GROUP 0

GENERAL

CONTENTS

HOW TO USE THIS MANUAL

M6000000100026

This manual contains Pre-delivery inspection and Periodic inspection and maintenance.

Group 0 and 1 have the contents for all vehicle models, and Group 2 has contents for the relevant vehicle models.

PRECAUTIONS BEFORE SERVICE

PROTECTING THE VEHICLE

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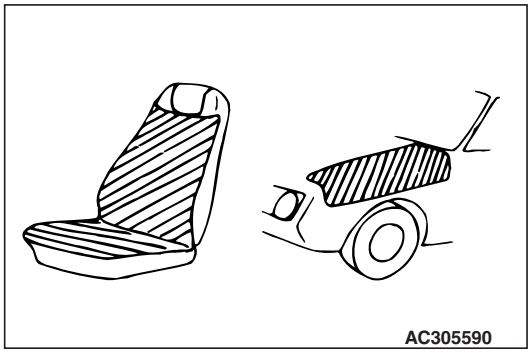
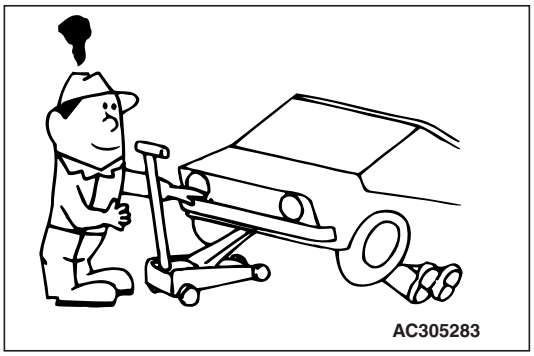


If there is a likelihood of damaging interior or exterior parts during service operations, protect them with suitable covers (such as seat covers, fender covers, etc.).

DOING SERVICE WORK IN GROUPS OF TWO OR MORE MECHANICS

M6001000200026



If the service work is to be done by two or more mechanics working together, all the mechanics involved should take safety into consideration while they work.

REMOVAL AND DISASSEMBLY

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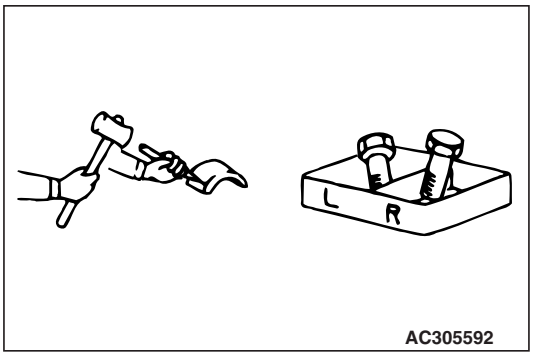
When checking a malfunction, find the cause of the problem. If it is determined that removal and/or disassembly is necessary, perform the work by following the procedures contained in this manual.

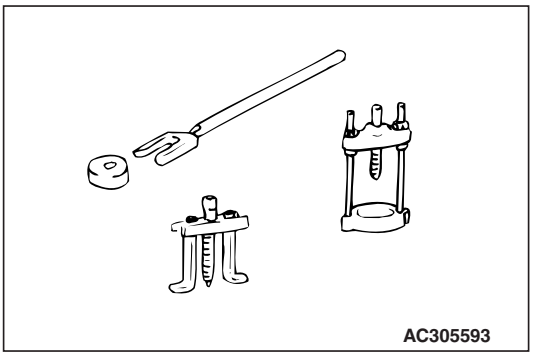


If punch marks or mating marks are made to avoid error in assembly and facilitate the assembly work, be sure to make them in locations which will have no detrimental effect on performance and/or appearance. If an area having many parts, similar parts, and/or parts which are symmetrical right and left is disassembled, be sure to arrange the parts so that they do not become mixed during the assembly process.

1. Arrange the parts removed in the proper order.
2. Determine which parts are to be reused and which are to be replaced.
3. If bolts, nuts, etc., are to be replaced, be sure to use only the exact size specified.

SPECIAL TOOLS

M6001000400031



If other tools are substituted for the special tools to do service of repair work, there is the danger that vehicle parts might be damaged, or the technician might be injured; therefore, be sure to use the special tool whenever doing any work for which the use of one is specified.

PARTS TO BE REPLACED

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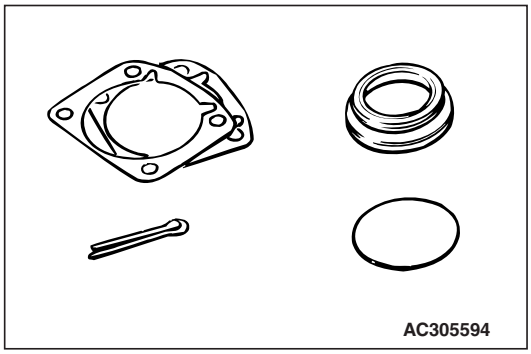
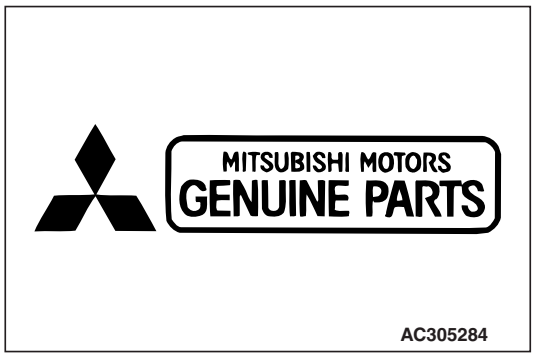


If any of the following parts are removed, they must be replaced with new parts.

- Oil seals
- Gaskets (except rocker cover gasket)
- Packings
- O-rings
- Lock washers
- Split pins
- Self-locking nuts

PARTS

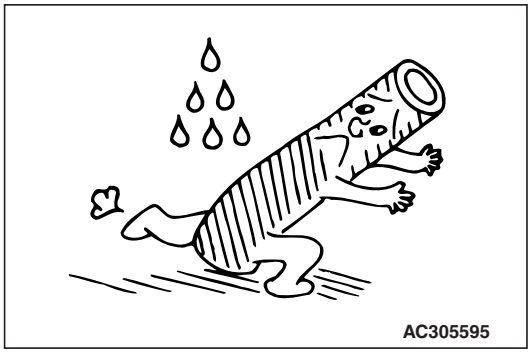
M6001000600024



When replacing parts, use MITSUBISHI genuine parts.

TUBES AND OTHER RUBBER PARTS

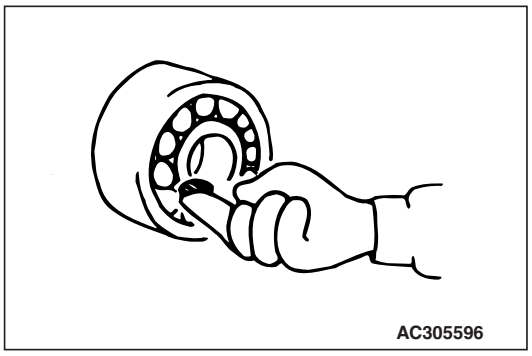
M6001000700021



Be careful to avoid spilling any petrol, oil, etc., because if it adheres to any tubes or other rubber parts, they might be adversely affected.

