valves 3-cylinders) petrol engine
	Total displacement cm ³ (cu in)		1,193 (72.8)	1,193 (72.8)
	Maximum output kW/r/min (HP/r/min)		55/6,000 (74/6,000)	55/6,000 (74/6,000)
	Maximum torque N·m/r/min (ft·lb/r/min)		100/4,000 (74/4,000)	100/4,000 (74/4,000)
Fuel system	Fuel supply system		MFI	MFI
Transmission	Model code		F1CJB	F1CJB
	Type		Front wheel drive 2WD, CVT	Front wheel drive 2WD, CVT
Minimum turning radius m (ft)	Body		4.9 (16.08)	4.9 (16.08)
	Wheel		4.6 (15.09)	4.6 (15.09)

PRECAUTIONS BEFORE SERVICE

SUPPLEMENTAL RESTRAINT SYSTEM (SRS)

M1001011601907

1. Items to review when servicing SRS:

- (1) Be sure to read GROUP 52B, Supplemental Restraint System (SRS). For safe operation, please follow the directions and heed all warnings.
- (2) 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.
- (3) Warning labels must be heeded when servicing or handling SRS components. Warning labels can be found in the following locations (Refer to GROUP 52B [P.52B-3](#), Warning/Caution Labels).
- (4) Always use the designated special tools and test equipment.
- (5) 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.
- (6) Never attempt to disassemble or repair the SRS components (SRS-ECU, air bag module and clock spring). If there is a defect, replace the defective part.
- (7) Whenever you finish servicing the SRS, check the SRS warning light operation to make sure that the system functions properly.
- (8) 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 [P.52B-268](#), Air Bag Module Disposal Procedures).

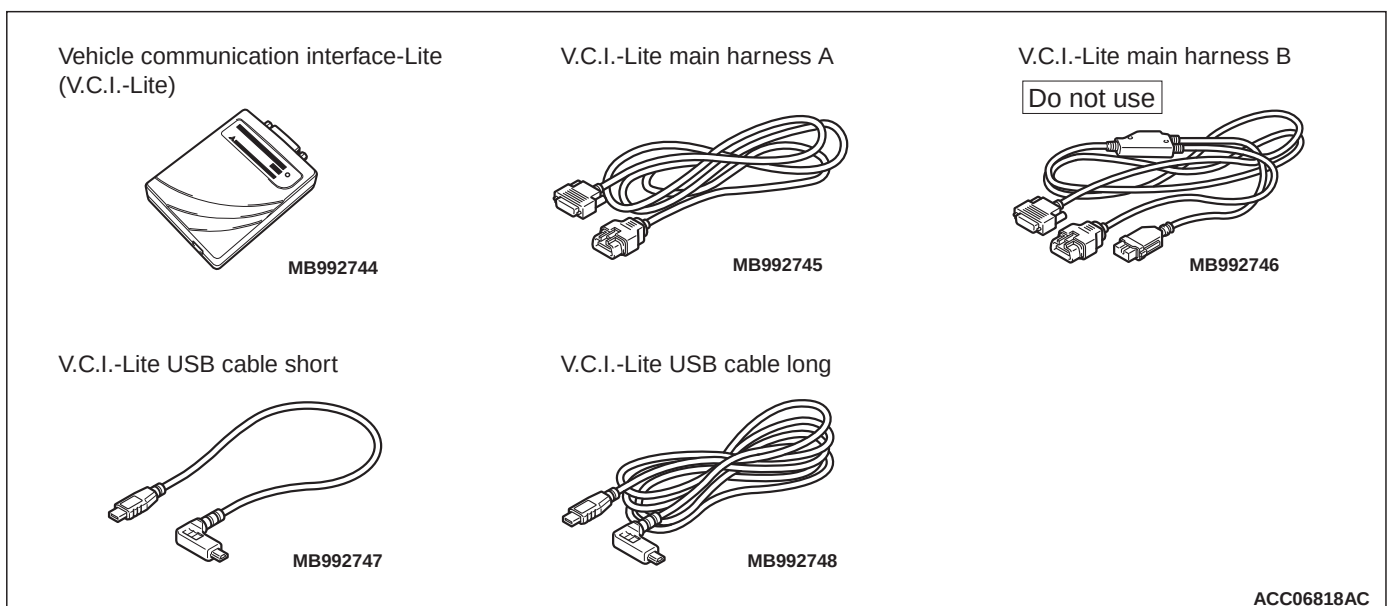
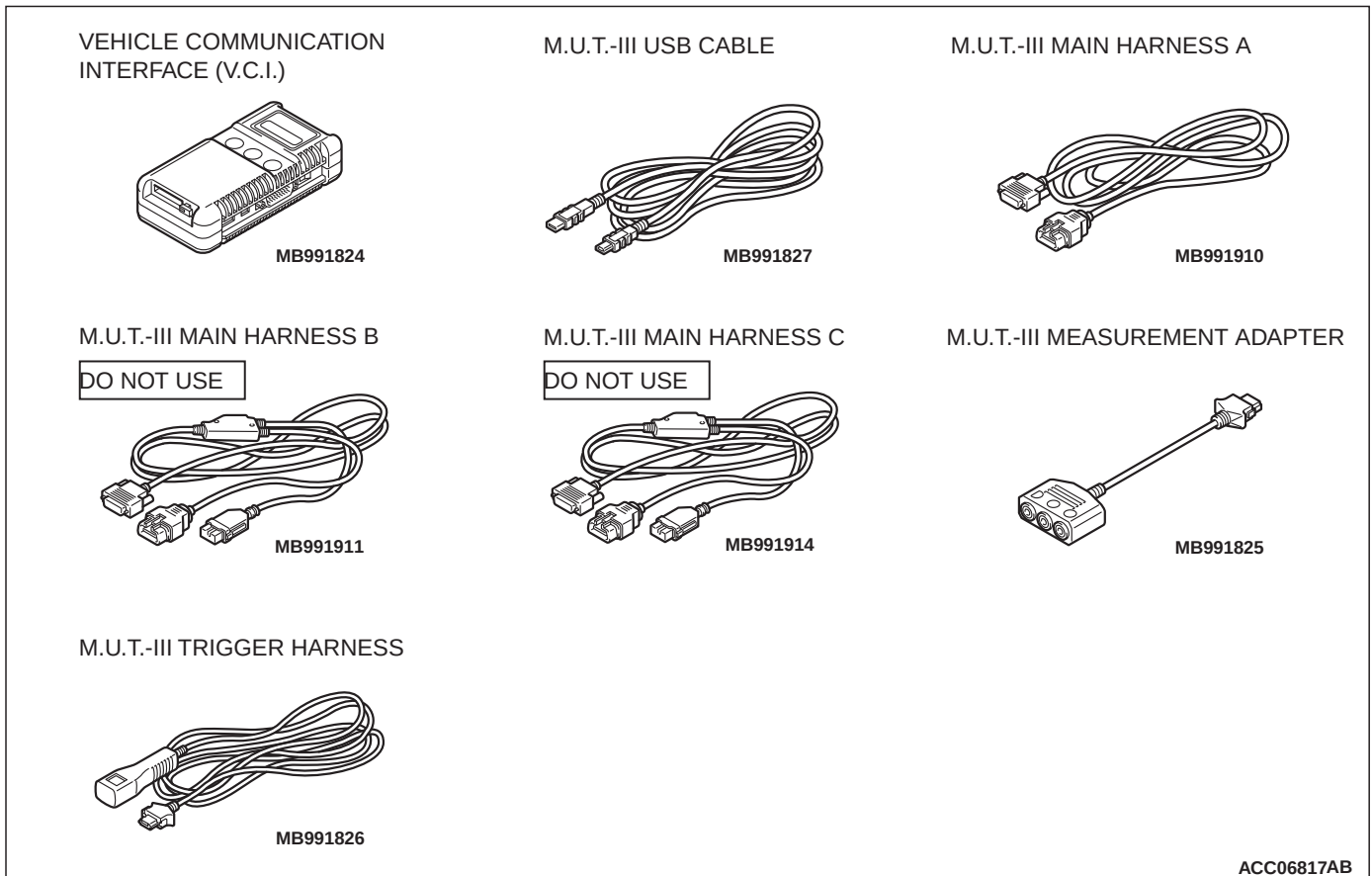
2. Observe the following when carrying out operations on places where SRS components are installed, including operations not directly related to the SRS air bag.

- (1) When removing or installing parts, do not allow any impact or shock to occur to the SRS components.
- (2) 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 (200 °F) or more
 - Seat belt pre-tensioner: 90 °C (194 °F) or more

SCAN TOOL [MULTI USE TESTER (M.U.T.-III) SUB ASSEMBLY]

M1001012400613

MULTIUSE TESTER (M.U.T. - III) SUB ASSEMBLY



- Both the scan tool MB991824 (V.C.I.) and the scan tool MB992744 (V.C.I.-Lite) can be used.

CAUTION

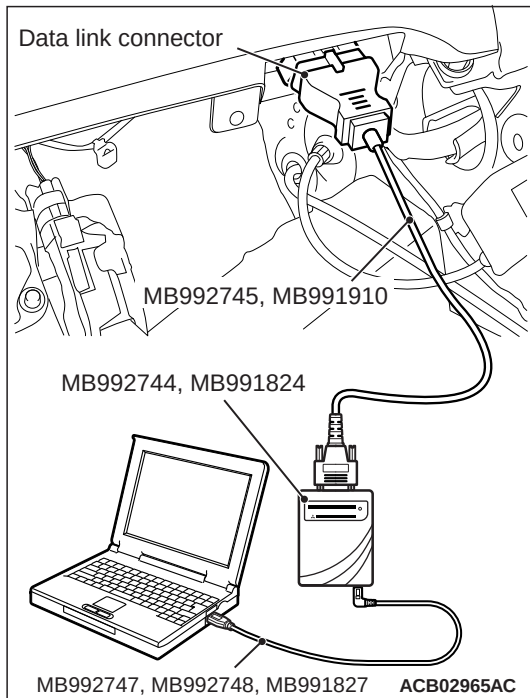
For the V.C.I., use MB991827 and MB991910. For the V.C.I.-Lite, use MB992745, MB992747 and MB992748.

- Refer to the "M.U.T.-III OPERATION MANUAL" for instructions on handling the scan tool (M.U.T.-III).

⚠ CAUTION

Turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting the scan tool (M.U.T.-III).

Connect the scan tool (M.U.T.-III) to the data link connector as shown in the illustration.

**SERVICING ELECTRICAL SYSTEM**

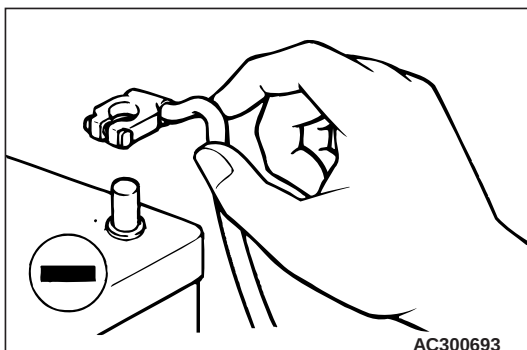
M1001011900433

⚠ WARNING

Battery posts, terminals and related accessories contain lead and lead compounds. WASH HANDS AFTER HANDLING.

1. Note the following before proceeding with working on the electrical system.

Never perform unauthorized modifications to any electrical device or wiring. Such modifications might lead to a vehicle malfunction, over-capacity or short-circuit that could result in a fire in the vehicle.



⚠ CAUTION

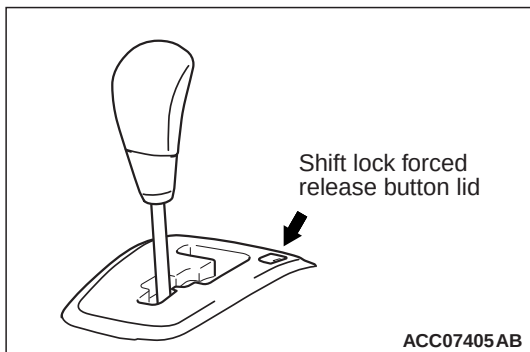
- Before connecting or disconnecting the negative battery cable, be sure to turn the ignition switch to the "LOCK" (OFF) position and turn off the lights (If this is not done, there is the possibility of semiconductor parts being damaged).
 - After completion of the work (and the negative battery terminals is connected), warm up the engine and allow it to idle for approximately 10 minutes under the conditions described below in order to stabilize engine control conditions, and then check to be sure that the idle is satisfactory.
 - Engine coolant temperature: 85 – 95°C (185 – 203°F)
 - Lights and all accessories: OFF
 - Transaxle: "P" position
 - Steering wheel: straight-forward position
2. When servicing the electrical system, disconnect the negative cable terminal from the battery.

HOW TO SHIFT LOCK FORCED RELEASE <CVT>

M1001018100319

If the shift lever cannot be moved from the P position due to discharged battery or similar reasons, release the shift lock by observing the procedure below.

1. Turn the ignition switch to the position other than the "LOCK" (OFF) position.
2. Remove the shift lock forced release button lid shown in the figure. While pressing the shift lock forced release button with a screwdriver or a similar tool, move the selector lever.



**HOW TO PERFORM VIN WRITING FOR ENGINE
CONTROL MODULE, KOS&OSS-ECU AND
ETACS-ECU**

M1001011401088

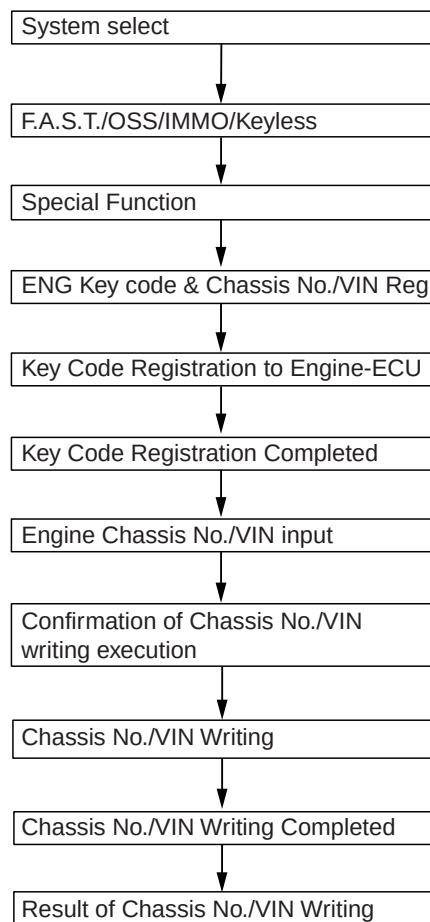
⚠ CAUTION

The F.A.S.T-Key (Free-hand Advanced Security Transmitter) is described as the Keyless Operation System (KOS) in this manual. (KOS is indicated as F.A.S.T. in the scan tool display.)

The VIN is stored in the engine control module (ECM), the KOS&OSS-ECU and the ETACS-ECU. If the VIN is improperly erased, the engine warning light or the keyless operation system warning indicator illuminates, and the diagnostic trouble code is displayed. When the ECM, the KOS&OSS-ECU and the ETACS-ECU are replaced, follow the procedure below to write the VIN.

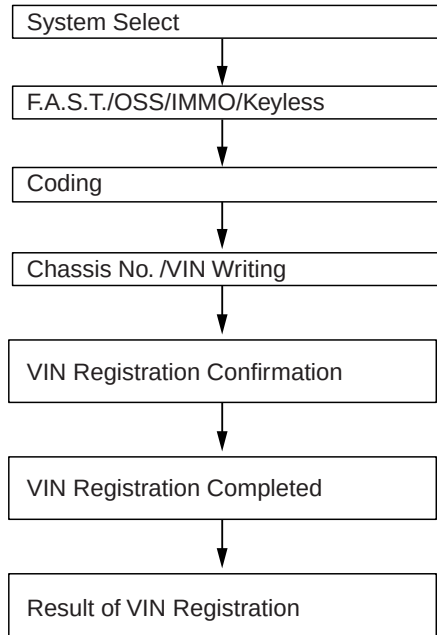
SCREEN FLOW OF SCAN TOOL (M.U.T.-III)

<When ECM is replaced>

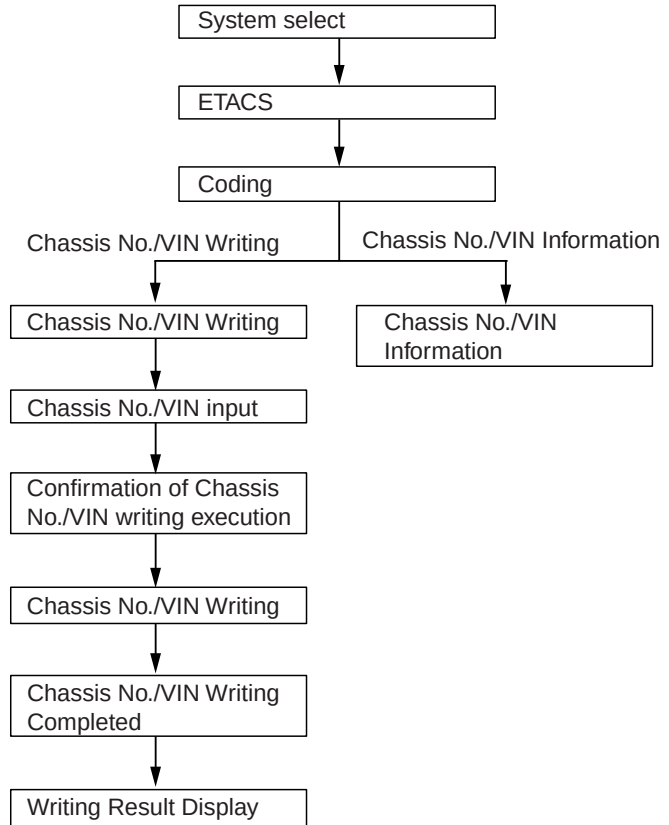


ACE01009AC

<When KOS&OSS-ECU, ESL ECU is replaced>



<When ETACS-ECU is replaced>



ACC00279 AF

NOTE:

- VIN writing of the OSS-ECU and Electric Steering Lock (ESL) ECU is described in "Keyless Operation System (KOS)" (Refer to GROUP 42B – On-vehicle Service <KOS&OSS-ECU>[P.42B-127](#)).
- Perform the variant coding of the ECM when the VIN is registered to the ECM.

WHEN ECM IS REPLACED

Required Special Tools:

- MB992744: Vehicle communication interface-Lite (V.C.I.-Lite)
- MB992745: V.C.I.-Lite main harness A
- MB992747: V.C.I.-Lite USB cable short
- MB992748: V.C.I.-Lite USB cable long
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: Vehicles Communication Interface (V.C.I.)
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

⚠ CAUTION

- Check that diagnostic trouble code No.P062F "Internal control module EEPROM error" is not set. When diagnostic trouble code No. P062F "Internal control module EEPROM error" is set, the ECM cannot store engine key code and VIN even if the engine key code and VIN are registered. If this diagnostic trouble code is set, troubleshoot the ECM and repair, and then register the engine key code and VIN to the ECM.
- Before connecting or disconnecting the scan tool (M.U.T.-III), turn the ignition switch to the "LOCK" (OFF) position.

Connect the scan tool (M.U.T.-III) to the data link connector as follows.

NOTE: For details on how to use the scan tool (M.U.T.-III), refer to the "M.U.T.-III Owner's manual."