LUBRICANTS

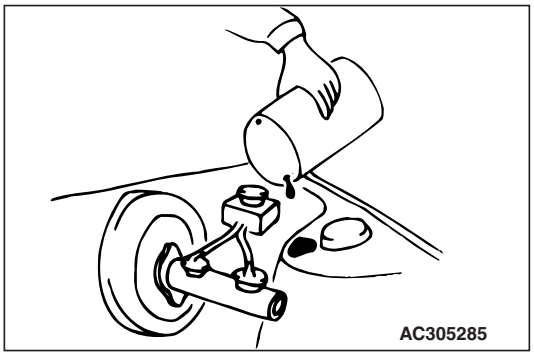
M6001000800028



In accordance with the instructions in this manual, apply the specified lubricants in the specified locations during assembly and installation.

BRAKE FLUID

M6001000900025



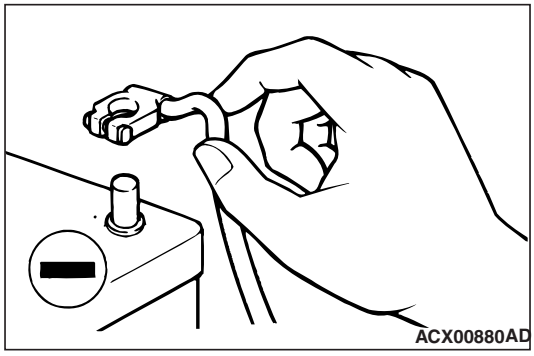
Be careful to avoid spilling any brake fluid, because if it adheres to the vehicle body, the paint coat might be discoloured.

SERVICING THE ELECTRICAL SYSTEM

M6001001000081

⚠ CAUTION

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



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

APPLICATION OF ANTI-CORROSION AGENTS AND UNDERCOATS

M6001001100022

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

PRE-INSPECTION CONDITION

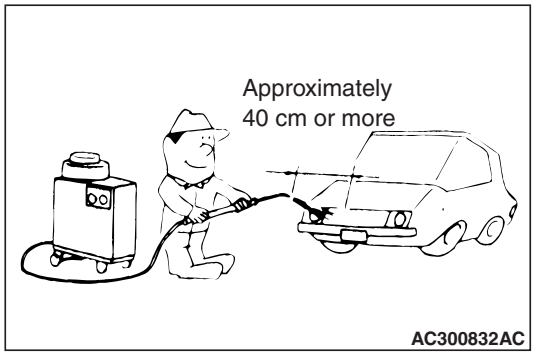
M6001001200041

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

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

VEHICLE WASHING

M6001001300082



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

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

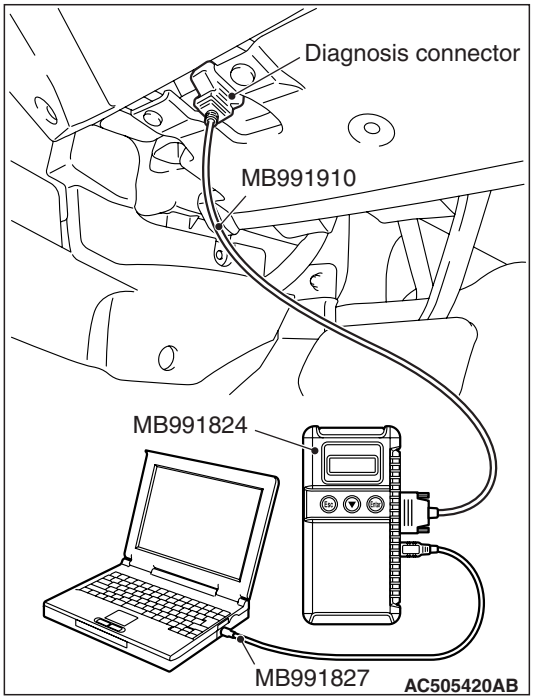
MULTI USE TESTER (M.U.T.-III) SUB ASSEMBLY

M6001001900169

Refer to the "M.U.T.-III OPERATING INSTRUCTIONS" for instructions on handling the M.U.T.-III.

⚠ CAUTION

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



Connect the M.U.T.-III to the diagnosis connector as shown in the illustration.

IN ORDER TO PREVENT VEHICLES FROM FIRE

M6001001500064

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

ENGINE OILS

M6001001600061

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.

NOTES

GROUP 1

PRE-DELIVERY INSPECTION

CONTENTS

Continued on next page

NOTES CONCERNING ENTRIES

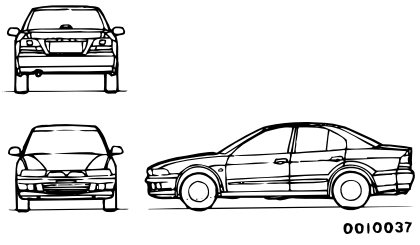
M6010100100132

This section describes the details and the inspection methods employed for the pre-delivery inspection of vehicles.
The inspection should be conducted according to the sequence described in the TABLE OF PRE-DELIVERY INSPECTION.
Inspection methods are described following the TABLE OF PRE-DELIVERY INSPECTION.

NOTE: The spaces for model, C/# (Chassis number), E/# (engine number), aggregate distance travelled in kilometres (miles), date of inspection, name of person conducting the inspection, and body colour must be completed without fail.

NOTE: The spaces for place of inspection, and name of owner should be completed as required.

TABLE OF PRE-DELIVERY INSPECTION



Model	
Chassis number	
Engine number	
Distance Travelled	km
Owner	
Date of inspection	
Place of inspection	
Inspector	
Body colour	

Symbols to be used					
√	Good	A	Needs adjustment	T	Needs retightening
C	Needs cleaning	L	Needs replenishment of lubricant, water, etc.	X	Needs replenishment of repair

INSPECTION PROCEDURE

First Step

1. ☐ Connection of the dark current connector

Body

2. ☐ Wrap film
3. ☐ Exterior
4. ☐ Operation of door locking systems and door hinges
5. ☐ Operation of door mirrors, windows and sunroof

Under Hood

6. ☐ Engine oil level
7. ☐ Brake master cylinder fluid level
8. ☐ Clutch master cylinder fluid level
9. ☐ Washer fluid level
10. ☐ Battery condition and connections
11. ☐ Power steering fluid level
12. ☐ Electrical wiring

Under Vehicle

13. ☐ Tyre and spare tyre pressures
14. ☐ Suspension system
15. ☐ Steering linkage and split pins
16. ☐ Under body

Before Road Test

17. ☐ Seat adjusters and seat back latches
18. ☐ Choke system and inhibitor switch
19. ☐ Idle control knob
20. ☐ Instrument panel controls
21. ☐ Meters, gauges, warning lamps and indication lamps
22. ☐ Air conditioning, heater and defroster systems
23. ☐ Wipers and washers
24. ☐ Operation of service brakes and parking brakes
25. ☐ Clutch operation
26. ☐ Operation of seat belts, shoulder belts and retractors

Road Test

27. ☐ Engine performance and exhaust gas
28. ☐ Transmission in all ranges
29. ☐ Brakes
30. ☐ Steering control
31. ☐ Vibration and rattles
32. ☐ Electrical equipment

After Road Test

33. ☐ Idle speed
34. ☐ Ignition timing
35. ☐ Radiator coolant level
36. ☐ Hoses, fluid lines and connections located under hood
37. ☐ Manual transmission and transfer (4WD) oil level
38. ☐ Automatic transmission fluid level
39. ☐ Engine, transmission, steering gear box and differential for leaks
40. ☐ Front and rear differential oil levels
41. ☐ Hoses, fluid lines and connections located under vehicle

Final Steps

42. ☐ Headlamp aiming
43. ☐ Equipment
44. ☐ Exterior and interior
45. ☐ Owner instructions

PAINTWORK TERMS

M6010200100098

Term	Definition	Remark
Blister	A raised bubble in the paint (from the base or the undercoat) caused by abnormal moisture. The bubble may contain either water or air.	
Change in tone	The colour tone of the painted surface is not uniform.	Including wrong colour, discoloration and decolouration.
Contact mark	A mark on the painted surface as a result of contact by hands or clothing at the time of paint application.	
Crack	A crack in the painted surface.	Cracks may be either shallow or deep.
Dirt in paintwork	Rough surface resulting from foreign material in the paint or from dust deposited on wet paint during painting or storage.	
Filed or ground traces	Deep scratches in sheet metal surface, resulting from improper use of buffer or sander, are not completely covered, and are visible through paint coating.	
Orange peel	The painted surface has the appearance of an orange peel.	
Peeling	The paint flakes off (partly or over a wide area).	The peeling may be minor, medium, or major.
Pin holes	Tiny holes in the painted surface.	
Runs	A visible trickle of dried paint on the surface.	Either undercoat or top-coat.
Scratches	Scratches on the painted surface.	
Shrink	The painted surface "shrinks", causing wrinkles.	
Smears	Spots of soot or other material deposited on the painted surface.	Including stains and water spots.
Spray mist	The painted surface includes fine particles of other paint.	
Uneven lustre	The lustre of the painted surface is not uniform.	
Uneven metallic dispersion	The metallic dispersion of the painted surface is not uniform.	
Visibly incomplete topcoating	A part of the undercoating visible.	

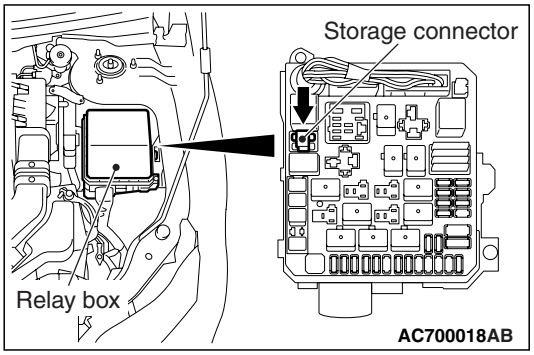
FIRST STEP

1. CONNECTION OF DARK CURRENT CONNECTOR

M6010300100233

CONNECTING PROCEDURE

Press down the storage connector.

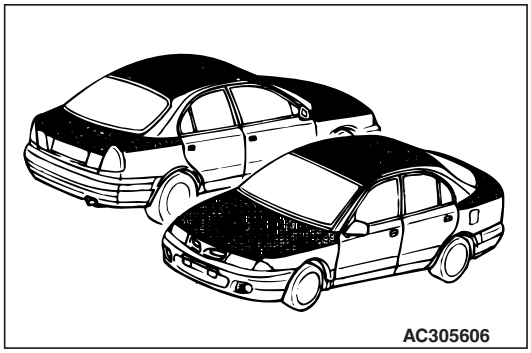


BODY

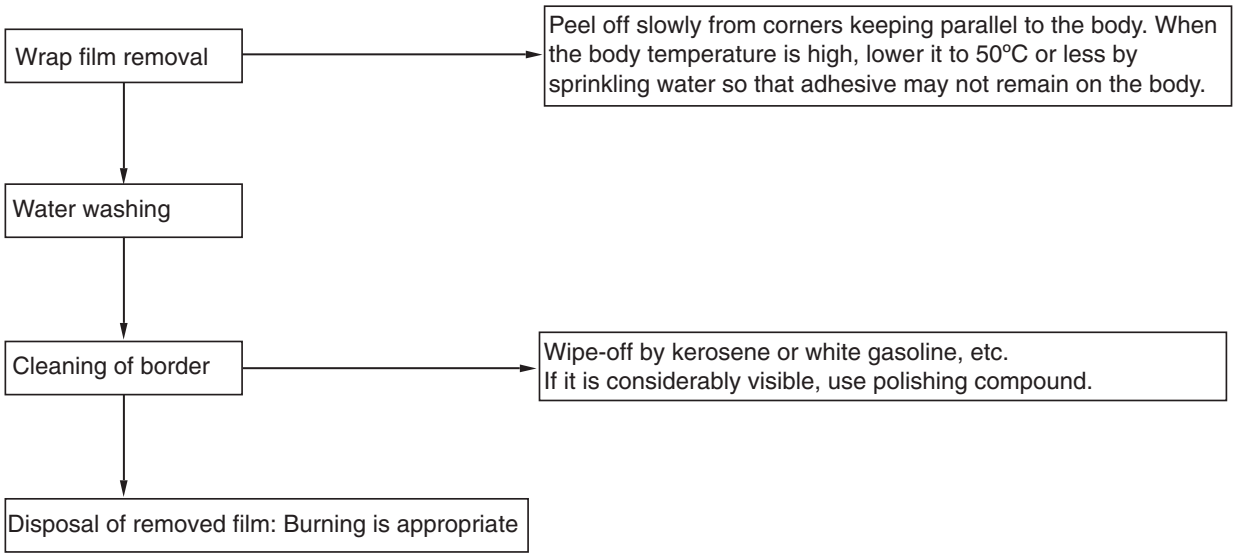
2. WRAP FILM

M6010400100100

To protect the exterior finish of vehicles prior to dealer delivery, a protective coating is used. The coating is a thin white resin film. It is applied to all painted exterior horizontal surfaces of the vehicle and is held in place with a tacky adhesive backing.



REMOVAL PROCEDURE



AC306352 AB

Wrapping work

No.	Process	Operation Content
1	Continuous peeling of film	The film is peeled off.
2	Water rinse	Sand and dust are removed from the vehicle body and it is dried thoroughly.
3	Parts where the film is to be reapplied are checked.	There should be no leftover adhesive, swelling or discoloration of the paint film, or other defects.
4	Treatment of parts where film is to be reapplied.	Treat the defects on the parts where film is to be reapplied. If a solvent is used to remove leftover adhesive, wipe off the solvent thoroughly.
5	Reapplication	1. Basically, the parts where the film is to be applied should be the same as the film that is to be applied. 2. Apply the film from the lower portion of the body, working upward progressively. Apply pressure using a plastic squeegee or similar tool. 3. As necessary, cut the film at the various parts such as windshield washer nozzles, hood and trunk lid.

⚠ CAUTION

- **Apply the film with the body at a temperature of 10 – 40°C. (Workability is good in this temperature range.)**
- **If the outside surface of the film (the side with no adhesive) is brought into direct contact with the paint film and left in that state, it may result in loss of paint gloss, so make sure the film does not get folded under or otherwise make contact with the paint film.**
- **Air bubbles and wrinkles do not have a particularly bad influence on the pain film, but every effort should be made to prevent air bubbles from being trapped under the film by applying pressure from the centre of the film outward toward the edges during application.**
- **To prevent intrusion of rainwater, be sure to press down the overlapping portions and cut ends of the film securely.**