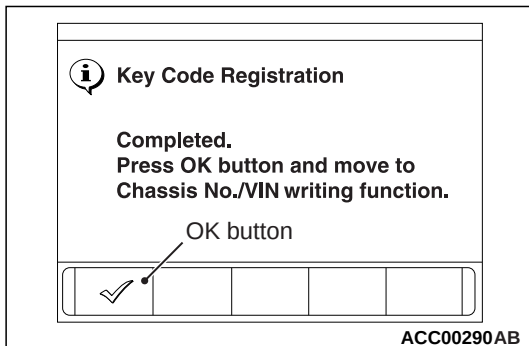
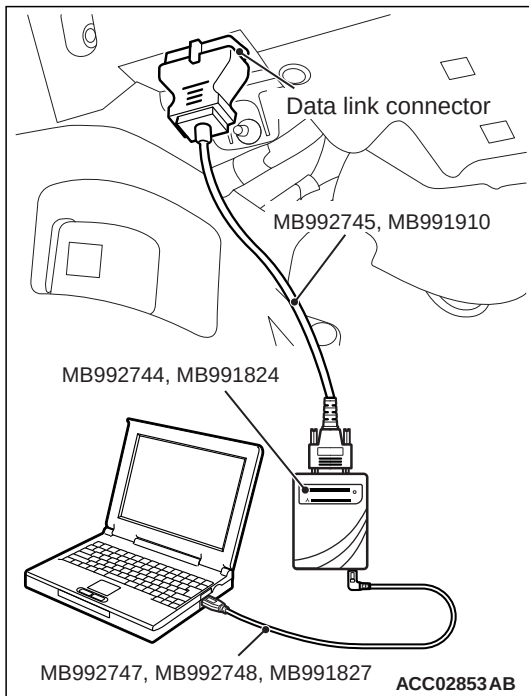
1. Start up the personal computer.
2. Connect special tool MB992747/M992748 or special tool MB991827 to special tool MB992744 or special tool MB991824 and the personal computer.
3. Connect special tool MB992745 or special tool MB991910 to special tool MB992744 or special tool MB991824.
4. Connect special tool MB992745 or special tool MB991910 to the data link connector.

NOTE: When the special tool MB992745 is connected to the data link connector, the special tool MB992744 indicator light will be illuminated in a green color.

5. Turn the power switch of special tool MB991824 to the "ON" position. <When using the special tool MB991824>

NOTE: When special tool MB991824 is energized, special tool MB991824 indicator light will be illuminated in a green color.

6. Start the M.U.T.-III system on the personal computer and turn the ignition switch to the "ON" position.
7. Select "F.A.S.T./OSS/IMMO/Keyless" in the "System Select" screen. Select the model year and push the OK button (Check each model if there is an option). Select "Special Function" on the next screen, and select "ENG Key Code & Chassis No/VIN Reg" on the further screen.
8. Push the OK button after "Key Code Registration" is displayed.
9. Push the OK button after "Completed. Press OK button and move to Chassis No./VIN writing function." is displayed.



ACC00285AD

10. Enter the VIN of registering vehicle and push the OK button.
11. Push the OK button after "Chassis No. Writing will start. Are you sure?" is displayed.
12. Return to the previous screen and "In Progress" is displayed at the lower-left corner on the screen.
13. Push the OK button after "Completed." is displayed.

ACC00286AD

14. VIN writing result is displayed.

WHEN KOS&OSS-ECU, ESL ECU IS REPLACED

VIN registration steps for KOS-ECU

Required Special Tools:

- MB992744: Vehicle communication interface-Lite (V.C.I.-Lite)
- MB992745: V.C.I.-Lite main harness A
- MB992747: V.C.I.-Lite USB cable short
- MB992748: V.C.I.-Lite USB cable long
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: Vehicles Communication Interface (V.C.I.)
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

⚠ CAUTION

- Check that diagnostic trouble code No. B2416 "ECU internal error" is not set. When diagnostic trouble code No. B2416 "ECU internal error" is set, the KOS&OSS-ECU cannot store the VIN even if the VIN is written. If this diagnostic trouble code is set, troubleshoot the KOS&OSS-ECU and repair, and then write the VIN to the KOS&OSS-ECU.
- Before connecting or disconnecting the scan tool (M.U.T.-III), turn the ignition switch to the "LOCK" (OFF) position.

NOTE: Regardless of which of the KOS&OSS-ECU or the electrical steering lock (ESL) is replaced, the registration can be performed by executing the same menu selection. (Even when both the KOS&OSS-ECU and the ESL were replaced as a set, they can be registered by performing the registration process only once.)

Connect the scan tool (M.U.T.-III) to the data link connector as follows.

NOTE: For details on how to use the scan tool (M.U.T.-III), refer to the "M.U.T.-III Owner's manual."

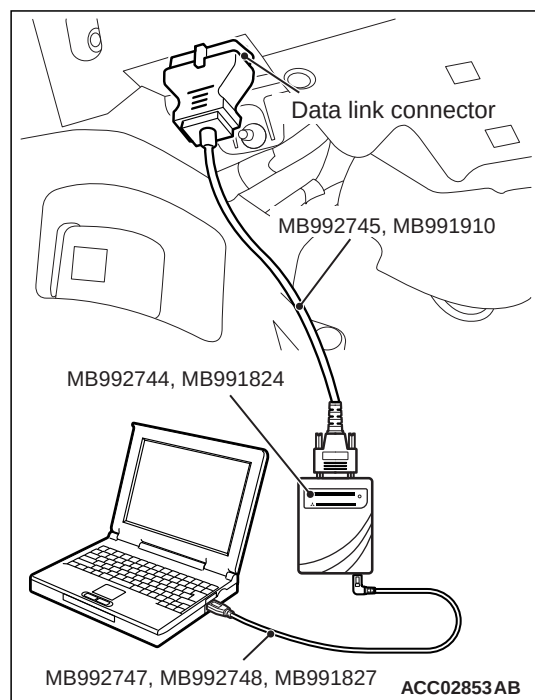
1. Start up the personal computer.
2. Connect special tool MB992747/M992748 or special tool MB991827 to special tool MB992744 or special tool MB991824 and the personal computer.
3. Connect special tool MB992745 or special tool MB991910 to special tool MB992744 or special tool MB991824.
4. Connect special tool MB992745 or special tool MB991910 to the data link connector.

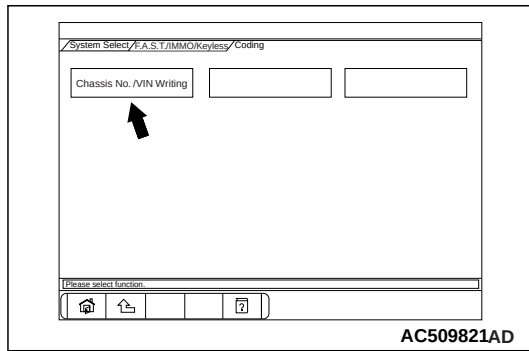
NOTE: When the special tool MB992745 is connected to the data link connector, the special tool MB992744 indicator light will be illuminated in a green color.

5. Turn the power switch of special tool MB991824 to the "ON" position. <When using the special tool MB991824>

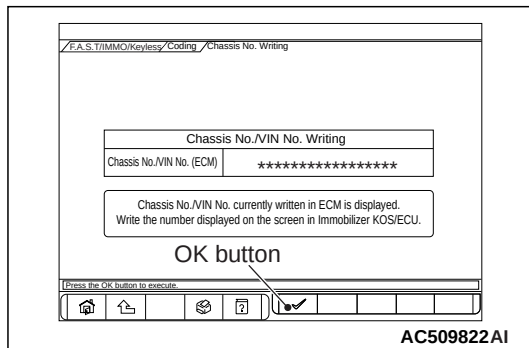
NOTE: When special tool MB991824 is energized, special tool MB991824 indicator light will be illuminated in a green color.

6. Start the M.U.T.-III system on the personal computer and turn the ignition switch to the "ON" position.
7. Select "F.A.S.T./OSS/IMMO/Keyless" in the "System Select" screen. Select the model year and push the OK button (Check each model if there is an option). Select "Coding" on the next screen.





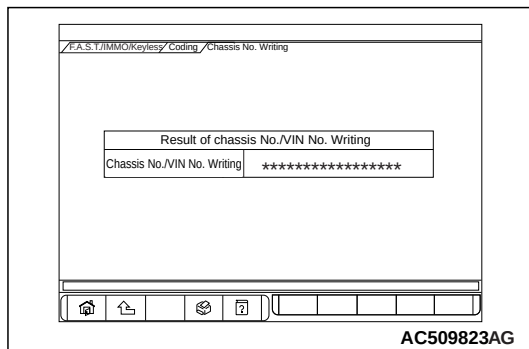
8. Select "Chassis No. /VIN Writing" on "Coding" screen.



9. Push the OK button after the VIN written in the ECM is displayed.

10. Push the OK button after "Chassis No. Writing will start. Are you sure?" is displayed.

11. Push the OK button after "Completed." is displayed.



12. Result of VIN writing is displayed.

13. Register the other ID code (Refer to GROUP 42B, Troubleshooting – ID Codes Registration Procedure).

WHEN ETACS-ECU IS REPLACED

VIN registration steps for ETACS-ECU.

Required Special Tools:

- MB992744: Vehicle communication interface-Lite (V.C.I.-Lite)
- MB992745: V.C.I.-Lite main harness A
- MB992747: V.C.I.-Lite USB cable short
- MB992748: V.C.I.-Lite USB cable long
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: Vehicles Communication Interface (V.C.I.)
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

⚠ CAUTION

Before connecting or disconnecting the scan tool (M.U.T.-III), turn the ignition switch to the "LOCK" (OFF) position.

Connect the scan tool (M.U.T.-III) to the data link connector as follows.

NOTE: For details on how to use the scan tool (M.U.T.-III), refer to the "M.U.T.-III Owner's manual".

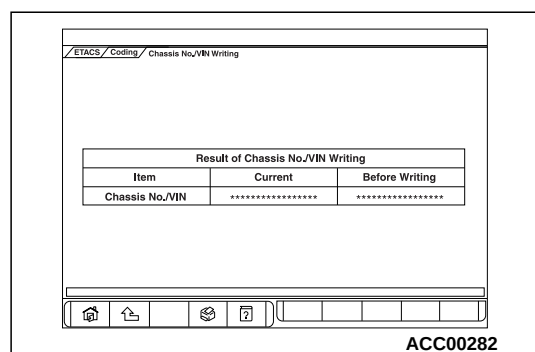
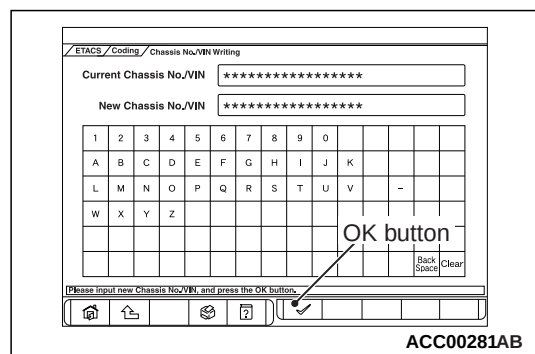
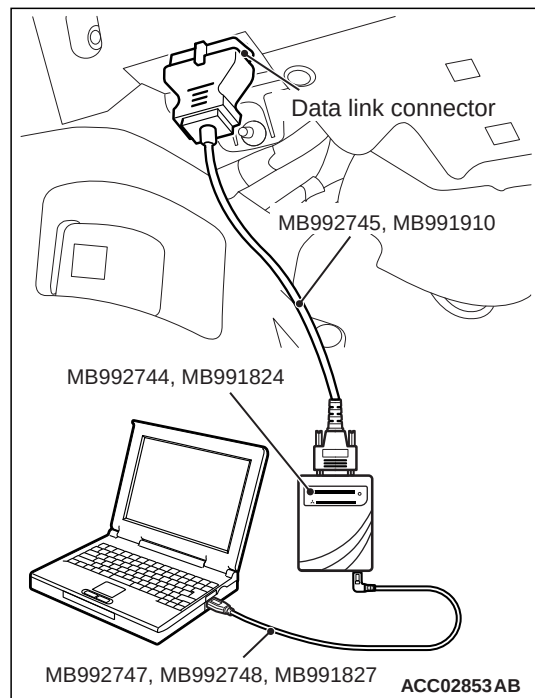
1. Start up the personal computer.
2. Connect special tool MB992747/M992748 or special tool MB991827 to special tool MB992744 or special tool MB991824 and the personal computer.
3. Connect special tool MB992745 or special tool MB991910 to special tool MB992744 or special tool MB991824.
4. Connect special tool MB992745 or special tool MB991910 to the data link connector.

NOTE: When the special tool MB992745 is connected to the data link connector, the special tool MB992744 indicator light will be illuminated in a green color.

5. Turn the power switch of special tool MB991824 to the "ON" position. <When using the special tool MB991824>

NOTE: When special tool MB991824 is energized, special tool MB991824 indicator light will be illuminated in a green color.

6. Start the M.U.T.-III system on the personal computer and turn the ignition switch to the "ON" position.
7. Select "ETACS" in the "System Select" screen. Select the model year and push the OK button (Check each model if there is an option). Select "Coding" on the next screen, and select "Chassis No./VIN Writing" on the further screen.
8. Enter the VIN of registering vehicle and push the OK button.
9. Push the OK button after "Chassis No./VIN Writing will start. Are you sure?" is displayed.
10. Return to the previous screen and "In Progress" is displayed at the lower-left corner on the screen.
11. Push the OK button after "Completed." is displayed.



12. VIN writing result is displayed.
13. Select "Chassis No./VIN Information" on the "Coding" screen after the VIN writing is completed, and check that the VIN is changed.
14. Register the other ID code (Refer to GROUP 54A, Immobilizer system – On-vehicle service P.54A-290).

CODING LIST

CAUTION

With the ETACS functions being customized, if any of the ETACS-ECU variant coding and option coding items are changed, the customized contents are reset. In such case, the functions need to be recustomized.

Before troubleshooting, check that the coding data written into the engine control module, SRS-ECU and ETACS-ECU are normal. If they are not the same as the initial settings, various functions and systems do not work normally.

VARIANT CODING

Required Special Tools:

- MB992744: Vehicle communication interface-Lite (V.C.I.-Lite)
- MB992745: V.C.I.-Lite main harness A
- MB992747: V.C.I.-Lite USB cable short
- MB992748: V.C.I.-Lite USB cable long
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: Vehicles Communication Interface (V.C.I.)
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

The coding data can be checked by operating scan tool (M.U.T.-III).

NOTE: For details on how to use the scan tool (M.U.T.-III), refer to the "M.U.T.-III Owner's manual."

CAUTION

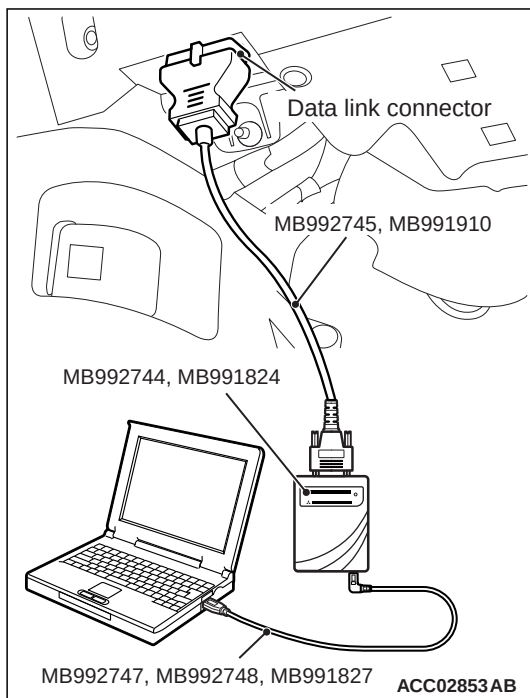
To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (M.U.T.-III).

1. Ensure that the ignition switch is at the "LOCK" (OFF) position.
2. Start up the personal computer.
3. Connect special tool MB992747/M992748 or special tool MB991827 to special tool MB992744 or special tool MB991824 and the personal computer.
4. Connect special tool MB992745 or special tool MB991910 to special tool MB992744 or special tool MB991824.
5. Connect special tool MB992745 or special tool MB991910 to the data link connector.

NOTE: When the special tool MB992745 is connected to the data link connector, the special tool MB992744 indicator light will be illuminated in a green color.

6. Turn the power switch of special tool MB991824 to the "ON" position. <When using the special tool MB991824>

NOTE: When special tool MB991824 is energized, special tool MB991824 indicator light will be illuminated in a green color.



7. Start the M.U.T.-III system on the personal computer and turn the ignition switch to the "ON" position.
8. On the system selection screen, select "MFI" to check the engine control module data, "SRS-AIR BAG" to check the SRS-ECU data, and "ETACS" to check the ETACS-ECU data.
9. Select "Coding."
10. Select "Coding Information & Copy."
11. If the displayed coding information is different from the corresponding initial setting in the list, replace the ECU with a correctly coded one. For replacement of the engine control module, refer to GROUP 13A – Engine Control Module [P.13A-656](#). For replacement of the SRS-ECU, refer to GROUP 52B – SRS Control Unit [P.52B-229](#). For replacement of the ETACS-ECU, refer to GROUP 54A – ETACS [P.54A-260](#).

ENGINE CONTROL MODULE CODING DATA LIST

NOTE: The items to be displayed may differ depending on the version of the scan tool (M.U.T.-III).

Item name	Initial value
Vehicle Model	MRG / S. STR
Model year	(Displays the model year)
Destination	U.S.
Engine type	3A92 1.2L
Final drive	2WD
Model year half	0
Final gear ratio	4.055(MT)
	3.757(CVT)
Tire circumference	1748mm
IMMOBILIZER	Not present or Present
ABS	Not present
A.S.C.	Present
EPS	Present
ECO indicator	Present
A/C	Not present or Present
Power window Dr	Not present
Power window As	Not present
Power window RR	Not present
Power window RL	Not present
OSS	Not present or Present
Cruise control	Not present or Present
Cruise control option coding	Not accept
Compressor type	No compressor or Type 1
S/W variation	No. 1

SRS-ECU CODING DATA LIST

NOTE: The items to be displayed may differ depending on the version of the scan tool (M.U.T.-III).

Item name	Initial value
DR airbag squib(1st)	Present
PS airbag squib(1st)	Present
DR airbag squib(2nd)	Present
PS airbag squib(2nd)	Present
DR pretensioner squib	Present
PS pretensioner squib	Present
DR lap pretensioner squib	Not present
PS lap pretensioner squib	Not present
RH side airbag squib	Present
LH side airbag squib	Present
RH curtain airbag squib	Present
LH curtain airbag squib	Present
DR knee airbag squib	Present
PS knee airbag squib	Not present
RH front G sensor	Present
LH/Center front G sensor	Present
RH side sensor B-pillar	Present
LH side sensor B-pillar	Present
RH side sensor C-pillar	Not present
LH side sensor C-pillar	Not present
Sensor for high volt. cutoff	Not present
DR seat position sensor	Not present
PS seat position sensor	Not present
DR buckle SW (mecha)	Not present
DR buckle SW (hall)	Not present
PS buckle SW (mecha)	Present
PS buckle SW (hall)	Not present
Seat posi. sensor/Buckle SW input	DR only/DR&PS
PS cut off SW	Not present
PS cut off light	Present
PS on light	Not present
SRS warning indicator(H/W)	Not present
Occupant classification module	Present
Roll over sensor	Not present
High volt.cutoff communication	Not present
Emergency call communication	Not present
Crash parameter flag(#0)	ON
Crash parameter flag(#1)	OFF

Item name	Initial value
Crash parameter flag(#2)	OFF
Crash parameter flag(#3)	OFF
Crash parameter flag(#4)	OFF
Crash parameter flag(#5)	OFF
Crash parameter flag(#6)	OFF
Crash parameter flag(#7)	OFF
High volt.cutoff para.flag(#0)	OFF
High volt.cutoff para.flag(#1)	OFF
High volt.cutoff para.flag(#2)	OFF
High volt.cutoff para.flag(#3)	OFF
High volt.cutoff para.flag(#4)	OFF
High volt.cutoff para.flag(#5)	OFF
High volt.cutoff para.flag(#6)	OFF
High volt.cutoff para.flag(#7)	Not used

ETACS-ECU CODING DATA LIST

NOTE: The items to be displayed may differ depending on the version of the scan tool (M.U.T.-III).