3. EXTERIOR

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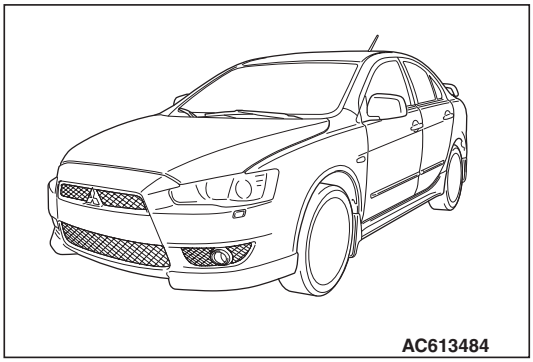
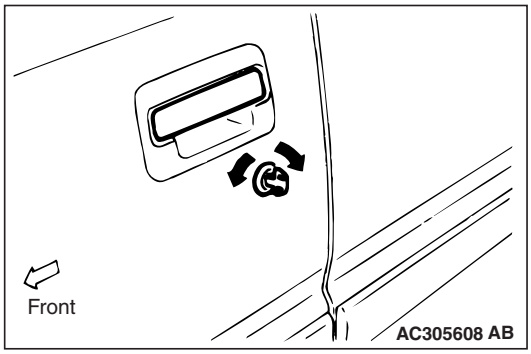
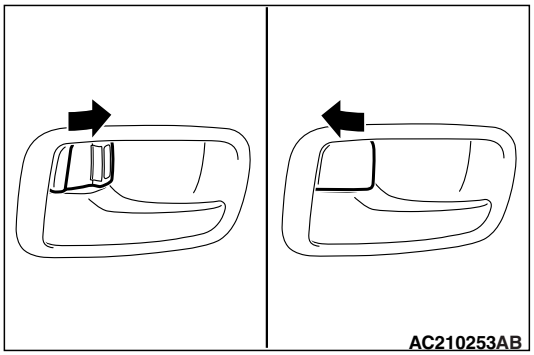


1. Visually inspect the entire exterior.
   (1) Paint condition
   (2) Corrosion, scratches
   (3) Bent edges, dented panels
2. Coated surfaces maintenance
   Touch up minor paint chips and flaws.
   (Refer to paintwork terms)

4. OPERATION OF DOOR LOCKING SYSTEMS AND DOOR HINGES

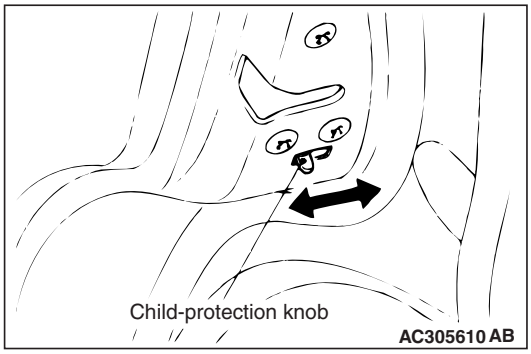
M6010400300137





1. Open each door to check the release mechanism and ease of operation.
2. Close the door to check the latch and striker.
3. Open the door, operate the lock lever and close the door to check the lock.
4. Partially close the door to check the open-door detent.
5. Unlock each door with the key to check lock operation.
6. Verify that all doors can be locked by the lock buttons.

NOTE: Adjust and lubricate the door latches, strikers and locks as required.

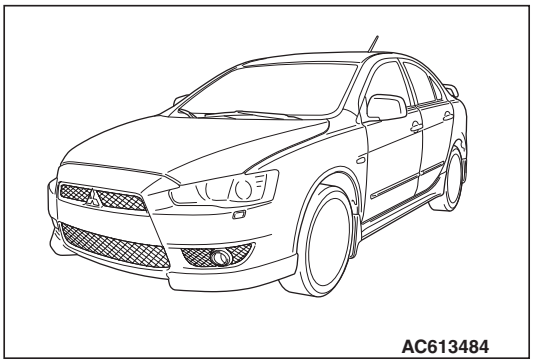


7. Verify that the rear doors can't be opened by the inner door handle when the child protection knob at the end of the door is shifted to the "LOCK" position with the inside lock plunger raised.

NOTE: Set the lock to the "FREE" position on child protection of both rear doors. (For four door models)

5. OPERATION OF DOOR MIRRORS, WINDOWS AND SUNROOF

M6010400400082



1. Door mirrors

   Check that the mirror operate properly.
2. Door windows

   Close all door windows to the fully closed position to check ease of operation.
3. Power windows

   Check that the door windows operate when the respective switches are operated. Check that when the lock switches are depressed, the respective door windows can no more be opened or closed.

4. Slide window

   Close the slide window to the fully closed position to check operation.

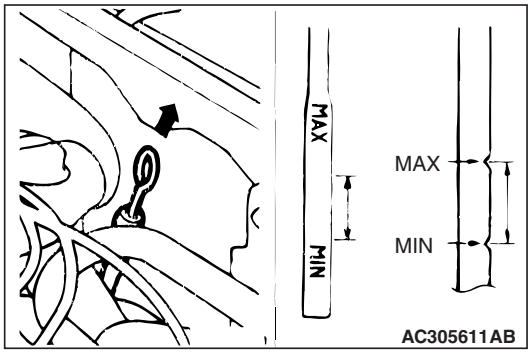
5. Sunroof

   Close the sunroof to the fully closed position to check operation.

UNDER HOOD

6. ENGINE OIL LEVEL

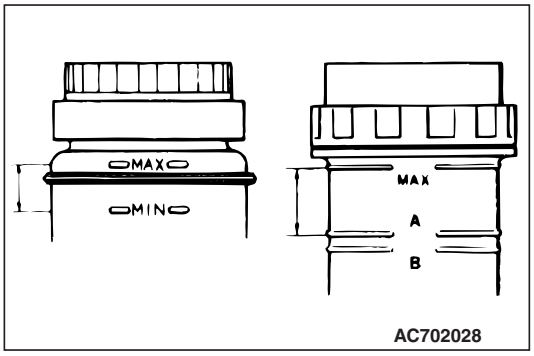
M6010500100107



Check that the oil level is between "MAX" and "MIN". If it is at or below MIN, add the necessary amount of the specified engine oil referring to GROUP 2, Periodic Inspection and Maintenance.

7. BRAKE MASTER CYLINDER FLUID LEVEL

M6010500200115

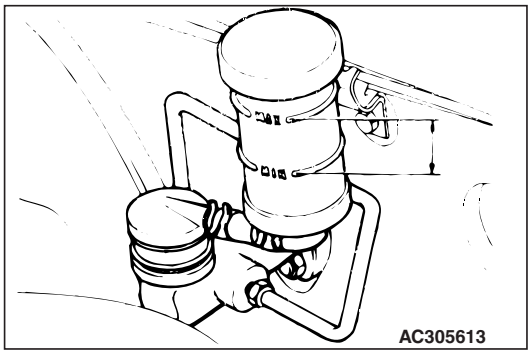


Check the fluid level.
If it is below the "MIN" mark, replenish fresh brake fluid up to the "MAX" mark.

Specified Brake Fluid: DOT3 or DOT4

8. CLUTCH MASTER CYLINDER FLUID LEVEL

M6010500300026

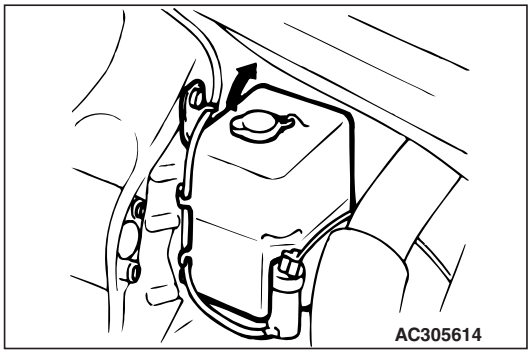


Check the fluid level.
If it is below the "MIN" mark, replenish fresh brake fluid up to the "MAX" mark.