Item name	Initial value
Compressor type*	No compressor or Type 1
Temperature type	Celsius or Fahrenheit
Average speed	Not available
Fuel consumption scale	L/100km or MPG (US)
Seat belt reminder logic	Except EU
Coolant temp gauge threshold	Normal
Frost warning threshold	U.S.
Distance to empty	Available
Average fuel consumption	Available
Instant fuel consumption	Not available
Trip autoreset IG OFF	Available
Seat belt reminder control type	AABT
Seat belt reminder indicator	D&P independent
Reverse alarm	Not available
Key reminder	Not available or Available
GCC speed alarm	Not available
Rent-a-car mode IG-OFF always	Available
Service reminder schedule table	Normal
Launch gear block alarm	Not present
TCM	Not present or Present
EPS	Present
EV	Not present

Item name	Initial value
A/C	Not present or Present
OCM	Present
ORC	Present
WCM	Not present
OSS	Not present or Present
Model year	(Displays the model year)
Vehicle line	MRG / S. STR
Destination	U.S.
EPS type	Type 2
Immobilizer	Type A or Type B
Handle side	LHD
ABS	Not present
A.S.C.	Present
TPMS information	N/A or 240 kPa
TPMS	Not present or Present(NAS)
TPMS Off mode function	Not present
Keyless entry*	Not present or Present
Vehicle Type for A.S.C.	Type 1
Brake Type for A.S.C.	Type 1
HBA Type	Type 1
ABS Type	Type 1
TCL Type	Type 1 or Type 2
A.S.C. Type	Type 1
HSA Type	Not present or Type 1
AS&G brake hold Type	Not present
Tyre circumference	1748 mm
A/C control type	Normal or NAS
Engine type	3A92 1.2L
Engine power	Normal
Transmission	5MT or CVT
F.A.S.T.	Not present or Type C
F.A.S.T. door entry type	Switch
Idle neutral control	Not present or Present
G sensor for CVT	Not present
T/M oil cooler	Not present
Transmission control type	Default
Model year half	0
GSI system	Not present
ESL	Default or Not present
F.A.S.T. SW type(Gate/trunk)	Gate 1SW

Item name	Initial value
Engine Type for OSS	Gasoline
F.A.S.T. LF output	Type 2
Transmission Type for OSS	Type 1
Option Heater	Not present
Fuel Tank Type	Type 0
Service reminder for month	6 month
Service reminder for km	12000 km
Service reminder for mile	7500 mile
GCC speed alarm indicator	Not present
AS&G status	Not present
ECO gauge	Not present
Gate/Trunk	Gate type
Outside temperature	Not present
Remote engine starter*	NotPresent/ChgNg or Present/Chg Ok
Comfort flasher type	Present/Chg Ok
Rear wiper by reverse customize	Disable or Enable
Dead lock operation customize	Disable
ACC power auto cut	Default disable
Room light auto cut by door	Enable
Horn chirp by keyless	Present/Chg Ok
Room light delay timer	Long
Room light by H/L	Full
Outer Buzzer Volume customize	Disable or Enable
Panic Alarm*	Disable or Enable
Multi mode RKE	D-spec
key reminder unlock	Disable or B-spec/Dr and As
Security alarm mode	Disable
Security alarm function	NotPresent/ChgNg
Pre-alarm	Not present
Manner Switch*	NotPresent/ChgNg
RLS Outside temperature control	Enable
RLS Outside temp. control type	A-spec
DRL signal	B-spec
Auto light control*	No/Chg Ng
Auto light control mode	High threshold
Wiper by washer	Disable
LED H/L indicator	Disable
Rear defogger timer	Enable
Power window mode	Type P3 or Type 5(NAFTA)
Power window Dr	Not present

Item name	Initial value
Power window As	Not present
Power window RR	Not present
Power window RL	Not present
RLS*	Not present
RLS overwipe type	Type 4
RLS WS type	Type 2 (Green)
Shift lock	Not present or Present
DRL type	DRL not present or Dimming DRL w/ P
Vehicle type for ETACS Function	Type A
DRL function*	Present/Chg Ng or NotPresent/ChgNg
Headlight	2 beams
Headlight washer	Disable
Headlight auto cut	C-spec
Turn signal bulb	21W+21W+5W
Front fog light mode	Type B
Front fog light*	Not present or Present
Rear fog light*	NotPresent/ChgOk
Rear wiper	Enable
Wiper washer check bulb*	Present
Horn type*	Single horn
Door lock system	Not present or A-spec
ESS by turn light	Not present
ESS Cancel Function*	Not present
Fold mirror	Disable
Trunk opener mode	Not present
ACC automatic cut customize(OSS)	Disable

NOTE: *: The setting can be changed by the option coding. Refer to [P.00-40](#).

OPTION CODING

⚠ CAUTION

- If there is any item indicated by the option coding after equipment change, set ETACS-ECU so that the option coding data corresponds with the equipment content. Pay attention to that the concerned functions and systems do not work normally if the setting does not correspond with the equipment.
- With the ETACS functions being customized, if any of the ETACS-ECU option coding items are changed, the customized contents are reset. In such case, the functions need to be recustomized.

The ETACS-ECU option coding data can be checked or changed by operating scan tool (M.U.T.-III).

- How to check option coding data
 1. Connect the scan tool (M.U.T.-III). Refer to [P.00-33](#).
 2. Select "ETACS" on the system selection screen.
 3. Select "Coding".
 4. Select "Option Coding Information".
 5. Check the displayed option coding information.
- How to change option coding data
 1. Connect the scan tool (M.U.T.-III). Refer to [P.00-33](#).
 2. Select "ETACS" on the system selection screen.
 3. Select "Coding".
 4. Select "Option Coding".
 5. Change to correct option coding data.

LIST

Item name
Compressor type
Keyless entry
Remote engine starter
Panic Alarm
Manner Switch
Auto light control
RLS
DRL function
Front fog light
Rear fog light
Wiper washer check bulb
Horn type
ESS Cancel Function

INITIALIZATION PROCEDURE FOR LEARNING VALUE IN MFI ENGINE

M1001011701584

When the following service is performed, initialize the learning value.

- At replacing engine assembly*
- At replacing injector and at cleaning
- At replacing throttle body and at cleaning
- At replacing knock sensor

NOTE: * Initialize CVT-related learning value.

INITIALIZATION PROCEDURE

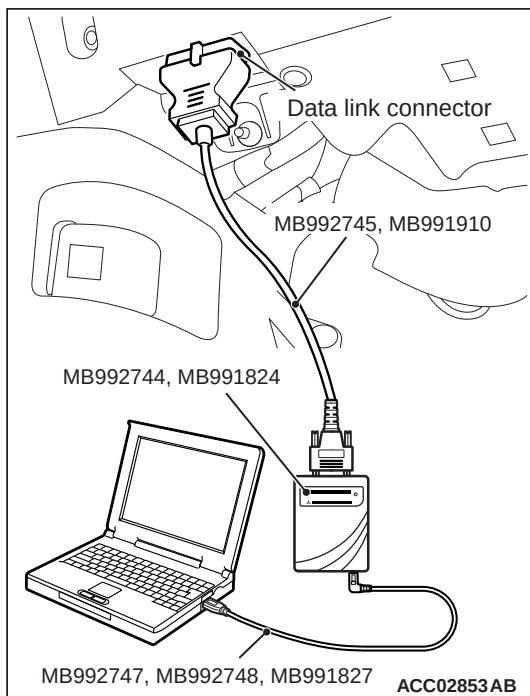
Required Special Tools:

- MB992744: Vehicle communication interface-Lite (V.C.I.-Lite)
- MB992745: V.C.I.-Lite main harness A
- MB992747: V.C.I.-Lite USB cable short
- MB992748: V.C.I.-Lite USB cable long
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: Vehicles Communication Interface (V.C.I.)
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

⚠ CAUTION

To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (M.U.T.-III).

1. After the ignition switch is in "LOCK" (OFF) position, connect scan tool (M.U.T.-III) to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "MFI" form System select Screen of scan tool (M.U.T.-III).
4. Select "Special Function" form MFI Screen.
5. Select "Learned value reset" from Special Function Screen.
6. Select "All learned value" form Learned value reset Screen.
7. Initialize the learning value by pressing the "ON" button.
8. After initializing the learning value, the learning value of MFI engine idling is necessary. (Refer to LEARNING PROCEDURE FOR IDLING IN MFI ENGINE [P.00-41](#)).



ENGINE IDLING LEARNING PROCEDURE

M1001011801525

PURPOSE

When the ECM is replaced, or when the learned value is initialized, the idle may not be stabilized. Carry out the learning method by following the procedures below.

LEARNING PROCEDURE

1. Start the engine and warm to reach 80°C (176°F) or more.

NOTE: When the engine coolant temperature is 80 °C (176 °F) or more, the warm-up is not needed if the ignition switch is in "ON" position once.

2. Turn the ignition switch to "LOCK" (OFF) position.
3. After 10 seconds or more, start the engine again.
4. For 10 minutes, carry out the idling under the condition shown below and then confirm the engine idles normally.
 - Transaxle: Neutral (P range on vehicles with CVT)
 - Operation in ignition-related, fan and attachments: Not to be operated
 - Engine coolant temperature: 80°C (176°F) or more

NOTE: If the engine stalls while idling, check for a dirty (on the throttle valve) of the throttle body and clean if needed. Then perform the service from Procedure 1 again.

INITIALIZATION PROCEDURE FOR THROTTLE ACTUATOR CONTROL MOTOR

When the battery cable is disconnected and reconnected, throttle actuator control motor valve (Fully closed position) is eliminated, so that the throttle valve opening angle control would not be performed correctly. When the battery cable is disconnected and reconnected, initialize the throttle actuator control motor using the following procedure.

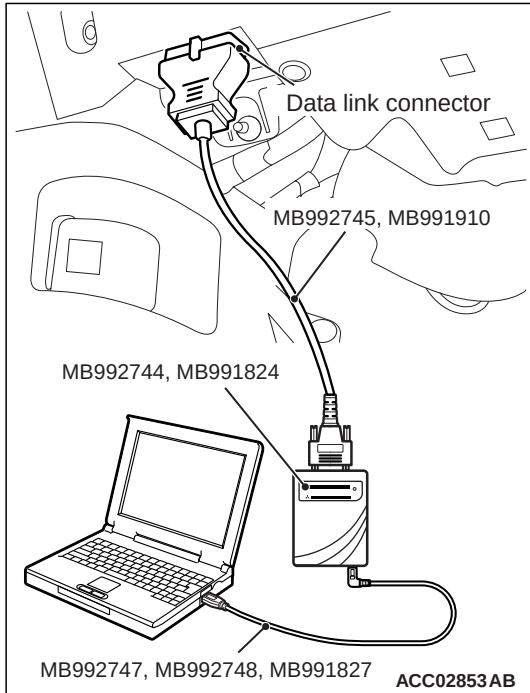
1. Turn the ignition switch to the "ON" position then, turn the ignition switch to "LOCK" (OFF) position.
2. For 10 seconds or more, keep the ignition switch in "LOCK" (OFF) position.

TIMING CHAIN LEARNED VALUE RESET

M1001020600087

Required Special Tools:

- MB992744: Vehicle communication interface-Lite (V.C.I.-Lite)
- MB992745: V.C.I.-Lite main harness A
- MB992747: V.C.I.-Lite USB cable short
- MB992748: V.C.I.-Lite USB cable long
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: Vehicles Communication Interface (V.C.I.)
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)



CAUTION

To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (M.U.T.-III).

1. After the ignition switch is in "LOCK" (OFF) position, connect scan tool (M.U.T.-III) to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "MFI" form System select Screen of scan tool (M.U.T.-III).
4. Select "Special Function" form MFI Screen.
5. Select "Timing chain maintenance" from Special Function Screen.
6. Select "Learned value reset" form Timing chain maintenance Screen.
7. Press "ON" to reset the learning value.

PRE-INSPECTION CONDITION

M1001012100902

"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
- Lights, electric cooling fan and all accessories: OFF
- M/T: Neutral
- CVT: P range

ENGINE OILS

M1001011200230

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.

FORM-IN-PLACE GASKET (FIPG)

M1001014200165

The engine has several parts to which the form-in-place gasket (FIPG) is used. To sufficiently achieve the aims of this gasket, it is necessary to pay attention to the application amount, procedure, and surface status.

If the application amount is too small, a leakage will occur. If the application amount is excessive, the FIPG will overflow and cause a clogging or narrowing of water and oil paths. Therefore, to eliminate the leak from the joint, it is indispensable that the FIPG be applied with a correct amount and without any gap.

Because the FIPG used for the engine parts becomes hardened by the reaction with the atmospheric moisture, it is normally used for the metal flange section.

 CAUTION

Reapply the FIPG with care to the followings.

1. Completely remove the old FIPG including the residue in gaps of parts.
2. Using Mitsubishi genuine parts cleaner (MZ100387) or equivalent, degrease the FIPG application surface carefully.
3. According to the FIPG application procedures, apply it accurately.

DISASSEMBLY

The parts installed with the FIPG can be disassembled easily without using any special method. However, in some cases, it is necessary to tear the sealant in between the mating surfaces by tapping the parts with a wooden hammer or similar tools. It is acceptable to lightly hit in a smooth, thin gasket scraper into the mating surface, but, in this case, a sufficient caution is required not to damage the mating surface. The oil pan FIPG cutter (Special tool: MD998727) is provided. Thus, use this special tool.

GASKET SURFACE CLEANING

Use a gasket scraper or wire brush to completely remove all the foreign materials adhering to the gasket surface. Check that the FIPG application surface is smooth. There must be no grease or foreign material adhesion to the gasket surface. Do not forget to remove the old FIPG remaining in the mounting hole and tapped hole.

APPLICATION PROCEDURE

Apply the FIPG with a specified diameter and without any gap. Completely enclose around the mounting hole. When the FIPG is not hardened, it can be wiped off. When the FIPG is still moistened (within three minutes), perform the installation to the specified position. At the time of installation, prevent the FIPG from adhering to locations other than it is necessary. After the installation, until a sufficient period of time (approximately for two hours) elapses, do not contact the oil or water to the application area. Also, do not start the engine. Because the FIPG application procedure may differ depending on the application area, apply the FIPG according to the procedure described in the text.

BOLTS AND NUTS WITH STABILIZER FOR COEFFICIENT OF FRICTION

M1001014800082

The bolts and nuts with stabilizer for coefficient of friction have been used for the connections such as the suspension arm and crossmember in order to stabilize the axial force and to ensure the high axial force at bolt/nut connections, resulting in improved reliability.

NOTE: The bolts and nuts with stabilizer for coefficient of friction mean that the bolts and nuts with surface treatment to stabilize and reduce the coefficient of friction, allowing to achieve the stable axial force and to secure the high axial force with low tightening torque.

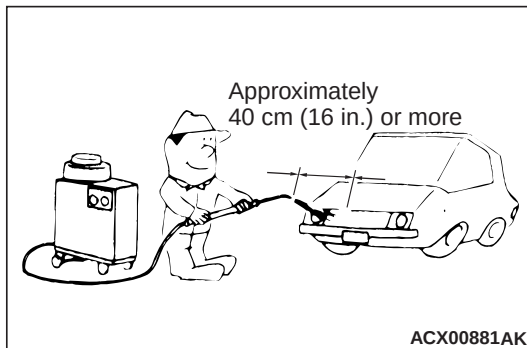
APPLICATION OF ANTI-CORROSION AGENTS AND UNDERCOATS

M1001011000117

Be careful not to apply oil or grease to the heated oxygen sensor. If applied, the sensor may malfunction. Protect the heated oxygen sensor with a cover before applying anti-corrosion agent, etc.

VEHICLE WASHING

M1001012000682



1. 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 approximately 40cm (16 in.) from any plastic parts and all opening parts (doors, luggage compartment, etc.).
2. If high-pressure car-washing equipment or steam car-washing equipment is used to wash the vehicle, be sure to observe the following instructions to prevent damages to the plastic parts.
 - Spray nozzle distance: Approximately 40 cm (16 in.) or more
 - Spray pressure: 3,900 kPa or less
 - Spray temperature: 82 °C (180°F) or less
 - Time of intensive spraying to one point: Within 30 seconds

TOWING AND HOISTING

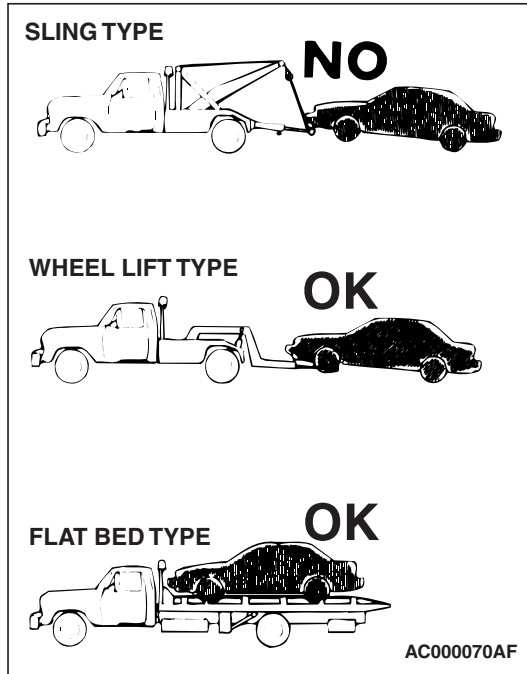
M1001000801071

WRECKER TOWING RECOMMENDATION

FRONT TOWING PICKUP

CAUTION

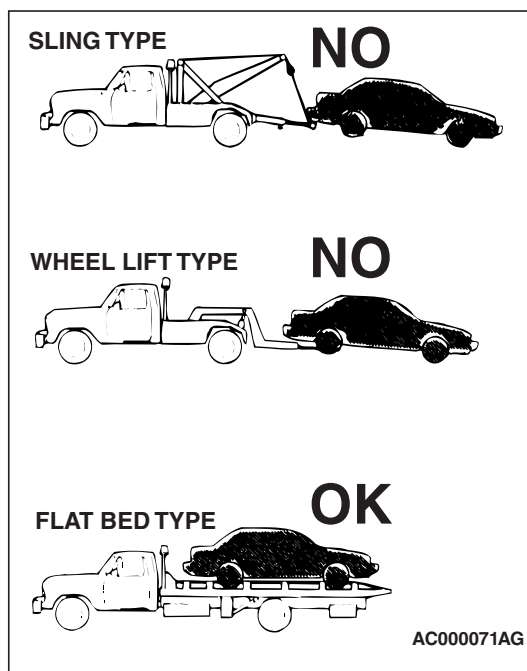
- This vehicle cannot be towed by a wrecker using sling-type equipment; otherwise the bumper may become deformed. If this vehicle is towed, use wheel lift or flat bed equipment.
- The vehicle may be towed on its rear wheels for extended distances provided the parking brake is released. It is recommended that vehicles be towed using the front pickup whenever possible.



REAR TOWING PICKUP

CAUTION

- This vehicle cannot be towed by a wrecker using sling-type equipment; as the bumper may become deformed. If this vehicle is towed, use wheel lift or flat bed equipment.
- The vehicle must not be towed by placing only its front wheels or only the rear wheels on a rolling dolly. This will result in deterioration of the viscous coupling causing the vehicle to jump forward suddenly. <AWD>
- Never lift the rear wheels, otherwise the vehicle becomes unstable while driving.
- If this vehicle is towed, use flat bed equipment only.



TOWING WHEN KEYS ARE NOT AVAILABLE

When a locked vehicle must be towed and keys are not available, the vehicle may be lifted and towed from the front, provided the parking brake is released. If not released, the rear wheels should be placed on a tow dolly.