Specified Brake Fluid: DOT3 or DOT4

9. WASHER FLUID LEVEL

M6010500400078

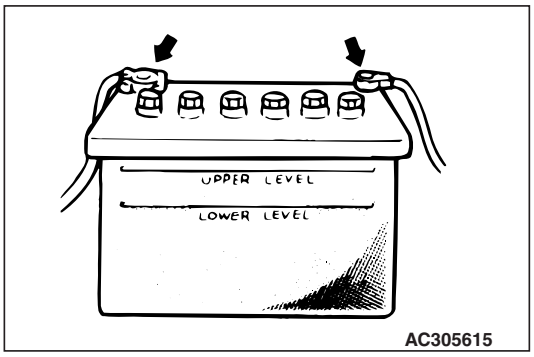


Check the fluid level; if it is low, replenish the washer fluid.

1. Windshield washer reservoir
2. Rear window washer reservoir

10. BATTERY CONDITION AND CONNECTIONS

M6010500500042

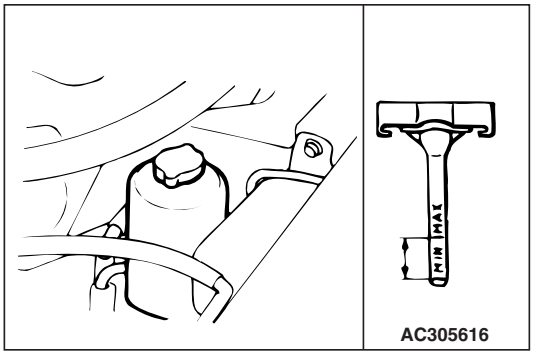


Inspect the battery connections. Verify that they are tightened.

NOTE: Do not wipe the lubricant from the battery posts and cable clamps.

11. POWER STEERING FLUID LEVEL

M6010500600072

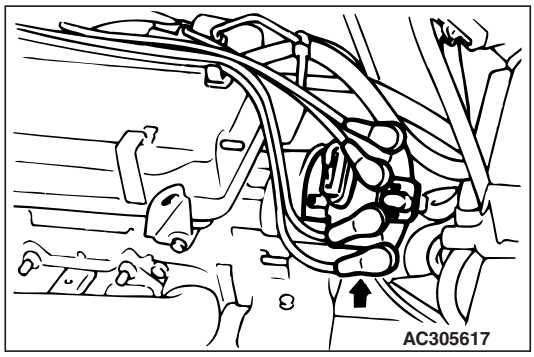


1. Check that the fluid level is between "MAX" and "MIN".
2. If the fluid is added, start the engine and turn the steering wheel from stop to stop several times to expel air from the system.

   Specified gear oil: Automatic transmission fluid DEXRON III or DEXRON II

12. ELECTRICAL WIRING

M6010500700024

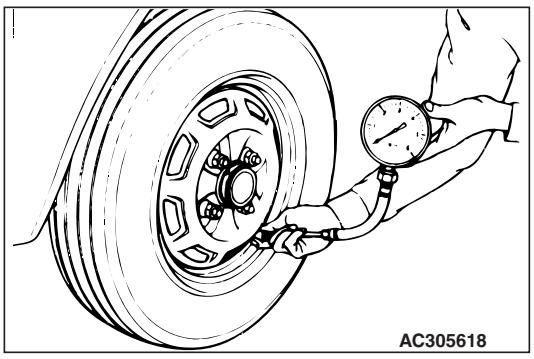


1. Each electrical wiring harness and connector
   (1) Check each harness to be correctly routed and securely clipped.
   (2) Confirm that all connections are tight.
2. Ignition cable
   Be sure that all ignition cables are firmly attached to the spark plugs, distributor cap (or crank angle sensor) and ignition coil.

UNDER VEHICLE

13. TYRE AND SPARE TYRE PRESSURES

M6010600100041

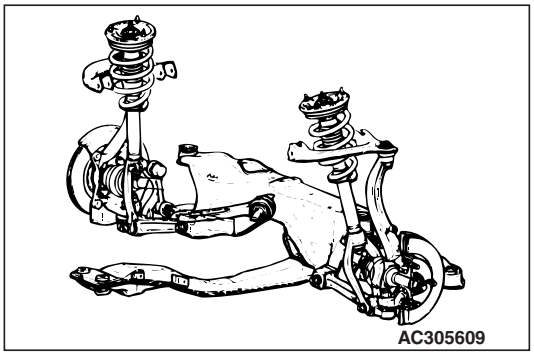


1. Tyre specification
   Check the correct tyre specification.
2. Tyre pressures
   Adjust each tyre pressure.

   NOTE: Recommended pressure is shown on the tyre pressure label.
3. Valve stem extensions
   Verify that the valve stem extensions are installed where necessary.
4. Install the wheel covers, wheel rings and hub caps.

14. SUSPENSION SYSTEM

M6010600200082



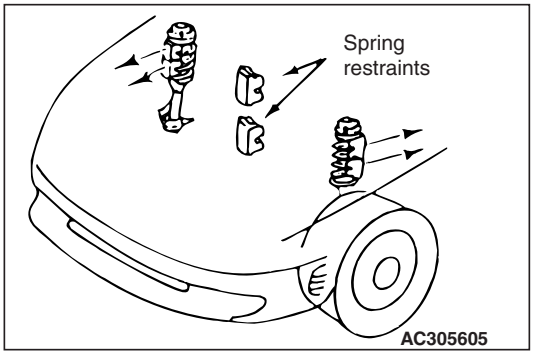
Check to be sure that each installation bolt and nut is tightened. If split pins are used, make sure that they are properly installed.

1. Lower arm, Upper arm
2. Stabilizer bar
3. Strut assembly

REMOVE FRONT SPRING RESTRAINTS

⚠ CAUTION

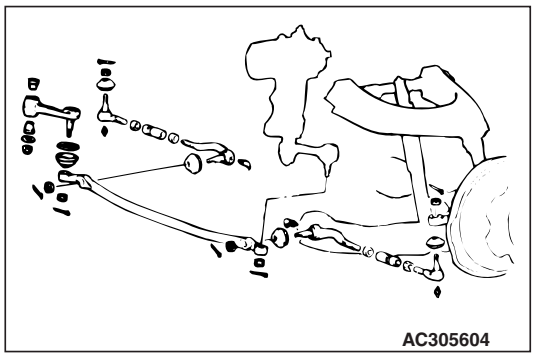
It is very important that these restraints must be removed during predelivery-inspection. Failure to do so could cause ride and handling complaints.



With the vehicle correctly positioned on the sub-frame contact points, and the suspension fully extended, remove the rubber restraints from the front springs.

15. STEERING LINKAGE AND SPLIT PINS

M6010600300023



1. Steering linkage retaining nuts and split pins
   Check visually and by feel that the steering linkage retaining nuts are correctly tightened and the split pins are correctly installed.
2. Tie rods and relay rod
   Check that the tie rods and relay rod of the steering linkage are not bent and that the tie rod end lock nuts are securely tightened.
3. Steering components
   (1) Check that each of the steering components is tightened.
   (2) Check the tie rod end, nuts and split pins for proper installation.
   (3) Check the condition of bellows-type dust seals.
4. Split pins
   Check the front axle nuts and rear wheel spindle nuts for split pins.

16. UNDER BODY

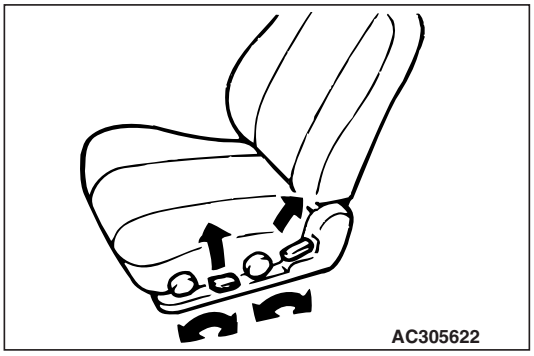
M6010600400020

Check under body and under body coating for damage.

BEFORE ROAD TEST

17. SEAT ADJUSTERS AND SEATBACK LATCHES

M6010700100082



Check the operation of the various parts of the seats.

1. Mechanical adjusters of the seats
2. Operation of the latch for tilting the seatbacks forward and backward.

18. INHIBITOR SWITCH

M6010701100029

On models with an automatic transmission, be sure the engine starts in both "P" and "N" position, and does not start in other positions.

19. IDLE CONTROL KNOB

M6010700300020

Verify that the diesel engine revolution increases when the idle control knob is pulled out.

20. INSTRUMENT PANEL CONTROLS

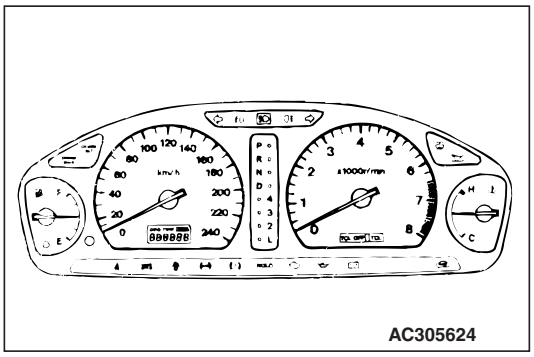
M6010700400083

Check the operation of the following

1. Horn
2. Headlamps
3. Exterior and interior lamps
4. Instrument panel lamps
5. Instrument brightness control

21. METERS, GAUGES, WARNING LAMPS AND INDICATION LAMPS

M6010700500024

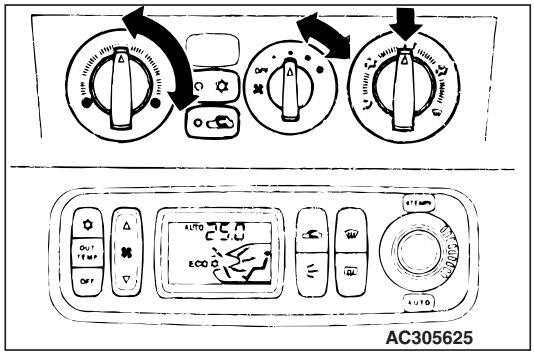


1. Check the meters and gauges are functioning properly.
2. Check each indicator lamp and warning lamp functions properly.

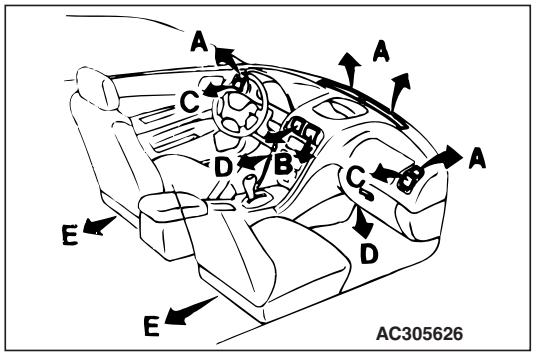
22. AIR CONDITIONER, HEATER AND DEFROSTER SYSTEM

M6010700600021

Check the systems for proper operation.



1. Air conditioner
   (1) Operate the air conditioner system.
   (2) Operate the air conditioner light.
   (3) Operate the control lever in all ranges.
   (4) Operate the blower motor switch in all ranges.

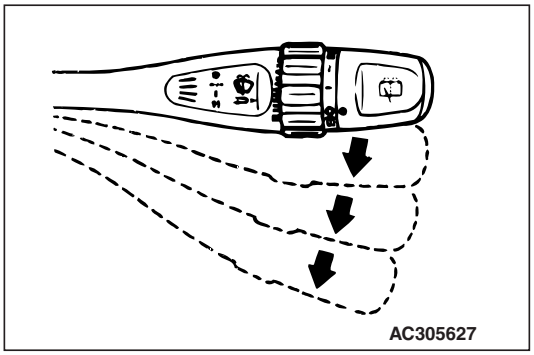


2. Heater and defroster
   (1) After the engine has warmed up, turn on the heater.
   (2) Operate the blower motor switch in all ranges.
   (3) Move the control to "Defrost" position.

A: From front and side defroster
B: From centre ventilators
C: From side ventilators
D: From under the instrument panel
E: From under the front seat (some models only)

23. WIPERS AND WASHERS

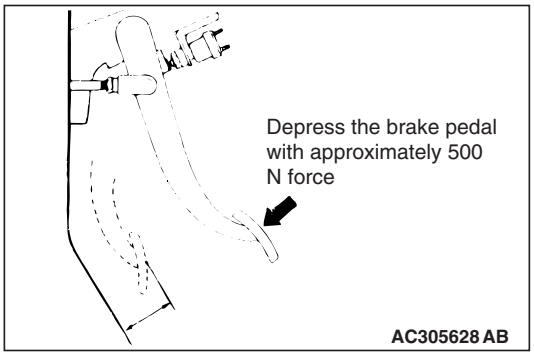
M6010700700028



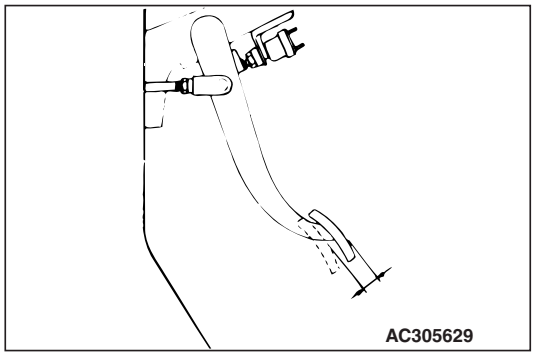
1. Front wiper and washer
   (1) Check operation of the front wipers in all ranges.
   (2) Check the aim of the front washer stream.
   (3) Check the wiper blade-stop positions.
   (4) Verify that the interval between cycles of wiping is shifted when timer knob is turned to any position.
   (5) Verify that the front wipers function by operating the washer switch.
2. Rear wiper and washer
   (1) Check the operation of the rear wiper.
   (2) Check the aim of the rear washer stream.
   (3) Check the wiper blade-stop positions.

24. OPERATION OF SERVICE BRAKES AND PARKING BRAKES

M6010700800274



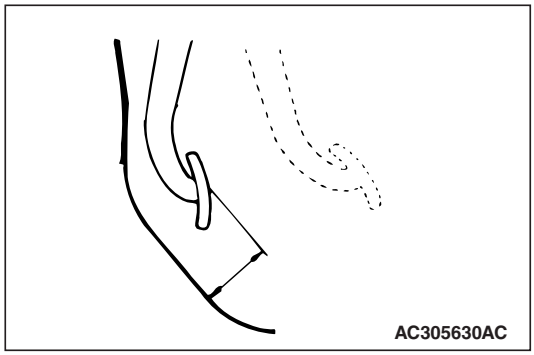
1. Service brakes
   (1) Check the clearance between the brake pedal and the floor board when the brake pedal is depressed.