SAFETY PRECAUTIONS

The following precautions should be taken when towing the vehicle:

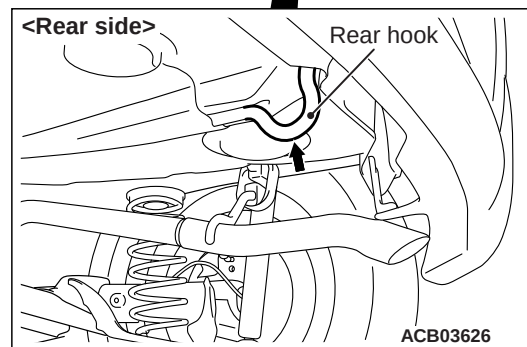
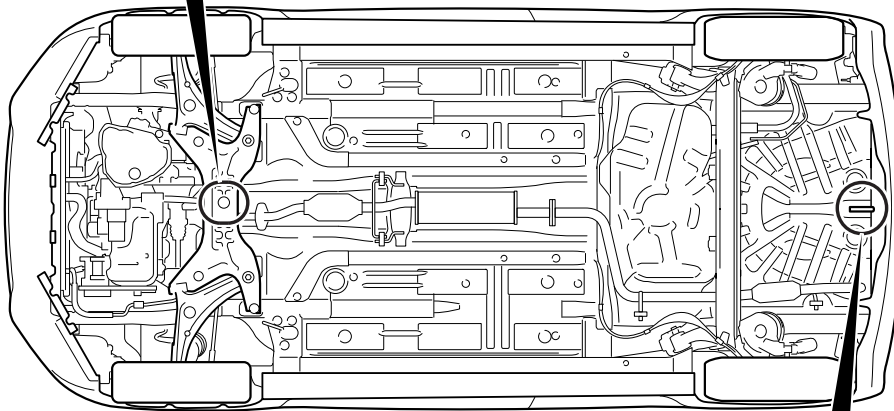
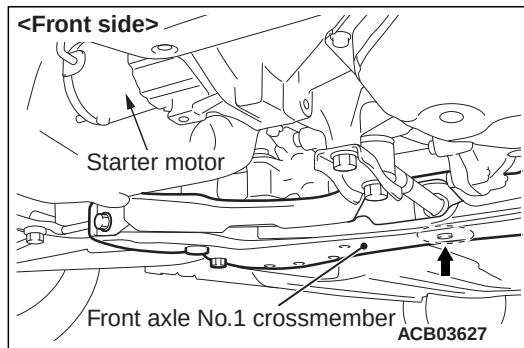
1. The rear shipping hook at the jack-up point must not be used to tow another vehicle.
2. Do not lift or tow the vehicle by attaching to or wrapping around the bumper.
3. Any loose, protruding, or damaged parts such as hoods, doors, fenders, trim, etc. should be secured or removed prior to moving the vehicle.
4. Refrain from going under a vehicle when it is lifted by the towing equipment, unless the vehicle is adequately supported by safety stands.
5. Never allow passengers to ride in a towed vehicle.
6. State and local rules and regulations must be followed when towing a vehicle.

LIFTING, JACKING SUPPORT LOCATION

FLOOR JACK

⚠ CAUTION

- Be sure to support the specified locations only. Otherwise, deformation of vehicle may occur.
- Be careful not to damage the front bumper and the starter assembly.



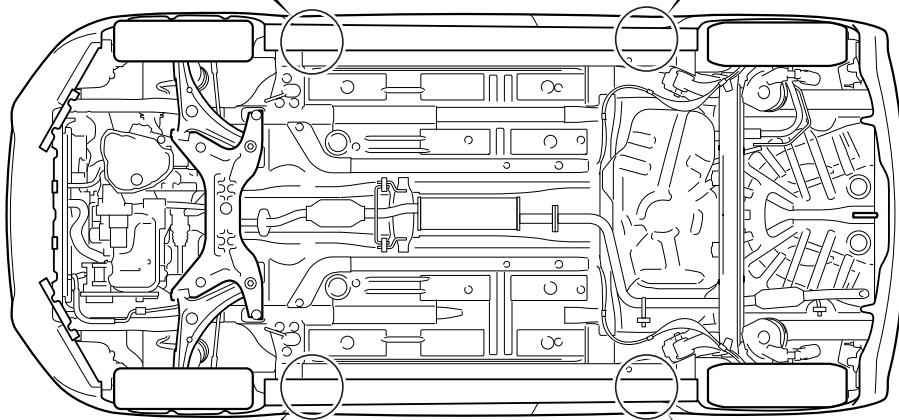
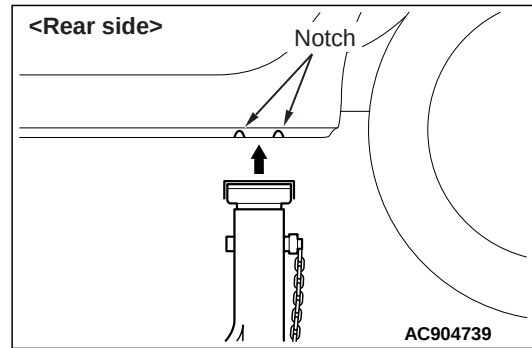
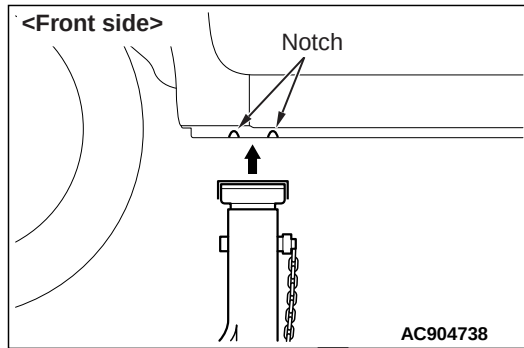
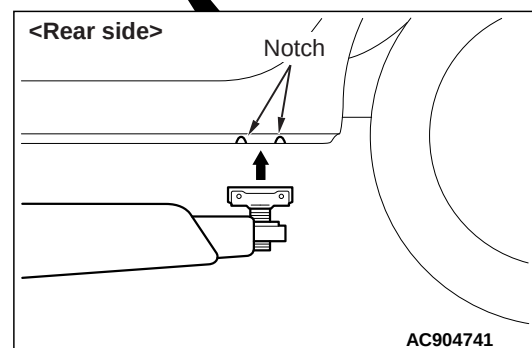
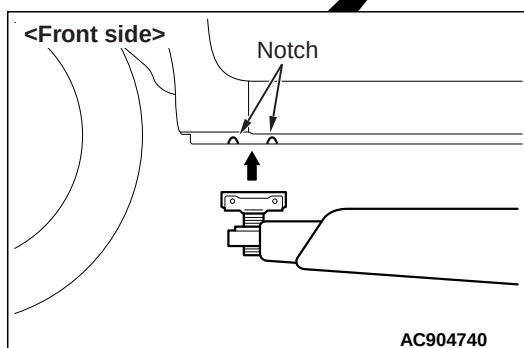
ACB03855AD

RIGID RACKS AND A SINGLE-POST LIFT OR DOUBLE-POST LIFT

⚠ CAUTION

- Be sure to support the specified locations only. Otherwise, deformation of vehicle may occur.
- Be careful to avoid damage to the side sill garnish.

RIGID RACKS

SINGLE-POST LIFT OR
DOUBLE-POST LIFT

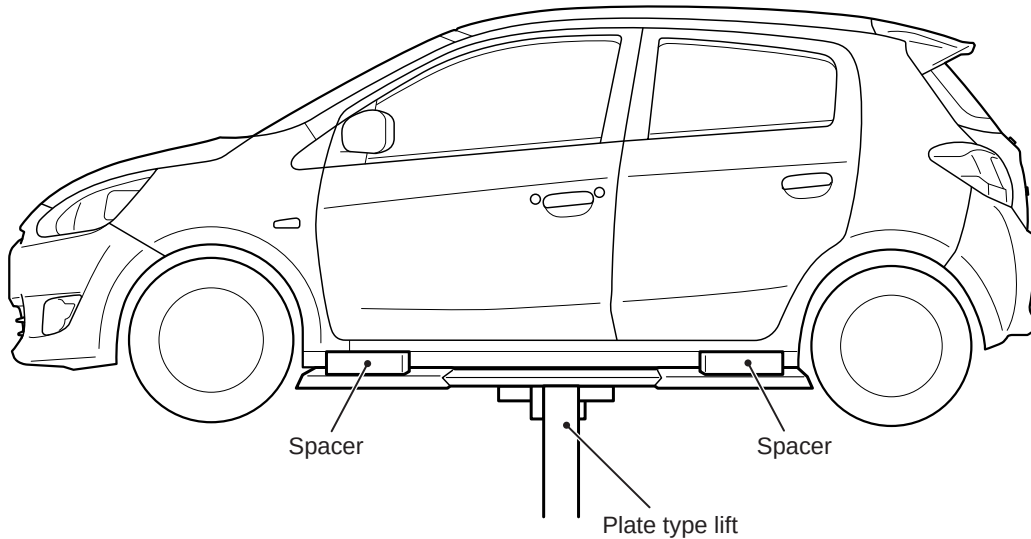
ACB03628AB

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

PLATE TYPE LIFT

CAUTION

Be sure to support the specified locations only. Otherwise, deformation of vehicle may occur.



ACB03857AB

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

LUBRICATION AND MAINTENANCE

M1001001200615

Maintenance and lubrication service recommendations have been compiled to provide maximum protection for the vehicle owner's investment against all reasonable types of driving conditions. Since these conditions vary with the individual vehicle owner's driving habits, the area in which the vehicle is operated and the type of driving to which the vehicle is subjected, it is necessary to prescribe lubrication and maintenance service on a time frequency as well as mileage interval basis.

Oils, lubricants and greases are classified and graded according to standards recommended by the Society of Automotive Engineers (SAE), the American Petroleum Institute (API) and the National Lubricating Grease Institute (NLGI).

MAINTENANCE SCHEDULES

Information for service maintenance is provided in the "SCHEDULED MAINTENANCE TABLE." Three schedules are provided; one for "Required Maintenance," one for "General Maintenance" and one for "Severe Usage Service." The item numbers in "SCHEDULED MAINTENANCE TABLE" correspond to the section numbers in "MAINTENANCE SERVICE."

SEVERE SERVICE

Vehicles operating under severe service conditions will require more frequent service.

Component service information is included for vehicles operating under one or more of the following conditions:

1. Trailer towing or police, taxi or commercial type operation.
2. Operation of Vehicle
 - (1) Short-trip operation at freezing temperature (engine not thoroughly warmed up)
 - (2) More than 50% operation in heavy city traffic during hot weather above 32°C (90°F)
 - (3) Extensive idling
 - (4) Driving in sandy areas
 - (5) Driving in salty areas
 - (6) Driving in dusty conditions
 - (7) Driving off-road

ENGINE OIL

CAUTION

Test results submitted to EPA have shown that laboratory animals develop skin cancer after prolonged contact with used engine oil. Accordingly, the potential exists for humans to develop a number of skin disorders, including cancer, from such exposure to used engine oil. Therefore, when changing engine oil, be careful not to touch it as much as possible. Protective clothing and gloves, that cannot be penetrated by oil, should be worn. The skin should be thoroughly washed with soap and water, or use waterless hand cleaner, to remove any used engine oil. **Do not use gasoline, thinners, or solvents.**

Either of the following engine oils should be used: Engine oils displaying ILSAC certification symbol or conforming to the API classification SN.

For further details, refer to "LUBRICANTS SELECTION" section [P.00-53](#).

LUBRICANTS AND GREASES

Semi-solid lubricants bear the NLGI designation and are further classified as grades 0, 1, 2, 3, etc.

Whenever "Chassis Lubricant" is specified, Multipurpose Grease, NLGI grade Number 2, should be used.

FUEL USAGE STATEMENT

CAUTION

Using leaded gasoline in this car will damage the catalytic converters and heated oxygen sensors, and affect the warranty coverage validity.

This vehicle must use unleaded gasoline only.

This vehicle has a fuel filler tube which is especially designed to accept only the smaller-diameter unleaded gasoline dispensing nozzle.

GASOLINE CONTAINING ALCOHOL

Some gasoline sold at service stations contain alcohol although they may not be so identified.

Using fuels containing alcohol is not recommended unless the nature of the blend can be determined as being satisfactory.

Gasohol: A mixture of 10% ethanol (grain alcohol) and 90% unleaded gasoline may be used in your vehicle. If driveability problems are experienced as a result of using gasohol, it is recommended that the vehicle be operated on gasoline.

Methanol: **Do not use gasoline containing methanol (wood alcohol).** Using this type of alcohol can result in vehicle performance deterioration and damage critical parts in the fuel system components. Fuel system damage and performance problems resulting from the use of gasoline containing methanol may not be covered by the new vehicle warranty.

GASOLINE CONTAINING METHYL TERTIARY BUTYL ETHER (MTBE)

Unleaded gasoline containing 15% or less MTBE may be used in your vehicle. (Fuel containing MTBE over 15% in volume may cause reduced engine performance and produce vapor lock or hard starting.

MATERIALS ADDED TO FUEL

Indiscriminate use of fuel system cleaning agents should be avoided. Many of these materials intended for gum and varnish removal may contain highly active solvents or similar ingredients that can be harmful to gasket and diaphragm materials used in fuel system component parts.

RECOMMENDED LUBRICANTS AND LUBRICANT CAPACITIES TABLE

M1001001301079

RECOMMENDED LUBRICANTS

Lubricant	Specification	Remark
Engine oil	Engine oils displaying ILSAC certification symbol ("Starburst" symbol) or conforming to the API classification SN or higher	For further details, refer to "LUBRICANTS SELECTION" section.
Engine coolant	MITSUBISHI MOTORS GENUINE SUPER LONG LIFE COOLANT PREMIUM or equivalent* ¹	-
Transaxle oil <M/T>	MITSUBISHI MOTORS GENUINE NEW MULTI GEAR OIL ECO API classification GL-4, SAE 75W-80	-
Transmission fluid <CVT>	MITSUBISHI MOTORS GENUINE CVTF-J4	-
Brakes and clutch	Conforming to Brake fluid DOT 3 or DOT 4	-
Door hinges, Liftgate hinges	Grease	-

NOTE: *similar high quality ethylene glycol based non-silicate, non-amine, non-nitrate and non-borate coolant with long life hybrid organic acid technology.

LUBRICANT CAPACITY TABLE

Description		Specification
Engine oil dm ³ (qt)	Oil pan (excluding oil filter)	2.8 (2.96)
	Oil filter	0.2 (0.21)
Engine coolant dm ³ (qt)	Vehicles for M/T	4.0* (4.23)*
	Vehicles for CVT	4.6* (4.86)*
Transaxle oil dm ³ (qt)		1.6 (1.69)
Transmission fluid dm ³ (qt)		2.5 (2.64)
Fuel tank dm ³ (gal)		35.0 (9.2)

NOTE: *: includes 0.5 L in the condense tank

LUBRICANT SELECTION

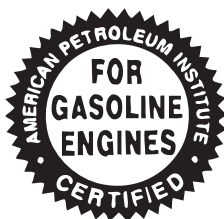
ENGINE OIL

⚠ CAUTION

Never use nondetergent or straight mineral oil.

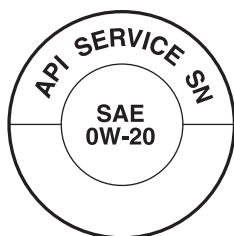
Use only engine oils displaying the ILSAC certification symbol ("Starburst" symbol) on the container.

ILSAC certification symbol
("Starburst" symbol)



AC609011AC

API service symbol

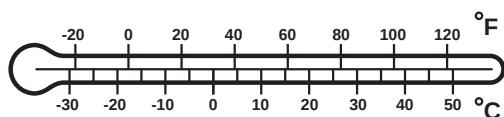


ACC06164AB

If these oils are not available, an API classification SN can be used.

OIL VISCOSITY

The SAE grade number indicates the viscosity of the oil. A proper SAE grade number should be selected according to ambient temperature.



SAE 0W-20, Recommended

ACA02197AB

SCHEDULED MAINTENANCE TABLE

<VEHICLES FOR USA>

M1001001401292

SELECTING THE PROPER MAINTENANCE SCHEDULE

Either of the two maintenance schedules should be applied in accordance with your customer's driving situation.

SCHEDULE 1

When any of the followings are true, schedule 1 should be applied.

- Driving on dusty, rough, muddy or salt-spread roads
- Towing or police, taxi or commercial operation
- Extensive idling and/or low speed operation
- Repeated short-trip operation at freezing temperatures (engine not thoroughly warmed up)
- Extended use of brakes while driving
- Driving in sandy areas
- More than 50% operation in heavy city traffic during hot weather above 90°F (32°C)

SCHEDULE 2

When none of the followings are true, schedule 2 should be applied.

SCHEDULE 1

MAINTENANCE ITEM		MAINTENANCE INTERVAL (MILEAGE OR TIME-WHICHEVER OCCURS FIRST)										
		Miles × 1,000	15	30	45	60	75	90	105	120	135	150
		Km × 1,000	24	48	72	96	120	144	168	192	216	240
		Months	12	24	36	48	60	72	84	96	108	120
EMISSION CONTROL SYSTEM MAINTENANCE												
No.	Item	Service intervals	Interval									
1	Fuel system (tank, pipe line and connection, and fuel tank filler tube cap)	Check for leaks				X				X		
2	Fuel hoses	Check condition		X ^{*1}		X		X		X		X
3	Air cleaner element	Replace	X ^{*1}	X	X	X	X	X	X	X	X	X
4	Evaporative emission control system (except evaporative emission canister)	Check for leaks and clogging				X				X		
5	Spark plugs (Iridium-tipped type)	Replace							X			
6	Intake and exhaust valve clearance* ²	Inspect and adjustment				X				X		
7	Drive belts (for the generator and power steering oil pump)	Check condition		X		X		X		X		X
8	Exhaust system (connection portion of muffler, muffler pipes and converter heat shields)	Check and service		X ^{*1}		X		X		X		X
GENERAL MAINTENANCE												
No.	Item	Service intervals	Interval									
9	Engine oil	Change	Every 3,750 miles (6,000 km) or every 3 months									
10	Engine oil filter	Replace	Every 3,750 miles (6,000 km) or every 3 months									
11	Transaxle oil <M/T>	Change oil		X		X		X		X		X
12	Transmission fluid <CVT>	Check fluid level and condition	X	X	X	X	X	X	X	X	X	X
		Change fluid		X		X		X		X		X
13	Engine coolant	Change	First 120,000 miles (192,000 km) or 96 months, thereafter every 90,000 miles (144,000 km) or 72 months									
14	Coolant hoses (radiator hose, heater hose)	Inspect		X		X		X		X		X
15	Disk brake pads, rotors	Inspect for wear	Every 7,500 miles (12,000 km) or every 6 months									
16	Rear drum brake linings and rear wheel cylinders (except vehicles with disc brakes)	Inspect for wear and leaks	X	X	X	X	X	X	X	X	X	X
17	Brake hoses	Check for deterioration or leaks	X	X	X	X	X	X	X	X	X	X

GENERAL MAINTENANCE												
No.	Item	Service intervals	Interval									
18	Brake fluid	Change			X			X			X	
19	Ball joint and steering linkage seals	Inspect for grease leaks and damage		X		X		X		X		X
20	Drive shaft boots	Inspect for grease leaks and damage	X	X	X	X	X	X	X	X	X	X
21	Suspension system	Inspect for looseness and damage	Every 7,500 miles (12,000 km) or every 6 months									
22	Tires	Rotate	Every 7,500 miles (12,000 km)									
23	Clean air filter	Inspect for clogging	Every 3,750 miles (6,000 km) or every 3 months									
		Replace	Every 7,500 miles (12,000 km) or every 6 months									
24	Tire repair kit	Check tire repair sealant expiration date	Every 12 months									

NOTE:

1. ^{*1}: This maintenance is recommended but is not required to maintain the emissions warranty.
2. ^{*2}: Check the valve clearance in case abnormal noise from valves is heard.

SCHEDULE 2

MAINTENANCE ITEM		MAINTENANCE INTERVAL (MILEAGE OR TIME-WHICHEVER OCCURS FIRST)										
		Miles × 1,000	15	30	45	60	75	90	105	120	135	150
		Km × 1,000	24	48	72	96	120	144	168	192	216	240
		Months	12	24	36	48	60	72	84	96	108	120
Emission control system maintenance												
No.	Item	Service intervals	Interval									
1	Fuel system (tank, pipe line and connection, and fuel tank filler tube cap)	Check for leaks				X				X		
2	Fuel hoses	Check condition		X ^{*1}		X		X		X		X
3	Air cleaner element	Replace		X		X		X		X		X
4	Evaporative emission control system (except evaporative emission canister)	Check for leaks and clogging				X				X		
5	Spark plugs (Iridium-tipped type)	Replace							X			
6	Intake and exhaust valve clearance* ²	Inspect and adjustment				X				X		
7	Drive belts (for the generator and power steering oil pump)	Check condition		X		X		X		X		X
8	Exhaust system (connection portion of muffler, muffler pipes and converter heat shields)	Check and service		X ^{*1}		X		X		X		X
GENERAL MAINTENANCE												
No.	Item	Service intervals	Interval									
9	Engine oil	Change	Every 7,500 miles (12,000 km) or every 6 months									
10	Engine oil filter	Replace	Every 7,500 miles (12,000 km) or every 6 months									
11	Transaxle oil <M/T>	Change oil		X		X		X		X		X
13	Engine coolant	Change	First 120,000 miles (192,000 km) or 96 months, thereafter every 90,000 miles (144,000 km) or 72 months									
14	Coolant hoses (radiator hose, heater hose)	Inspect		X		X		X		X		X
15	Disk brake pads, rotors	Inspect for wear	X	X	X	X	X	X	X	X	X	X
16	Rear drum brake linings and rear wheel cylinders (except vehicles with disc brakes)	Inspect for wear and leaks		X		X		X		X		X
17	Brake hoses	Check for deterioration or leaks	X	X	X	X	X	X	X	X	X	X
18	Brake fluid	Change			X			X			X	
19	Ball joint and steering linkage seals	Inspect for grease leaks and damage		X		X		X		X		X

GENERAL MAINTENANCE												
No.	Item	Service intervals	Interval									
20	Drive shaft boots	Inspect for grease leaks and damage	X	X	X	X	X	X	X	X	X	X
21	Suspension system	Inspect for looseness and damage		X		X		X		X		X
22	Tires	Rotate	Every 7,500 miles (12,000 km)									
23	Clean air filter	Replace	X	X	X	X	X	X	X	X	X	X
24	Tire repair kit	Check tire repair sealant expiration date	Every 12 months									

NOTE:

1. ^{*1}: This maintenance is recommended but is not required to maintain the emissions warranty.
2. ^{*2}: Check the valve clearance in case abnormal noise from valves is heard.

<VEHICLES FOR CANADA>

M1001001401322

SCHEDULED MAINTENANCE SERVICE FOR EMISSION CONTROL AND PROPER VEHICLE PERFORMANCE

Inspection and service should be performed any time if a malfunction is observed or suspected.

No.	Emission control system maintenance	Service intervals	Kilometers in thousands	16	32	48	64	80	96	112	128	144	160	176	192
			Mileage in thousands	10	20	30	40	50	60	70	80	90	100	110	120
			Months	10	20	30	40	50	60	70	80	90	100	110	120
1	Fuel system (tank, pipe line and connection, and fuel tank filler tube cap)	Check for leaks	Every 72,000 km (45,000 miles) or 45 months												
2	Fuel hoses	Check condition		X		X		X		X		X		X	
3	Air cleaner element	Replace		X		X		X		X		X		X	
4	Evaporative emission control system (except evaporative emission canister)	Check for leaks and clogging	Every 72,000 km (45,000 miles) or 45 months												
5	Spark plugs (Iridium-tipped type)	Replace	Every 168,000 km (105,000 miles)												
6	Intake and exhaust valve clearance (3A9 engine)	Inspect and adjustment	Every 72,000 km (45,000 miles) or 45 months												
7	Drive belts (for the generator and power steering oil pump)	Check condition		X		X		X		X		X		X	
8	Exhaust system (connection portion of muffler, muffler pipes and converter heat shields)	Check and service		X		X		X		X		X		X	

GENERAL MAINTENANCE SERVICE FOR PROPER VEHICLE PERFORMANCE

No.	General maintenance	Service intervals	Kilometers in thousands	16	32	48	64	80	96	112	128	144	160	176	192
			Mileage in thousands	10	20	30	40	50	60	70	80	90	100	110	120
			Months	10	20	30	40	50	60	70	80	90	100	110	120
9	Engine oil	Change	Every 8,000 km (5,000 miles) or 5 months												
10	Engine oil filter	Replace	Every 8,000 km (5,000 miles) or 5 months												
11	Transaxle oil <M/T>	Check oil level and condition		X		X		X		X		X		X	
13	Engine coolant	Change	First 192,000 km (120,000 miles) or 96 months, thereafter every 144,000 km (90,000 miles) or 72 months												
14	Coolant hoses (radiator hose, heater hose)	Inspect		X		X		X		X		X		X	
15	Disk brake pads, rotors	Inspect for wear	X	X	X	X	X	X	X	X	X	X	X	X	X
16	Rear drum brake linings and rear wheel cylinders (except vehicles with disc brakes)	Inspect for wear and leaks		X		X		X		X		X		X	
17	Brake hoses	Check for deterioration or leaks	X	X	X	X	X	X	X	X	X	X	X	X	X
18	Brake fluid	Change	Every 56,000 km (35,000 miles) or 35 months												
19	Ball joint and steering linkage seals	Inspect for grease leaks and damage		X		X		X		X		X		X	
20	Drive shaft boots	Inspect for grease leaks and damage	X	X	X	X	X	X	X	X	X	X	X	X	X
21	Suspension system	Inspect for looseness and damage		X		X		X		X		X		X	
22	Tires	Rotate	Every 8,000 km (5,000 miles)												
23	Clean air filter	Replace	X	X	X	X	X	X	X	X	X	X	X	X	X
24	Tire repair kit	Check tire repair sealant expiration date	Every 10 months												

SCHEDULED MAINTENANCE UNDER SEVERE USAGE CONDITIONS

Maintenance should be carried out according to the following table:

No.	Maintenance item	Service intervals	Kilometers in thousands	16	32	48	64	80	96	112	128	144	160	176	192
			Mileage in thousands	10	20	30	40	50	60	70	80	90	100	110	120
			Months	10	20	30	40	50	60	70	80	90	100	110	120
1	Fuel system (tank, pipe line and connection, and fuel tank filler tube cap)	Check for leaks	Every 72,000 km (48,000 miles) or 36 months												
2	Fuel hoses	Check condition	Every 30,000 km (20,000 miles) or 15 months												
3	Air cleaner element	Replace	Every 24,000 km (16,000 miles) or 12 months												
4	Evaporative emission control system (except evaporative emission canister)	Check for leaks and clogging	Every 72,000 km (48,000 miles) or 36 months												
5	Spark plugs (Iridium-tipped type)	Replace	Every 168,000 km (105,000 miles)												
6	Intake and exhaust valve clearance (3A9 engine)	Inspect and adjustment	Every 72,000 km (48,000 miles) or 36 months												
7	Drive belts (for the generator and power steering oil pump)	Check condition	Every 30,000 km (20,000 miles) or 15 months												
8	Exhaust system (connection portion of muffler, muffler pipes and converter heat shields)	Check and service	Every 30,000 km (20,000 miles) or 15 months												
9	Engine oil	Change	Every 6,000 km (4,000 miles) or 3 months												
10	Engine oil filter	Replace	Every 6,000 km (4,000 miles) or 3 months												
11	Transaxle oil <M/T>	Change oil	Every 48,000 km (32,000 miles) or 24 months												
12	Transmission fluid <CVT>	Check fluid level and condition	Every 24,000 km (16,000 miles) or 12 months												
		Change fluid	Every 48,000 km (32,000 miles) or 24 months												

No.	Maintenance item	Service intervals	Kilometers in thousands	16	32	48	64	80	96	112	128	144	160	176	192
			Mileage in thousands	10	20	30	40	50	60	70	80	90	100	110	120
			Months	10	20	30	40	50	60	70	80	90	100	110	120
13	Engine coolant	Change	First 192,000 km (120,000 miles) or 96 months, thereafter every 144,000 km (90,000 miles) or 72 months												
14	Coolant hoses (radiator hose, heater hose)	Inspect	Every 30,000 km (20,000 miles) or 15 months												
15	Disk brake pads, rotors	Inspect for wear	Every 12,000 km (8,000 miles) or 6 months												
16	Rear drum brake linings and rear wheel cylinders (except vehicles with disc brakes)	Inspect for wear and leaks	Every 24,000 km (16,000 miles) or 12 months												
17	Brake hoses	Check for deterioration or leaks	Every 12,000 km (8,000 miles) or 6 months												
18	Brake fluid	Change	Every 54,000 km (36,000 miles) or 27 months												
19	Ball joint and steering linkage seals	Inspect for grease leaks and damage	Every 30,000 km (20,000 miles) or 15 months												
20	Drive shaft boots	Inspect for grease leaks and damage	Every 12,000 km (8,000 miles) or 6 months												
21	Suspension system	Inspect for looseness and damage	Every 12,000 km (8,000 miles) or 6 months												
22	Tires	Rotate	Every 6,000 km (4,000 miles)												
23	Clean air filter	Inspect for clogging	Every 6,000 km (4,000 miles) or 3 months												
		Replace	Every 12,000 km (8,000 miles) or 6 months												
24	Tire repair kit	Check tire repair sealant expiration date	Every 12 months												

Severe usage conditions:

1. Driving on dusty, rough, muddy or salt-spread roads
2. Towing or police, taxi or commercial operation
3. Extensive idling and/or low speed operation
4. Repeated short-trip operation at freezing temperatures (engine not thoroughly warmed up)
5. Extended use of brakes while driving
6. Driving in sandy areas
7. More than 50% operation in heavy city traffic during hot weather above 32°C (90°F)

MAINTENANCE SERVICE

1. FUEL SYSTEM (TANK, PIPE LINE AND CONNECTION, AND FUEL TANK FILLER TUBE CAP)

M1001001600442

CHECK FOR LEAKS

Check for damage or leakage in the fuel lines and connections.

2. FUEL HOSES

M1001001700397

CHECK CONDITION

1. Inspect the surface of fuel hoses for heat and mechanical damage. Hard and brittle rubber, cracking, tears, cuts, abrasions and excessive swelling indicate deterioration of the rubber.
2. If the fabric casing of the rubber hose is exposed by cracks and abrasions in the fuel system, the hoses should be replaced.

3. AIR CLEANER ELEMENT

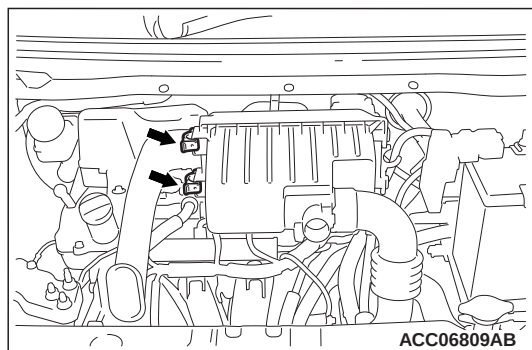
M1001001800509

REPLACE

The air cleaner element will become dirty during use, reducing its effectiveness. Replace it with a new one.

Replacement of air cleaner element

1. Unclamp the air cleaner housing.
2. Remove the air cleaner element and install a new one.
3. When clamping the air cleaner housing in place, be sure that the cover is completely closed.



4. EVAPORATIVE EMISSION CONTROL SYSTEM (EXCEPT EVAPORATIVE EMISSION CANISTER)

M1001001900476

CHECK FOR LEAKS AND CLOGGING

If the fuel-vapor vent line is clogged or damaged, fuel vapor will escape into the atmosphere causing excessive emissions. Disconnect the line at both ends, and blow it clean with compressed air. Remove the fuel tank filler tube cap from the filler tube and check to see if there is evidence that the seal makes improper contact to the filler tube.

5. SPARK PLUGS (IRIDIUM-TIPPED TYPE)

M1001002000636

REPLACE

⚠ CAUTION

Iridium plugs are used. Use care not to damage the iridium tip and the platinum tip of the plugs. Do not adjust the spark plug gap.

1. Spark plugs must spark properly to assure proper engine performance and reduce exhaust emission level. Therefore, they should be replaced periodically with new ones.

Spark plug type

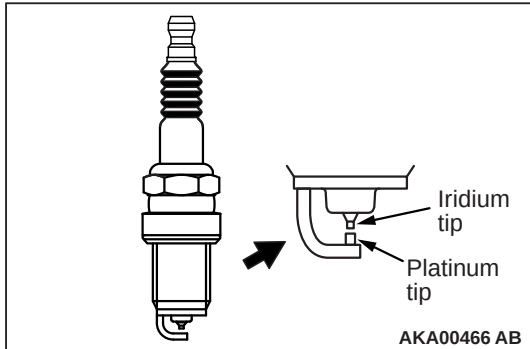
Maker	Type
NGK	LZFR5BI-11

2. The new plugs should be checked for the proper gap.

Standard value: 1.0 – 1.1 mm (0.040 – 0.043 inch)

Limit: 1.5 mm (0.06 inch)

3. Install the spark plugs and tighten to 25 ± 5 N·m (18 ± 3 ft-lb).



6. INTAKE AND EXHAUST VALVE CLEARANCE

M1001012900414

INSPECT AND ADJUSTMENT

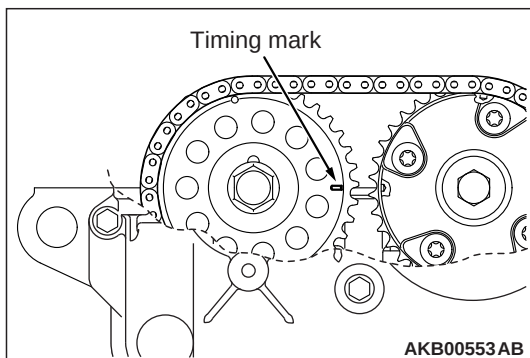
NOTE: Perform the valve clearance check and adjustment at the engine cold state.

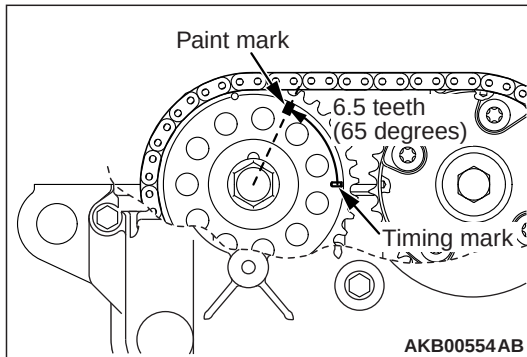
1. Remove the cylinder head cover assembly (Refer to [P.11A-22](#)).

⚠ CAUTION

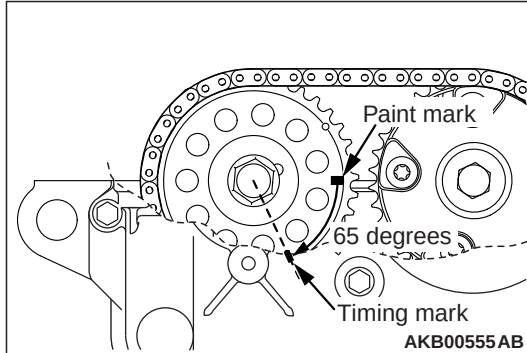
Turn the crankshaft always clockwise.

2. Turn the crankshaft clockwise, and align the timing mark on the exhaust camshaft sprocket against the upper face of the cylinder head as shown in figure. Therefore No.1 cylinder goes to the compression top dead center.

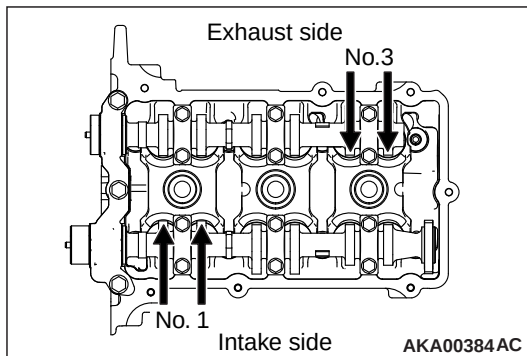




3. Apply the paint mark to the 6.5th tooth (65 degrees) counterclockwise from the timing mark on the exhaust camshaft sprocket.



4. Turn the crankshaft clockwise 130 degrees, and align the paint mark against the upper face of the cylinder head as shown in figure.

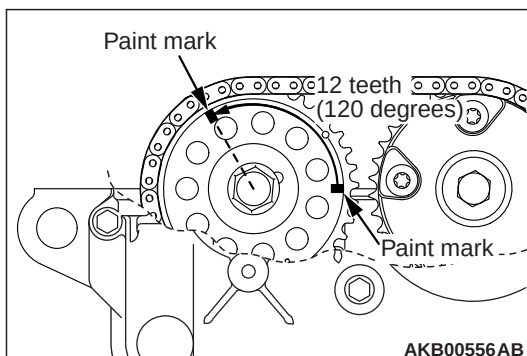


5. Using a thickness gauge, measure the valve clearance with the arrow shown in figure. If deviated from the standard value, make note for the valve clearance.

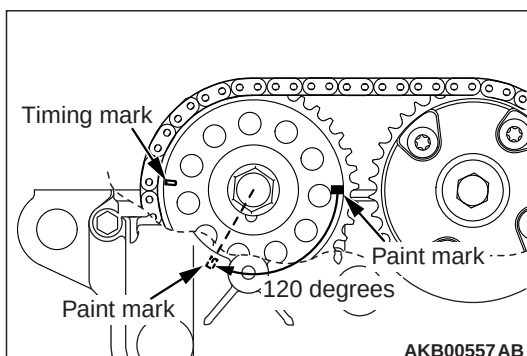
Standard value (cold engine):

Intake valve 0.22 ± 0.04 mm (0.009 ± 0.001 inch)

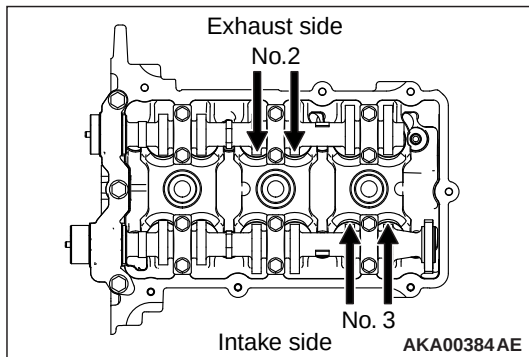
Exhaust valve 0.30 ± 0.04 mm (0.012 ± 0.001 inch)



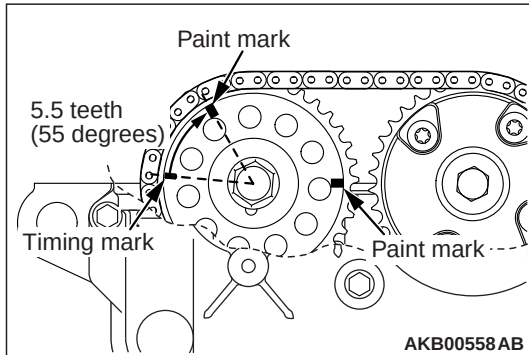
6. Apply the paint mark to the 12th tooth (120 degrees) counterclockwise from the paint mark.



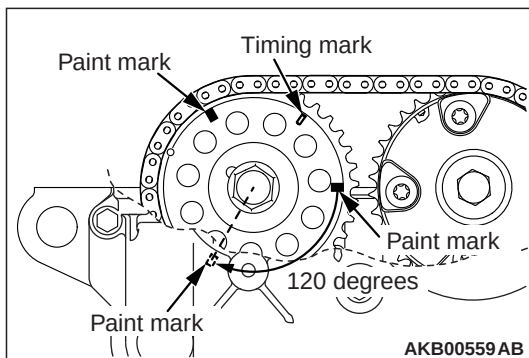
7. Turn the crankshaft clockwise 240 degrees, and align the paint mark against the upper face of the cylinder head as shown in figure.



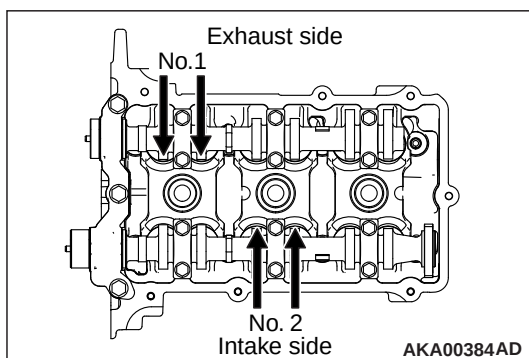
8. Check the valve clearance with the arrow shown in figure. In the same procedure as 5.