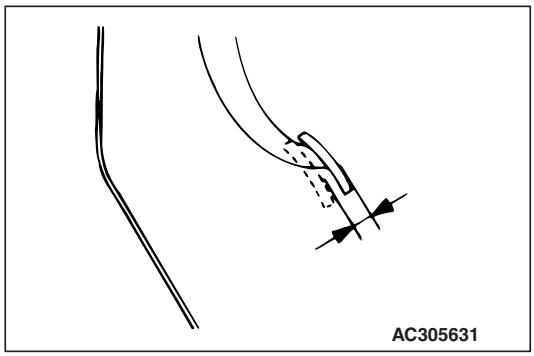
   (2) Verify correct brake pedal free play.
   NOTE: For inspection and adjustment of the service brake, refer to GROUP 2, Periodic Inspection and Maintenance.
2. Parking brake
   Check the parking brake drag and lever travel.
   NOTE: For inspection and adjustment of the parking brake, refer to GROUP 2, Periodic Inspection and Maintenance.

25. CLUTCH OPERATION

M6010700900282



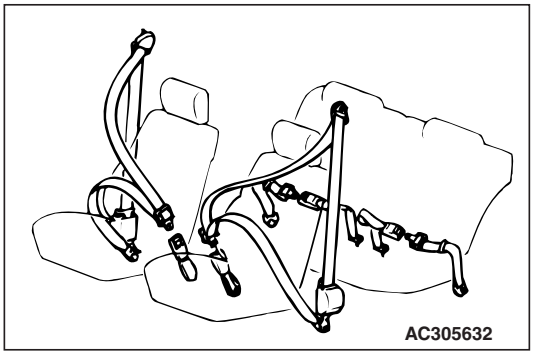
1. Check the clutch operation in all driving ranges.
2. Check the pedal to floorboard clearance when the clutch is just disengaged.



3. Verify correct clutch pedal free play.
   NOTE: For inspection and adjustment of the clutch pedal, refer to GROUP 2, Periodic Inspection and Maintenance.

26. OPERATION OF SEAT BELTS, SHOULDER BELTS AND RETRACTORS

M6010701000022

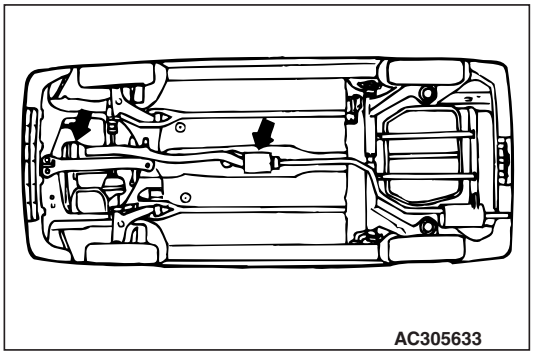


1. Verify that the seat belt warning lamp operates properly.
2. Check all seat belts and harnesses to assure that they connect and hold properly.
3. Lean forward to check that the shoulder harnesses allow movement.
4. Check the condition of the belts and anchors.
5. Check for proper seat belt retraction.

ROAD TEST

27. ENGINE PERFORMANCE AND EXHAUST GAS

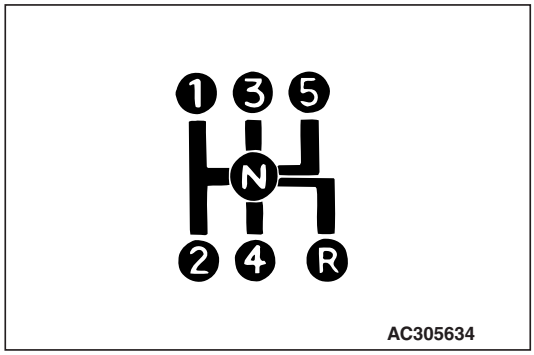
M6010800100023



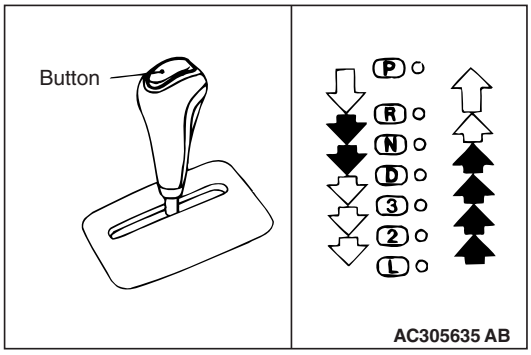
1. Engine performance
   Check the engine for proper performance and accelerator pedal for smooth operation.
2. Exhaust system
   (1) Check the exhaust system components for gas leaks.
   (2) Verify that no black smoking is emitted from the end of the exhaust pipe (diesel-powered vehicles).

28. TRANSMISSION IN ALL RANGES

M6010800200020



1. Manual transmission
   Check the transmission in all forward ranges and in reverse.



2. Automatic transmission
   (1) Make sure shift indicator lines up properly in all ranges.
   (2) Depress the accelerator completely to check that the manual kickdown is operating correctly.

(3) Stop the vehicle on a steep incline.
Put the automatic transmission in "P" position and slowly release the service brakes to see if "P" position lock holds. If it does not hold, the transmission requires further service.

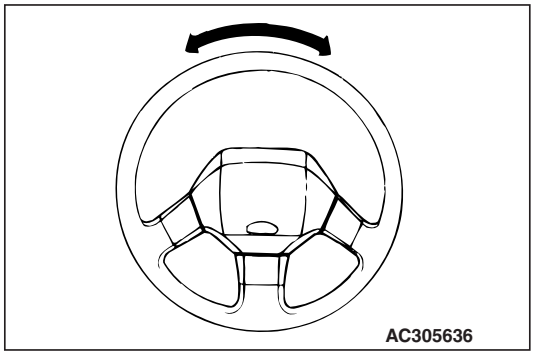
29. BRAKES

M6010800300027

1. Service Brake
Put the vehicle in gear and apply the brakes while the vehicle is in motion. Be sure brake operation is smooth and positive.
2. Parking Brake
(1) Stop the vehicle on a steep incline.
With the service brakes firmly applied, place the transmission in "N" position, and set the parking brakes.
(2) Slowly release the service brakes to see if the parking brakes will hold.

30. STEERING CONTROL

M6010800400024



1. Check for excessive play or looseness.
2. Check the steering wheel centre.

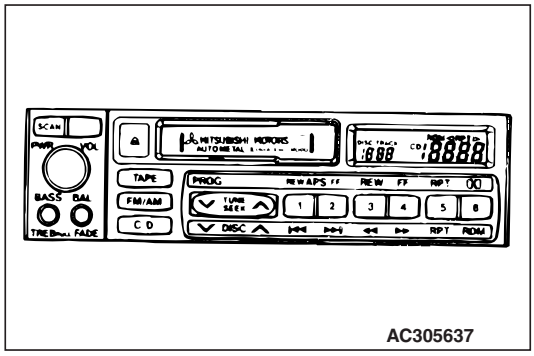
31. VIBRATION AND RATTLES

M6010800500021

1. Locate squeaks, rattles and unusual vibrations.
2. Verify that no noise occurs from the engine, transmission, axle and body.

32. ELECTRICAL EQUIPMENT

M6010800600028



1. Radio
Tune the radio to a local broadcasting station and check the following:
(1) Operate the volume, tone, balance and fader controls, etc.
(2) Pull out the pushbuttons, dial another station and set each pushbuttons.
(3) Operate the AM/FM switch.
2. Tape player
Insert a cassette tape in the tape player and check as follows:
(1) Check the operation of the tape feeder and rewind.
(2) Check the ejection.
(3) Check the operation of volume, tone, balance and fader controls, etc.