9. Apply the paint mark to the 5.5th tooth (55 degrees) clockwise from the timing mark on the exhaust camshaft sprocket.

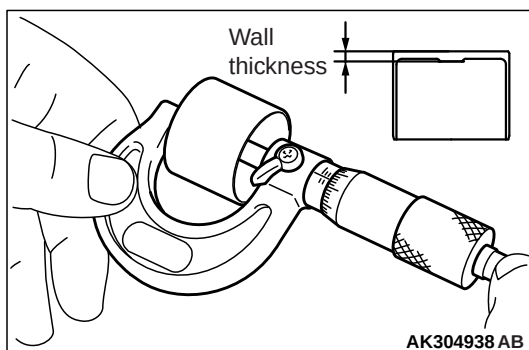


10. Turn the crankshaft clockwise 240 degrees, and align the paint mark against the upper face of the cylinder head as shown in figure.



11. Check the valve clearance with the arrow shown in figure. In the same procedure as 5.

12. If the valve clearance is deviated from the standard value, remove the camshaft and the valve tappet (Refer to [P.11A-23](#)).



13. Using a micrometer, measure the thickness of the removed valve tappet.

14. Calculate the thickness of the newly installed valve tappet through the following equation.

A: Thickness of new valve tappet

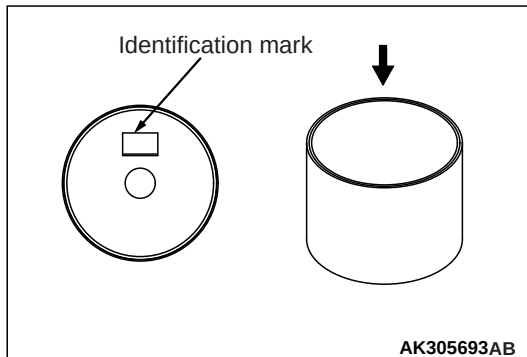
B: Thickness of old valve tappet

C: Measured valve clearance

Equation

Intake valve: $A = B + [C - 0.22 \text{ mm (0.009 inch)}]$

Exhaust valve: $A = B + C - 0.30 \text{ mm (0.012 inch)}$



NOTE: The valve tappet ranges 5.10 – 5.70 mm (0.2008 – 0.2244 inch) and has 31 types per 0.02 mm (0.0008 inch). The thickness below a decimal point is stamped on the reverse side of the valve tappet.

Example: In case of 5.40 mm (0.2126 inch), "40" is stamped.

15. Install the valve tappet selected through the procedure 14.

16. Install the camshaft (Refer to [P.11A-23](#)).

17. Install the cylinder head cover assembly (Refer to [P.11A-22](#)).

7. DRIVE BELTS (FOR THE GENERATOR AND POWER STEERING OIL PUMP)

M1001002500750

DRIVE BELT CONDITION

Check the whole rounds of the drive belt for cracks, fraying and wear.

DRIVE BELT TENSION CHECK AND ADJUSTMENT

DRIVE BELT TENSION CHECK

⚠ CAUTION

- When checking the drive belt tension, make sure that the engine is cold.
- Check the drive belt tension after turning the crankshaft clockwise one turn or more.

Check the drive belt tension in the following procedure.

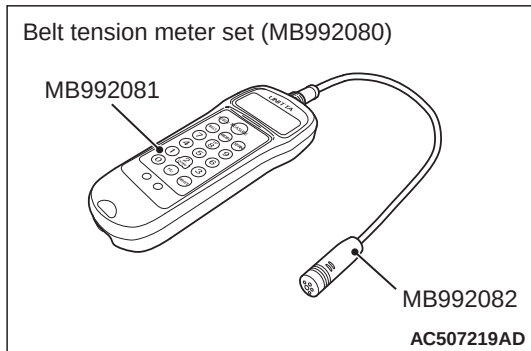
NOTE: For the vehicles without A/C, the check procedure is also same.

Standard value:

Item	When checked	When adjusted	When replaced
Vibration frequency Hz	144 – 169 ^{*1} 143 – 169 ^{*2}	151 – 163 ^{*1} 150 – 163 ^{*2}	192 – 202 ^{*1} 192 – 202 ^{*2}
Tension N (lb)	490 – 686 (110.2 – 154.2)	539 – 637 (121.2 – 143.2)	882 – 980 (198.3 – 220.3)
Deflection mm (in) [Reference]	8.3 – 10.5 (0.33 – 0.41) ^{*1} 8.5 – 10.9 (0.34 – 0.42) ^{*2}	8.8 – 9.9 (0.35 – 0.38) ^{*1} 9.1 – 10.2 (0.36 – 0.40) ^{*2}	6.2 – 6.8 (0.25 – 0.26) ^{*1} 6.3 – 6.9 (0.25 – 0.27) ^{*2}

NOTE:

- ^{*1}: Vehicles without A/C
- ^{*2}: Vehicles with A/C



<When the vibration frequency is measured: Recommendation>

1. Connect special tool microphone assembly (MB992082) to special tool belt tension meter (MB992081) of special tool belt tension meter set (MB992080).
2. Press the "POWER" button to turn on the power supply.
3. Press number key "1". Check to ensure that "No. 01" appears on the upper left of the display and that the following numeric values are displayed for individual items ("M", "W", and "S"):

M 000.9 g/m

W 010.0 mm/R

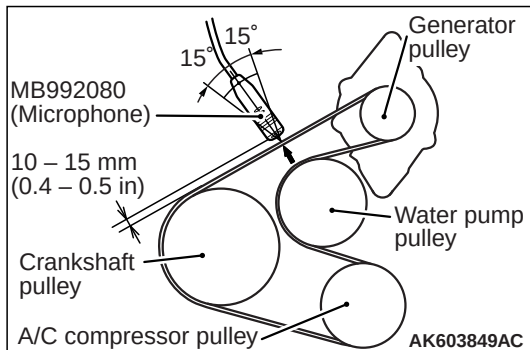
S 0100 mm

NOTE:

- If numeric values have not been entered (new tool), set them according to the belt specifications as shown below. Once you set them, you do not have to set them again. The settings remain undeleted even after battery replacement.
- This operation is to temporarily set the preset data such as the belt specifications, because if the measurement is taken without input of the belt specifications, conversion to tension value (N) cannot be made, resulting in judgment of error.

<Setting procedure>

- (1) Press down the "MASS" button till the belt mass select display appears.
 - (2) Press the "UP" or "DOWN" button to select "01 1.5GT 0.9" and press the "MEASURE" button to decide it. Check to ensure that "M 000.9 g/m" is displayed.
 - (3) Press the "WIDTH" button to change to the belt width input display.
 - (4) Press number keys "0", "1", "0", and "0" sequentially, and press the "SELECT" button to apply them. Check to ensure that "W 010.0 mm/R" appears on the display.
 - (5) Press the "SPAN" button to change to the span length input display.
 - (6) Press number keys "0", "1", "0", and "0" sequentially, and press the "SELECT" button to apply them. Check to ensure that "S 0100 mm" appears on the display.
4. Press "Hz" button twice to change the display to the frequency display (Hz).

**⚠ CAUTION**

- Do not let any contaminants such as water or oil get onto the microphone.
- If strong gusts of wind blow against the microphone or if there is loud sources of noise nearby, the values measured by the microphone may not correspond to actual values.
- If the microphone is touching the belt while the measurement is being made, the values measured by the microphone may not correspond to actual values.
- Do not take the measurement while the vehicle's engine is running.

5. Hold special tool MB992080 to the middle of the drive belt between the pulleys (at the place indicated by arrow) where it does not contact the drive belt [approximately 10 – 15 mm (0.4 – 0.5 inch) away from the rear surface of the belt] so that it is perpendicular to the drive belt (within an angle of $\pm 15^\circ$).

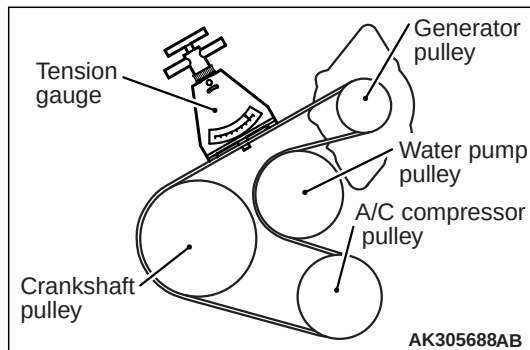
6. Press the "MEASURE" button.

7. Gently tap the middle of the drive belt between the pulleys (the place indicated by the arrow) with your finger as shown in the illustration.

8. Check that the vibration frequency of the drive belt is within the standard value.

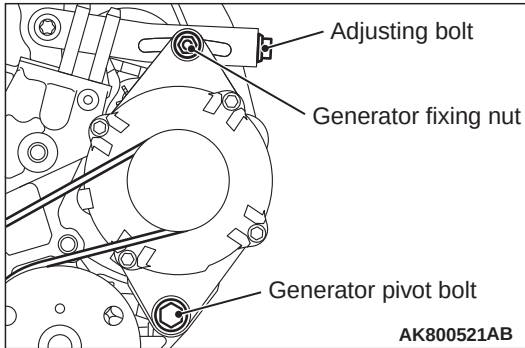
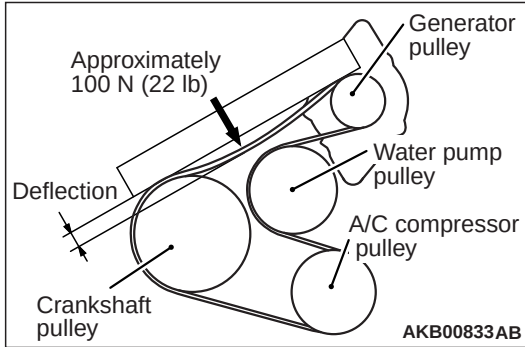
NOTE: To take the measurement repeatedly, flip the drive belt again.

9. After the completion of the measurement, press and hold the "POWER" button to turn off the power supply.

**<When tension is measured>**

Use a belt tension gauge in the middle of the drive belt between the pulleys shown in the figure to check that the drive belt tension is within the standard value.

NOTE: Before inspection, remove the oil dipstick guide assembly.



<When deflection is measured>

Apply approximately 100 N (22 pounds) of force to the middle of the drive belt between the pulleys (at the place indicated by the arrow) and check that the amount of deflection is within the standard value.

DRIVE BELT TENSION ADJUSTMENT

If not within the standard value, adjust the belt tension by the following procedure.

1. Loosen the nut for generator pivot bolt.
2. Loosen the generator fixing nut.
3. Temporarily tighten the generator fixing nut.

Tightening torque: 10 ± 3 N·m (89 ± 26 in-lb)

4. Use the adjusting bolt to adjust the belt tension and belt deflection to the standard values.
5. Tighten the nut for generator pivot bolt.

Tightening torque: 47 ± 5 N·m (35 ± 3 ft-lb)

6. Tighten the generator fixing nut.

Tightening torque: 23 ± 2 N·m (17 ± 1 ft-lb)

7. Tighten the adjusting bolt.

Tightening torque: 5.0 ± 1.0 N·m (44 ± 8 in-lb)

⚠ CAUTION

When checking the belt tension, turn the crankshaft clockwise one turn or more.

8. Check the belt tension, and readjust if necessary.
9. When the belt tension is adjusted by measuring the deflection, adjust it with a tool for vibration frequency measurement or tension measurement afterward.

8. EXHAUST SYSTEM (CONNECTION PORTION OF MUFFLER, MUFFLER PIPES AND CONVERTER HEAT SHIELDS)

M1001005800534

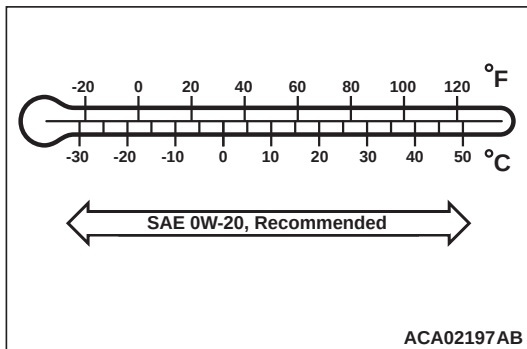
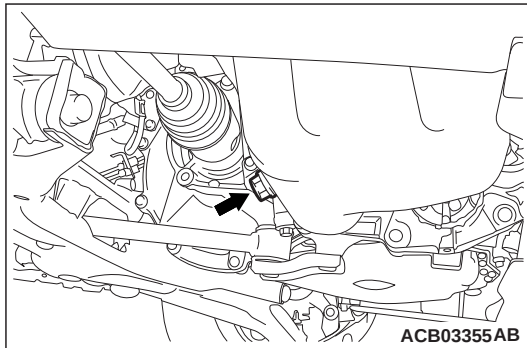
CHECK AND SERVICE

1. Check for holes and exhaust gas leaks due to damage, corrosion, etc.
2. Check the joints and connections for looseness and exhaust gas leaks.
3. Check the rubber hangers and brackets for damage.

9. ENGINE OIL

M1001002600939

1. Start the engine and allow it to warm up until the temperature of the engine coolant reaches 80 – 90°C (176 – 194°F).

**⚠ WARNING**

Use care as engine oil could be hot.

2. Remove the oil filler cap.
3. Remove the oil drain plug to drain engine oil.
4. Install a new oil drain plug gasket and then tighten the oil drain plug to the specified torque.

Tightening torque: $39 \pm 5 \text{ N}\cdot\text{m}$ ($29 \pm 3 \text{ ft}\cdot\text{lb}$)

5. Refill with specified quantity of engine oil.

Specified Engine Oil: Engine oils displaying the ILSAC certification symbol ("Starburst" symbol) on the container. If these oils are not available, and API classification SN or higher can be used.

Total quantity (Includes volume inside engine oil filter): 3.0 dm^3 (3.11 quarts)

NOTE: Mitsubishi Motors Genuine 0W-20 Synthetic Engine Oil is recommended for optimum fuel economy and cold weather starting.

If Mitsubishi Motors Genuine 0W-20 Synthetic Engine Oil is not available, 5W-20 grade oils displaying the ILSAC certification can be used.

However, Mitsubishi Motors Genuine 0W-20 Synthetic Engine Oil should be used at the next oil change to maintain optimum fuel economy and cold weather starting.

6. Install the oil filler cap.
7. Let the engine run for a few minutes.
8. Stop the engine, and then check the engine oil level using the engine oil dipstick after a few minutes.

10. ENGINE OIL FILTER

M1001002700721

The quality of replacement filters varies considerably. Only high quality filters should be used to assure most efficient service. Genuine oil filters require that the filter is capable of withstanding a pressure of 1,765 kPa (256 psi) are high quality filters and are recommended as follows:

Mitsubishi Oil Filter Part Number: MD360935, 1230A105 or equivalent

ENGINE OIL FILTER SELECTION

This vehicle is equipped with a full-flow, throw-away oil filter.

The same type of filter is recommended as a replacement filter for this vehicle. It is possible, particularly in cold weather, that this vehicle may develop high oil pressure for a short duration. Make sure that any replacement filter used on this vehicle is a high-quality filter. The filter must withstand a pressure of 1,800 kPa (261 psi) [manufacturer's specifications] to avoid filter and ultimately engine damage. The following is a high-quality filter and is strongly recommended for use on this vehicle: Mitsubishi Engine Oil Filter Part number MD360935 or 1230A105. Any replacement oil filter should be installed in accordance with the oil filter manufacturer's installation instructions.

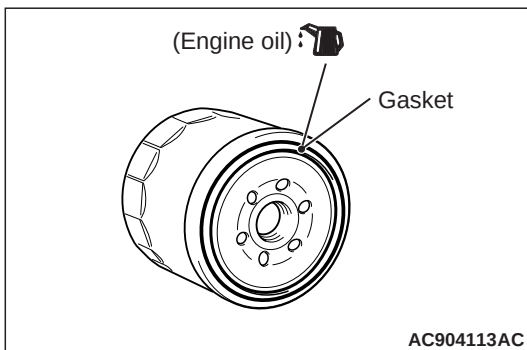
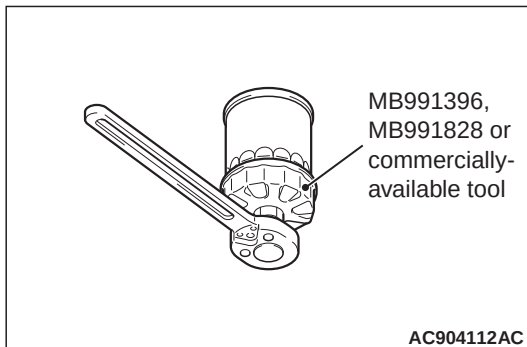
ENGINE OIL FILTER REPLACEMENT

1. Remove the oil drain plug to drain engine oil (Refer to [P.12-4](#)).

CAUTION

Cover the starter assembly with a rag to prevent the engine oil from adhering to the starter assembly, otherwise the starter assembly may be damaged.

2. Use special tool oil filter wrench (MB991396, MB991828) or commercially-available tool to remove the oil filter.
3. Clean the oil filter installing surface on the cylinder block side.

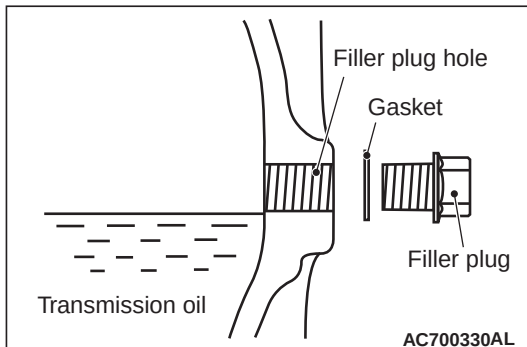
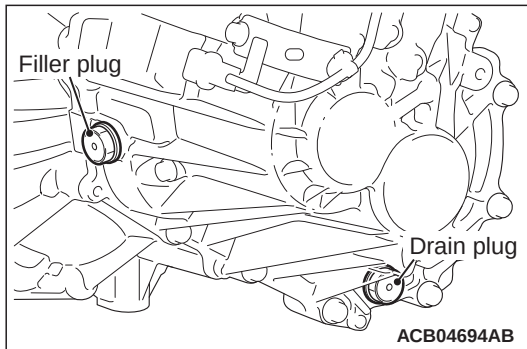


4. Apply a small amount of engine oil to the new oil filter gasket.
5. For the specified tightening torque, refer to the caution label attached on the oil filter.
6. Tighten the oil filter until the gasket contacts with the installation surface.
7. In the same manner as removal, use special tool oil filter wrench (MB991396, MB991828) or commercially-available tool to tighten the oil filter to the specified torque.
8. Install the oil drain plug and refill the engine oil (Refer to [P.12-4](#)).
9. Rev the engine a few times, and check to be sure that no engine oil leaks from the installation section of the oil filter.

11. TRANSAXLE OIL <M/T>**CHECK OIL LEVEL AND CONDITION**

1. Remove the filler plug and gasket.
2. Check that the oil level is up to the lower edge of the filler plug hole.
3. Check that the oil is not noticeably dirty.
4. Tighten the filler plug and new gasket to the specified torque.

Tightening torque: 40 ± 11 N·m (30 ± 8 ft-lb)

**TRANSAXLE OIL REPLACEMENT**

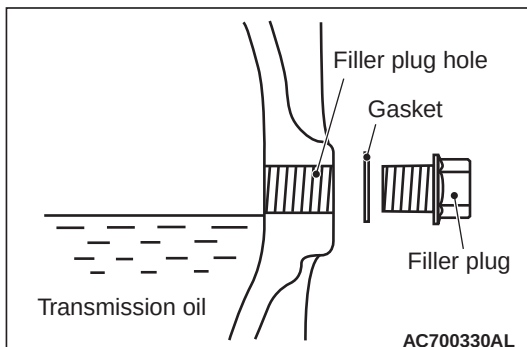
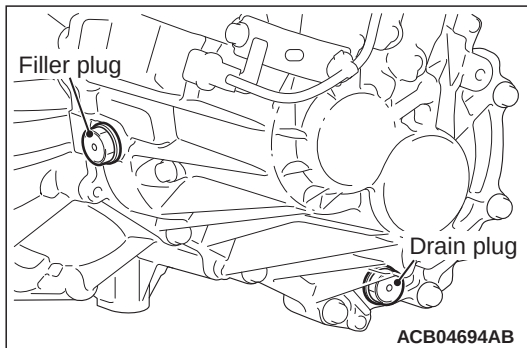
1. Remove the filler plug and gasket.
2. Remove the drain plug and gasket, and drain the oil.
3. Tighten the drain plug and new gasket, to the specified torque.
4. Fill with MITSUBISHI MOTORS NEW MULTI GEAR OIL ECO API GL-4, SAE 75W-80 until the level comes to the lower portion of filler plug hole.

Tightening torque: 48 ± 20 N·m (35 ± 14 ft-lb)

Quantity: 1.6 dm^3 (1.69 quarts)

5. Tighten the filler plug and new gasket to the specified torque.

Tightening torque: 40 ± 11 N·m (30 ± 8 ft-lb)



12. TRANSMISSION FLUID <CVT>

CHECK FLUID LEVEL AND CONDITION

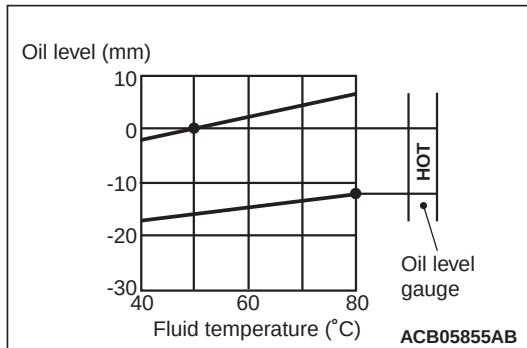
CAUTION

Replace the transmission fluid whenever the transmission is replaced with a new one or the vehicle is driven in harsh conditions.

1. Drive the vehicle until the transmission fluid is warmed up to the normal operating temperature 50 – 80°C (122 – 176°F).

NOTE: Use scan tool (M.U.T.-III.) to measure the transmission fluid temperature.

NOTE: When a certain amount of time is required to warm up the transmission fluid to the normal operating temperature 50 – 80°C (122 – 176°F), check the oil level referring to the characteristics chart.



2. Park the vehicle on a level surface.
3. Move the selector lever to every position to fill the torque converter and the hydraulic circuit with the transmission fluid, and then move the selector lever to P or N range.
4. Pull out the oil level gauge, and wipe off the transmission fluid and dirt. Then, insert the oil level gauge again and pull it to check the condition of the transmission fluid.

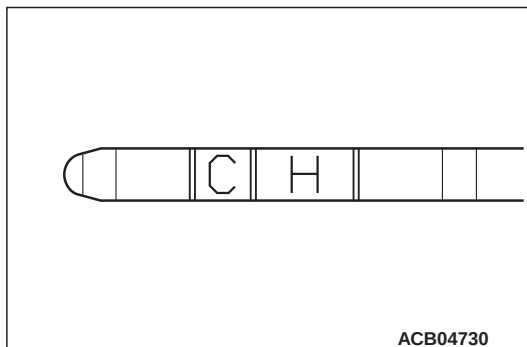
NOTE: If the transmission fluid smells burnt or is excessively deteriorated or dirty, the transmission fluid is contaminated with particles of the metal bushings and friction material. In these cases, the transmission must be replaced.

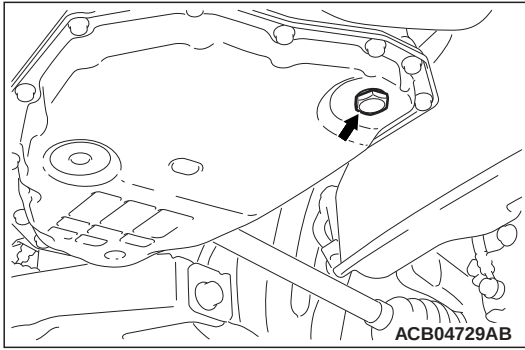
5. Check that the transmission fluid level is within the "H" area on the oil level gauge. If the fluid level is low, add the transmission fluid to the "H" level.

Transmission fluid: MITSUBISHI MOTORS GENUINE CVTF-J4

NOTE: When the transmission fluid level is low, the oil pump sucks air together with the transmission fluid, and produces air bubbles in the hydraulic circuit. The air bubbles in the hydraulic circuit decreases the hydraulic pressure, causing the delayed gearshift or slippage of the belt, clutch, and brake. When the transmission fluid level is too high, the fluid is stirred by the gear and foams up, and the problems similar to those when the transmission fluid level is low will occur. In either case, air bubbles cause the overheat and oxidation of the transmission fluid, which prevents normal operation of the valve, clutch, and brake. Beside, when the transmission fluid is foamy, it flows out of the transmission vent hole. This may be taken as the fluid leakage by mistake.

6. Insert the oil level gauge securely.



**CHANGE**

1. Remove the drain plug on the bottom of the transmission case to drain the transmission fluid.

Draining amount: Approximately 2.5 dm³ (2.64 qt)

2. Install the drain plug with a new gasket to the transmission case, and tighten it to the specified torque.

Tightening torque: 35 ± 4 N·m (26 ± 2 ft-lb)

⚠ CAUTION

If the transmission case becomes full before filling 2.5 dm³ (2.64 qt) of transmission fluid, stop filling the transmission fluid.

3. Fill in the new transmission fluid through the oil filler tube.

Filling amount: Approximately 2.5 dm³ (2.64 qt)

Transmission fluid: MITSUBISHI MOTORS GENUINE CVTF-J4

4. Start up the engine and let it idle for 1 to 2 minutes.
5. Move the selector lever to every position, and then move it to the P or N range.
6. Stop the engine and perform the above steps 1 to 5 again.
7. Stop the engine, and discharge a small amount of transmission fluid to check for fouling. If fouling is found, repeat steps 1 to 5 until clean transmission fluid comes out.
8. Drive the vehicle until the transmission fluid is warmed up to the normal operating temperature 50 – 80°C (122 – 176°F), and check the transmission fluid level. It must be within the "H" area on the oil level gauge.

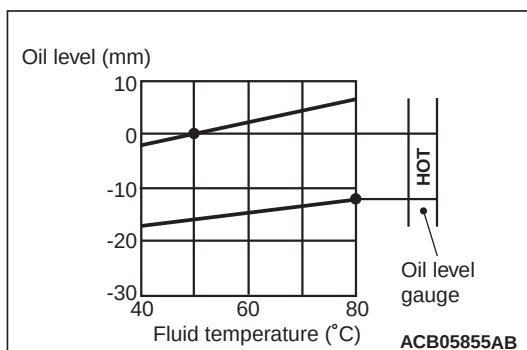
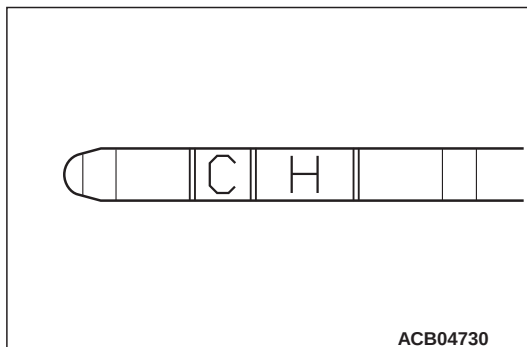
NOTE: The "C" level is for reference only. Use the "H" level as the criteria.

NOTE: Use scan tool (M.U.T.-III.) to measure the transmission fluid temperature.

NOTE:

When a certain amount of time is required to warm up the transmission fluid to the normal operating temperature 50 – 80 °C (122 – 176 °F), check the oil level referring to the characteristics chart.

9. Adjust the transmission fluid level to the specified level. Refill the transmission fluid when the fluid level is low, and drain the transmission fluid through the drain plug when the fluid level is high.
10. Securely insert the oil level gauge into the oil filler tube.
11. TCM records the deterioration level of the transmission fluid. After replacing the transmission fluid with new one, use scan tool (M.U.T.-III) to reset the deterioration level recorded in TCM.



13. ENGINE COOLANT

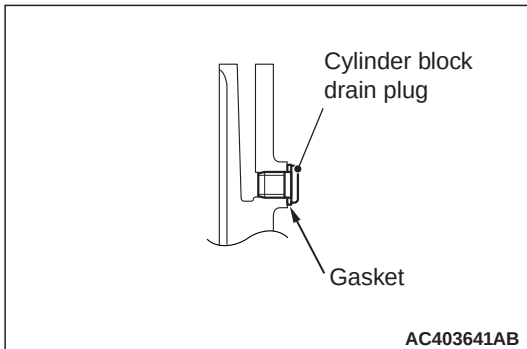
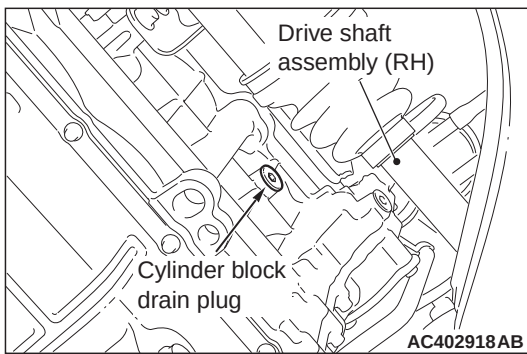
CHANGE

1. Remove the engine room under cover front (Refer to GROUP 51 – Under Cover P.51-15).

⚠ WARNING

When removing the radiator cap, use care to avoid contact with hot coolant or steam. Place a shop towel over the cap and turn the cap counterclockwise a little to let the pressure escape through the vinyl tube. After relieving the steam pressure, remove the cap by slowly turning it counterclockwise.

2. Drain the engine coolant from the radiator, heater core and engine after unplugging the radiator drain plug and removing the radiator cap.
3. Drain the engine coolant in the water jacket by unplugging the drain plug of the cylinder block.
4. Remove the condenser tank and drain the engine coolant.



5. Replace the gasket, and tighten the cylinder block drain plug to the specified torque.

Tightening torque: 25 ± 3 N·m (18 ± 2 ft·lb)

6. Securely tighten the drain plug of the radiator.
7. Reinstall the condenser tank.

⚠ CAUTION

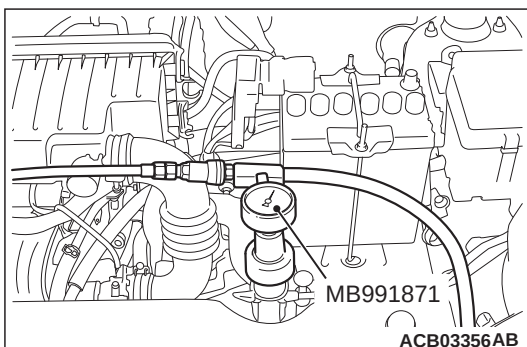
- Do not use alcohol or methanol anti-freeze or any engine coolants mixed with alcohol or methanol anti-freeze. The use of an improper anti-freeze can cause corrosion of the aluminum components.
 - Use the MITSUBISHI MOTORS GENUINE SUPER LONG LIFE COOLANT PREMIUM without adding water because the concentration is preadjusted to 50%.
8. Use special tool LLC changer (MB991871) to refill the engine coolant up to the top of the radiator port.

Recommended antifreeze: MITSUBISHI MOTORS GENUINE SUPER LONG LIFE COOLANT PREMIUM or equivalent*

NOTE: *similar high quality ethylene glycol based non-silicate, non-amine, non-nitrate and non-borate coolant with long life hybrid organic acid technology.

Quantity (Includes volume inside condense tank):

- M/T: 4.0 dm^3 (4.2 quarts)
- CVT: 4.6 dm^3 (4.8 quarts)



NOTE: For how to use special tool MB991871, refer to its manufacturer's instructions.

9. Tighten the radiator cap securely.
10. Remove the condenser tank cap, and add the engine coolant up to the "F" line of the condenser tank.
11. Turn the A/C switch to OFF position to start the engine and warm up until the cooling fan operates.

NOTE: This work is to open the thermostat fully.

12. Rev the engine several times and then stop it. Check that there are no coolant leaks.
13. Remove the radiator cap with the engine cool, and then refill the engine coolant up to the top of the radiator port.
14. Tighten the radiator cap securely.

⚠ CAUTION

Do not overfill the condenser tank.

15. Remove the condenser tank cap, and add the engine coolant up to the "F" line of the condenser tank.
16. Install the engine room under cover front (Refer to GROUP 51 – Under Cover [P.51-15](#)).

14. COOLANT HOSES (RADIATOR HOSE, HEATER HOSE)

M1001009700302

INSPECT

Inspect the surface of radiator hoses and heater hoses for heat and mechanical damage. Hard and brittle rubber, cracking, tears, cuts, abrasions and excessive swelling indicate deterioration of the rubber.

15. DISK BRAKE PADS AND ROTORS

M1001003200688

INSPECT FOR WEAR

BRAKE PAD CHECK

⚠ CAUTION

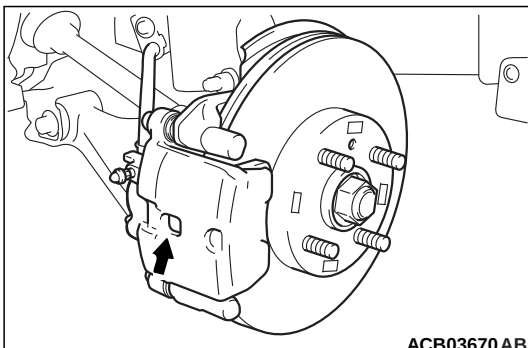
If there is a significant difference in thickness between the brake pads at right and left, check the sliding area and the run-out of the brake disc (Refer to [P.35A-20](#)).

1. Visually check the thickness of brake pad from the inspection hole of the caliper body.

Standard value: 9.0 mm (0.35 inch)

Limit: 2.0 mm (0.08 inch)

2. If the brake pad thickness is less than the limit value, replace the brake pad (Refer to [P.35A-19](#)).



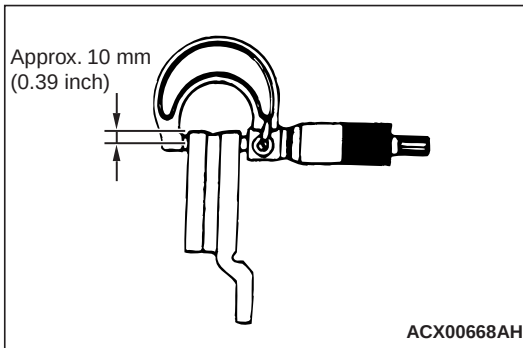
BRAKE DISC THICKNESS CHECK

1. Remove contaminants or corrosion from the brake disc surface.
2. Use a micrometer to measure the brake disc thickness at minimum eight points which are 10 mm inward from its circumference.

Standard value: 17.0 mm (0.67 inch)

Limit: 15.4 mm (0.61 inch)

3. If the brake disc thickness is worn beyond the limit value at more than one point, replace the brake disc. Then rephase the brake disc so that the minimum brake disc run-out is obtained, or grind the disc while in place on the vehicle so that its run-out is below the limit value.

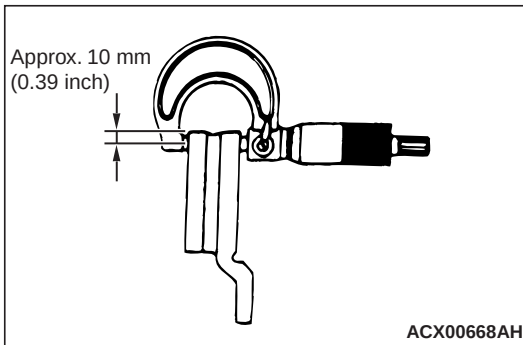


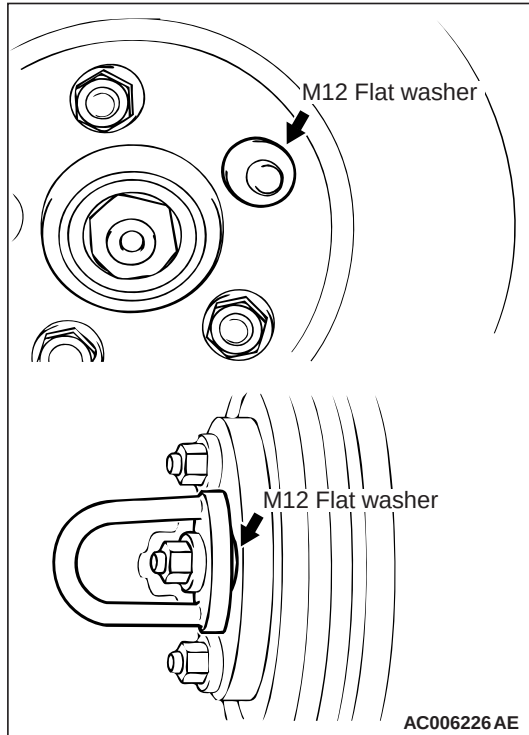
BRAKE DISC THICKNESS UNEVENNESS CHECK AND CORRECTION

1. Remove contaminants or corrosion from the brake disc surface.
2. Use a micrometer to measure the brake disc thickness at minimum eight points which are 10 mm (0.39 inch) inward from its circumference. Then record the measurements.
3. If the brake disc thickness unevenness (the difference between the maximum and minimum values measured above) is 0.015 mm (0.0006 inch) or less, it is within the standard value.
4. If the brake disc thickness unevenness exceeds the standard value, grind it according to the procedure below while it is mounted on the vehicle.

NOTE: If it is suspected that the brake disc thickness will become less than the limit value after the grinding, replace the brake disc. Then rephase the brake disc run-out is obtained, or grind the disc while in place on the vehicle so that its run-out is below the limit value.

- (1) Check for wheel bearing looseness in the axial direction (Refer to GROUP 26 – On-vehicle Service, Wheel bearing end play check [P.26-7](#)).



**⚠ CAUTION**

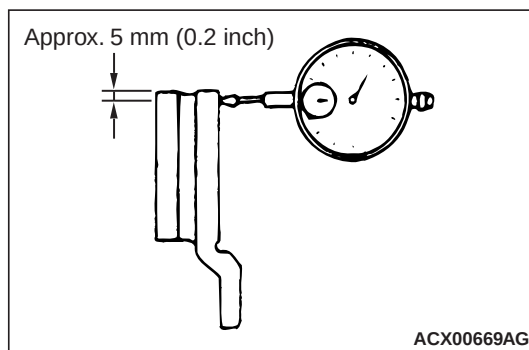
- Insert M12 plain washer and then install the adapter as shown before grinding. Failure to use the M12 plain washer will cause the brake disc to be deformed and ground incorrectly.
 - To grind the brake disc, ensure that all the nuts [M12 × 1.5 mm (M12 × 0.06 inch)] are tightened evenly and in a diagonal sequence to the specified torque [100 N·m (74 ft-lb)]. Failure to use all the nuts [M12 × 1.5 mm (M12 × 0.06 inch)], excessive or uneven tightening torque will cause the brake disc to deform or judder.
- (2) Correct the brake disc uneven thickness by grinding it while in place on the vehicle.

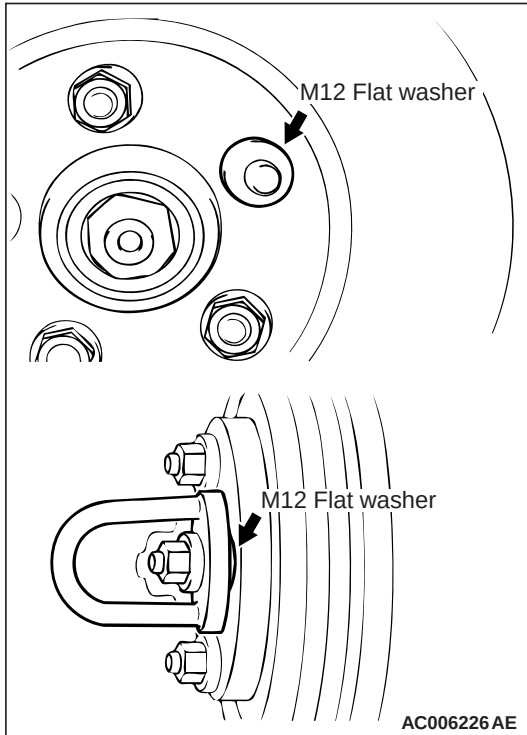
BRAKE DISC RUN-OUT CHECK AND CORRECTION

1. Check for wheel bearing looseness in the axial direction (Refer to GROUP 26 – On-vehicle Service, Wheel bearing end play check [P.26-7](#)).
2. If the end play is within the limit value, secure the brake disc by tightening the nut [M12 × 1.5 mm (M12 × 0.06 inch)] evenly to the specified torque [100 N·m (74 ft-lb)]. If the end play still exceeds the limit value, replace the wheel bearing. Then secure the brake disc by tightening the nut [M12 × 1.5 mm (0.06 inch) evenly to the specified torque [100 N·m (74 ft-lb)].
3. Place a dial gauge ca. 5 mm (0.2 inch) inward from the circumference of the brake disc to measure its run-out.

Limit: 0.06 mm (0.002 inch)

4. If the brake disc run-out exceeds the limit value, rephase the brake disc to the hub so that the minimum brake disc run-out is obtained.





⚠ CAUTION

- Insert M12 plain washer and then install the adapter as shown before grinding. Failure to use the M12 plain washer will cause the brake disc to be deformed and ground incorrectly.
 - To grind the brake disc, ensure that all the nuts [M12 × 1.5 mm (M12 × 0.06 inch)] are tightened evenly and in a diagonal sequence to the specified torque [100 N·m (74 ft-lb)]. Failure to use all the nuts [M12 × 1.5 mm (M12 × 0.06 inch)], excessive or uneven tightening torque will cause the brake disc to deform or judder.
5. If the brake disc run-out exceeds the limit value after rephasing, grind the disc while in place on the vehicle so that the brake disc run-out is within the limit value.

NOTE: If it is suspected that the brake disc thickness will be below the limit value, replace the brake disc. Then rephase the brake disc so that the minimum brake disc run-out is obtained, or grind the disc while in place on the vehicle so that its run-out is below the limit value.

16. REAR DRUM BRAKE LININGS AND REAR WHEEL CYLINDERS

M1001003300458

INSPECT FOR WEAR AND LEAKS

BRAKE LINING THICKNESS CHECK

⚠ CAUTION

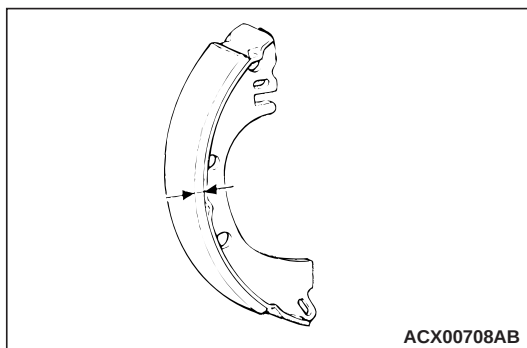
- Whenever the shoe and lining assembly is replaced, replace both RH and LH assemblies as a set to prevent the car from pulling to one side when braking.
- If there is a significant difference in the thickness of the shoe and lining assemblies on the left and right sides, check the sliding condition of the piston.

1. Remove the brake drum.
2. Measure the thickness of the brake lining at the area with the most wear.

Standard value: 3.8 mm (0.15 inch)

Limit: 2.0 mm (0.08 inch)

3. Replace the shoe and lining assembly if the brake lining thickness is less than the limit or if it is not worn evenly. For installation procedures for the shoe and lining assembly, refer to [P.35A-36](#).



BRAKE DRUM INSIDE DIAMETER CHECK**⚠ CAUTION**

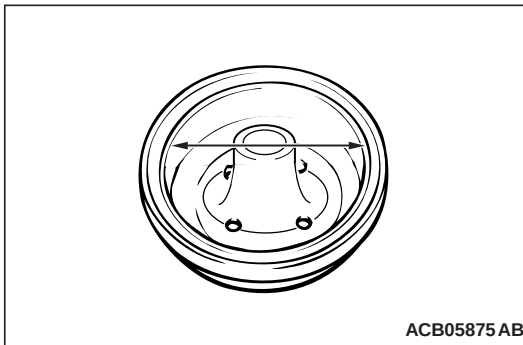
- The vehicle speed detection encoder collects any metallic particle easily, because it is magnetized. Make sure that the encoder should not collect any metallic particle.
- Always keep magnetic substances away from the vehicle speed detection encoder.

1. Remove the rear wheel hub assembly.
2. Measure the inside diameter of the rear wheel hub assembly at two or more locations.

Standard value: 180 mm (7.1 inch)

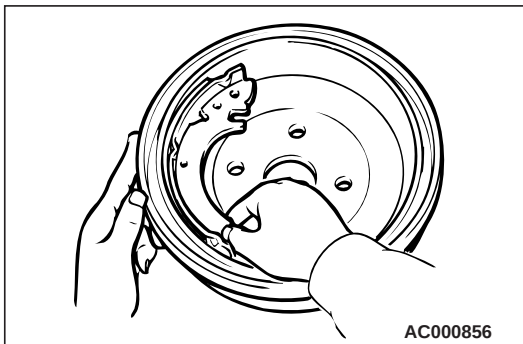
Limit: 181 mm (7.1 inch)

3. Replace the rear wheel hubs, shoe and lining assembly when wear exceeds the limit value or is badly imbalanced.

**BRAKE LINING AND BRAKE DRUM CONTACT CHECK**

1. Remove the brake drum.
2. Remove the shoe and lining assembly (Refer to [P.35A-36](#)).
3. Chalk the inner surface of the brake drum and rub with the shoe and lining assembly.
4. Replace the shoe and lining assembly or brake drums if there are any irregular contact areas.

NOTE: Clean off chalk after check.

**17. BRAKE HOSES**

M1001003400648

CHECK FOR DETERIORATION OR LEAKS

Inspection of brake hoses should be included in all brake service operations.

The hoses should be checked for:

1. Incorrect length, severe surface cracking, pulling, scuffing or worn spots. (If the fabric casing of the hoses is exposed by cracks or abrasion in the rubber hose cover, the hoses should be replaced. Eventual deterioration of the hose and possible bursting failure may occur).
2. Incorrect installation, twisting or interference with wheel, tire or chassis.

M1001022400023

18. BRAKE FLUID

CHANGE

1. Remove the cap of the bleeder screw, connect a vinyl tube, and place its other end in a receptacle.

CAUTION

If the reservoir tank completely runs out of fluid during operation, air will find way into the brake line. Pay attention, therefore, to the fluid level and replenish as necessary.

2. Loosen the bleeder screw and depress the brake pedal; supply new brake fluid when the level of the fluid within the reservoir tank decreases.

Specified brake fluid: DOT3 or DOT4

CAUTION

Use the specified brake fluid. Avoid using a mixture of the specified brake fluid and other fluid. If brake fluid is exposed to the air, it will absorb moisture; as water is absorbed from the atmosphere, the boiling point of the brake fluid will decrease and the braking performance will be seriously impaired. For this reason use a hermetically sealed 1 L (0.2 gal) or 0.5 L (0.1 gal) brake fluid container. Firmly close the cap of the brake fluid container after use.

3. When fresh fluid has come to flow out from the vinyl tube, tighten the bleeder screw.

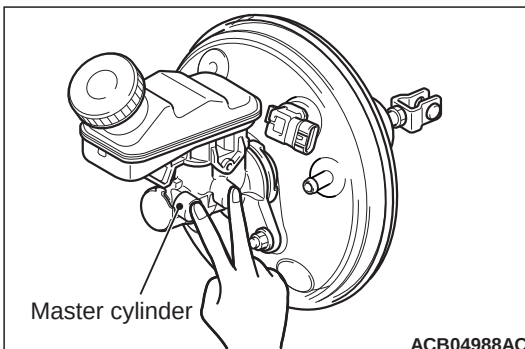
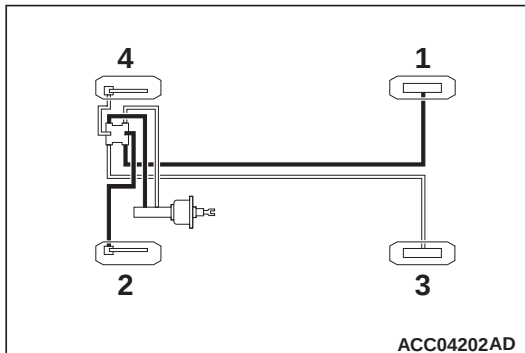
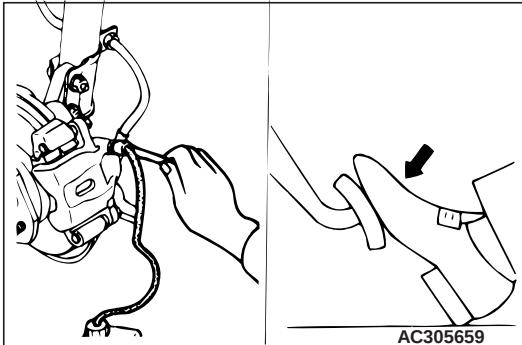
NOTE: This change from existing to fresh fluid can be judged by change in color of fluid that flows out.

4. Repeat above steps for other bleeder screws.

MASTER CYLINDER BLEEDING

When removed the master cylinder assembly, bleed the master cylinder in the following procedure to make bleeding of the brake pipeline easier (When no brake fluid is in the master cylinder).

1. Fill the brake fluid reservoir with the brake fluid.
2. Depress and hold the brake pedal.
3. Another operator closes the master cylinder outlets with his fingers.
4. In this condition, release the brake pedal.
5. Repeat Steps 2 to 4 for 3 or 4 times to fill the master cylinder with the brake fluid.

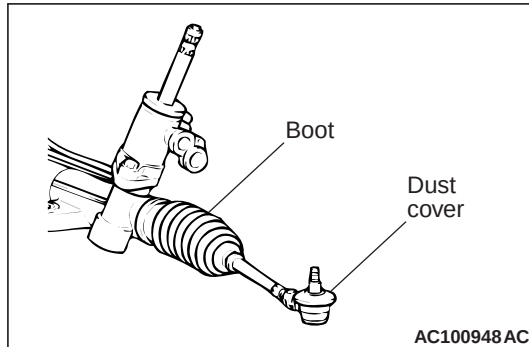


**19. BALL JOINT AND STEERING LINKAGE
SEALS**

M1001003500634

INSPECT FOR GREASE LEAKS AND DAMAGE

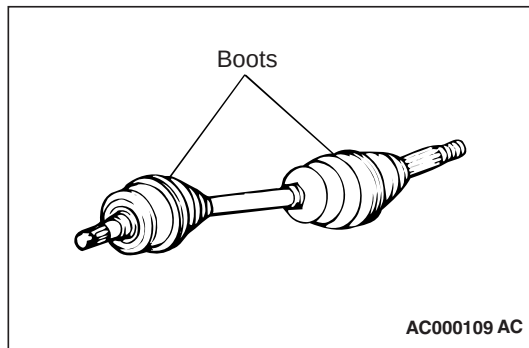
1. These components, which are permanently lubricated at the factory, do not require periodic lubrication. Damaged seals and boots should be replaced to prevent leakage or grease contamination.
2. Inspect the dust cover and boots for proper sealing, leakage and damage, and replace them if defective.

**20. DRIVE SHAFT BOOTS**

M1001003600631

INSPECT FOR GREASE LEAKS AND DAMAGE

1. These components, which are permanently lubricated at the factory, do not require periodic lubrication. Damaged seals and boots should be replaced to prevent leakage or grease contamination.
2. Inspect the dust cover and boots for proper sealing, leakage and damage. Replace them if defective.

**21. SUSPENSION SYSTEM**

M1001009600350

INSPECT FOR LOOSENESS AND DAMAGE

Visually inspect the front/rear suspension components for deterioration and damage. Re-tighten the front/rear suspension components retaining bolts to specified torque.

22. TIRES

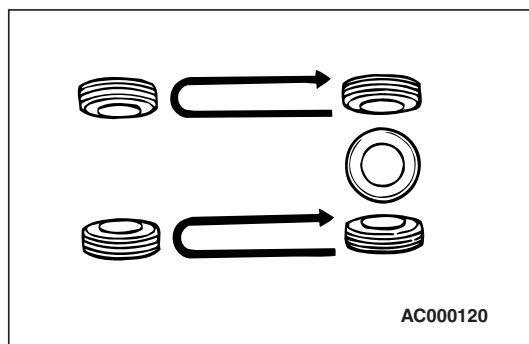
M1001008900682

ROTATE**<Vehicles for USA>**

Rotate tires regularly to equalize tire wear and help extend tire life. Recommended tire rotation is every 7,500 miles (12,000 km) or every 6 months <Schedule 1>, every 7,500 miles (12,000 km) <Schedule 2>.

Timing for the rotation may vary according to vehicle condition, road surface conditions, and individual driver's habits.

When rotating tires, check for uneven wear, damage, and wheel alignment. Abnormal wear is usually caused by incorrect tire pressure, improper wheel alignment, out-of balance wheels, or severe braking.



The first rotation is the most important, to achieve more uniform wear for all tires on the vehicle.

<Vehicles for Canada>

Rotate tires regularly to equalize tire wear and help extend tire life. Recommended tire rotation is Every 8,000 km (5,500 miles) <General maintenance service for proper vehicle performance>, Every 6,000 km (4,000 miles) <Scheduled maintenance under severe usage conditions>.

Timing for the rotation may vary according to vehicle condition, road surface conditions, and individual driver's habits.

When rotating tires, check for uneven wear, damage, and wheel alignment. Abnormal wear is usually caused by incorrect tire pressure, improper wheel alignment, out-of balance wheels, or severe braking.

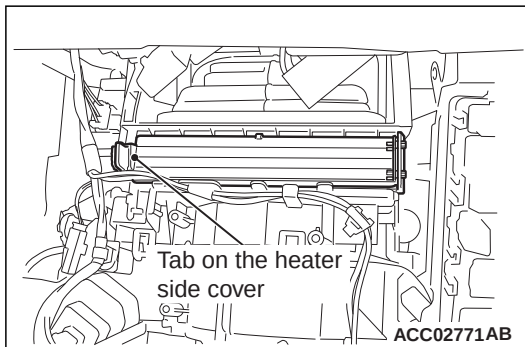
The first rotation is the most important, to achieve more uniform wear for all tires on the vehicle.

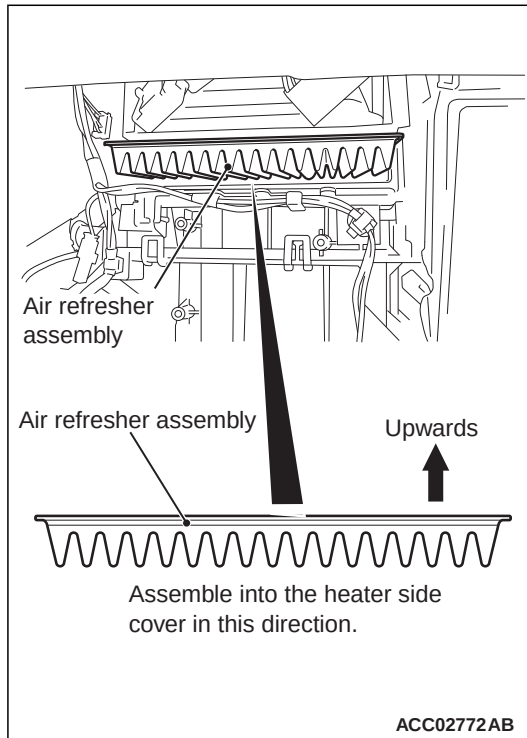
23. CLEAN AIR FILTER (AIR REFRESHER)

M1001009000295

REPLACE

1. Remove the glove box (Refer to GROUP 52A – Instrumental Panel, [P.52A-4](#)).
2. Grasp the tab to remove the heater side cover.





3. Install the air refresher assembly in the direction shown.
4. Install the glove box.

24. TIRE REPAIR KIT

Note the expiry date of the temporary repair agent bottle contained in the tire repair kit. If the useby date expired, replace the kit.

M1001023400015

MAIN SEALANT AND ADHESIVE TABLE

M1001003800691

Application		3M™/three bond No.	Loctite®/permatex®No.
ENGINE AND DRIVETRAIN	Between rocker cover assembly, cylinder head and timing chain case.	ThreeBond 1217G (MITSUBISHI MOTORS GENUINE Part No.1000A923)	Loctite®5900, Loctite® 5970
	Between cylinder head gasket. Between timing chain case assembly.		
	Between oil pan		
	Flywheel bolt <M/T> or drive plate bolt <CVT>	Three bond 1324	Loctite®2701
	Between engine oil pressure switch	ThreeBond 1215, ThreeBond 1141J, ThreeBond 1212D	-
	Between engine coolant temperature switch	ThreeBond 1324N	Loctite®262
WEATHERSTRIPPING FOR GLASS	Between wind glass (windshield glass, rear window glass or Liftgate window glass) and body flanges	3 M™ AAD part No. 8906	-
INTERIORS	Adhesive of vinyl chloride cloth	3M™ AAD Part No. 8088 General Trim Adhesive or 3M™ AAD Part No. 8064 Vinyl Trim Adhesive	Permatex® Vinyl Repair Kit No.81786
	Adhesion of door weatherstrip	3M™ AAD Part No. 8001 (yellow) or 3M™ AAD Part No. 8008 (black) Super Weatherstrip Adhesive or 3M™ AAD Part No. 8011 Black Weatherstrip Adhesive	Permatex® Super Black Weatherstrip Adhesive No.82, 81850
	Sealing of various grommets and packing	3M™ AAD Part No. 8509 or 3M™ AAD Part No. 8678	-
	Adhesion of headliners and various interior decorative materials	3M™ AAD Part No. 8088 General Trim Adhesive or 3M™ AAD Part No. 8090 Super Trim Adhesive	Permatex® Spray Adhesive No.82019
EXTERIORS	Front three-diamond mark	Generic Products Double-sided Tape	-
	Side air dam	3M™ K-500 Specified Primer, Generic Products Double-sided Tape	-

Application		3M™/three bond No.	Loctite®/permatex®No.
BODY SEALANTS	Sealing of sheet metal joints, floor, side panels, front panel, liftgate hinge	3M™ AAD Part No. 8531 Heavy Drip-Check Sealer (gray) 3M™ ADD Part No. 8646 or 3M™ AAD Part No. 8302 Ultrapro Autobody Sealant (clear) or 3M™ AAD Part No. 8361 Urethane A/B Sealant (gray or white) or 3M™ AAD Part No. 8531 Heavy drip check sealer, 3M™ AAD Part No. 8646 Automotive joint and seam sealer	-
	Miscellaneous body sealants (original mounted w/adhesive tape) - Waterproof door film - Rear combination light	3 M™ADD Part No. 8625 or 3M™ AAD Part No. 8633 Windo-weld Resealant	-
CHASSIS SEALANT	Sealant of various flange faces and threaded parts. Packing of fuel gauge unit	3M™ AAD Part No. 8730 High Strength Red Threadlock or 3M™ AAD Part No. 8731 Medium Strength Blue Threadlocker	Loctite®272 High Strength and High Temperature 27200
	Sealing of various threaded parts, dust covers. Differential carrier packing, dust covers and ball joint and linkage. Packing and shims of steering box, sealing of rack support cover and top cover of steering box housing, seal of junction face of knuckle arm flange	3M™ AAD Part No. 8672 Ultrapro High Temp. Silicone Gasket or 3M™ AAD Part No. 8679 (black) or 3M™ AAD Part No. 8678 (black) Press-In-Place Silicone gasket strips 3M™ AAD Part No. 8661 or 3M™ AAD Part No. 8663 Super Silicone sealant	Permatex® The Right Stuff No.25223
QUICK FIX ADHESIVE	-	3M™ AAD Part No. 8155 Quick Fix Adhesive	Loctite®Quicktite Super Glue 21309
ANAEROBIC STRONG SEALING AGENT	Fixing of various threads, bolts, screws. Fixing of differential drive gear bolt, Connecting of tilt steering bolt. Fan, pulley, gear Sealing of small gaps and flange faces	3M™ AAD Part No. 8730 High Strength Threadlocker or 3M™ AAD Part No. 8731 Medium Strength Threadlocker	Loctite®271, High-Strength Threadlocker 27100 or 27200

Application		3M™/three bond No.	Loctite®/permatex®No.
UNDER COATING AGENT	-	3M™ AAD Part No. 8883 Rubberized Undercoating Aerosol or 3M™ AAD Part No. 8864 Body Schutz Undercoating (qt)	Permatex® Heavy-Duty Undercoating 81833

NOTES