AFTER ROAD TEST

33. IDLE SPEED

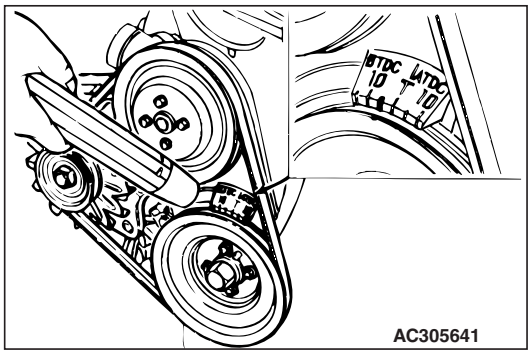
M6010900100172

Check the engine idle speed.

NOTE: For specific idle speed adjustment procedure, refer to GROUP 2, Periodic Inspection and Maintenance.

34. IGNITION TIMING

M6010900200179



Check the ignition timing. Except MPI vehicles with crankshaft-mounted crankshaft angle sensor.

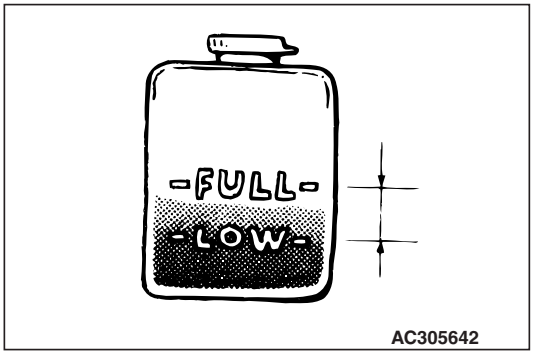
NOTE: For the inspection and adjustment of the ignition timing, refer to GROUP 2, Periodic Inspection and Maintenance.

35. RADIATOR COOLANT LEVEL

M6010900300154

⚠ CAUTION

Do not remove the radiator cap while the cooling system is under pressure.
When removing the radiator cap, be careful of steam and boiling water. Add coolant only to the reserve tank if it is required.



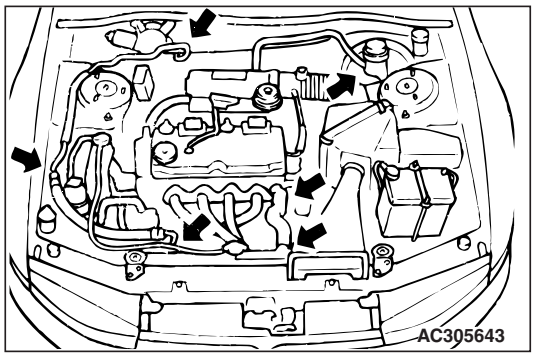
1. Check that the coolant level in the reserve tank is at or above "LOW" mark at normal engine operating temperature. And check cooling system for leaks.
2. Check that the coolant concentration is 30% to 60%.

36. HOSES, FLUID LINES AND CONNECTIONS LOCATED UNDER HOOD

M6010900400203

⚠ CAUTION

Remember that the air conditioner system is under pressure.

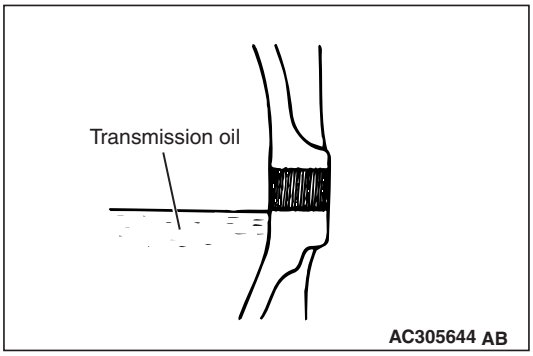


1. Check all brake, fuel, power steering and air conditioner lines and connections; verify proper routing, check connections for leaks, tighten loose connector as required.
2. Inspect routing and connections of all vacuum, and radiator and heater houses.

   NOTE: Keep in mind that an oily residue around an air conditioner connector does not necessarily indicate a leak. Oil is used to lubricate fittings during assembly. Be sure lines are not twisted or kinked.

37. MANUAL TRANSMISSION AND TRANSFER (4WD) OIL LEVEL

M6010900500211

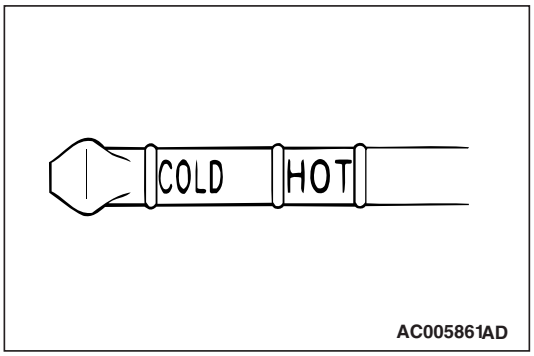


1. Remove the filler plug.
2. Check the oil level. If the oil level is at or slightly below the filler hole, it is in satisfactory condition.
3. If the level is low, replenish the transmission and transfer case with fresh oil by using a lubricator.

   NOTE: For the specified oil, refer to GROUP 2, Periodic Inspection and Maintenance.

38. AUTOMATIC TRANSMISSION FLUID LEVEL

M6010900600230



1. Remove the dipstick and check the fluid level.
2. Fluid level is okay if it is in the specified range as illustration at normal engine operating temperature.
3. If the level is below the lower notch, replenish fluid until the level reaches the upper notch.

   NOTE: For the specified automatic transmission fluid, refer to GROUP 2, Periodic Inspection and Maintenance.

39. ENGINE, TRANSMISSION, STEERING GEAR BOX AND DIFFERENTIAL FOR LEAKS

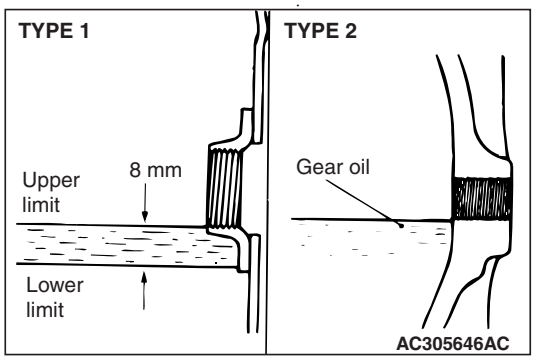
M6010900700055

Check the engine, transmission, steering gear box and differential for oil leaks.

40. FRONT AND REAR DIFFERENTIAL OIL LEVELS

M6010900800234

1. Remove the filler plug.
2. Check the oil level. If the oil level is at or slightly below the filler hole, it is in satisfactory condition.



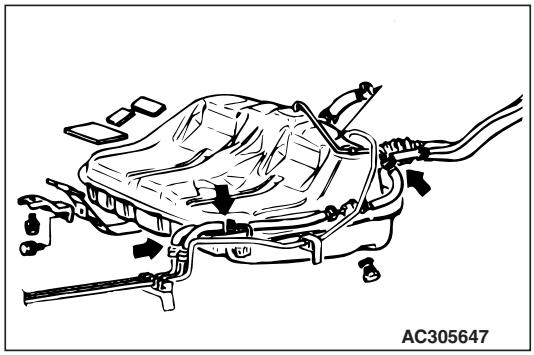
Type 1 only: Remove the filler plug, and check the gear oil level. Check that gear oil level is not 8 mm below the bottom of filler plug hole.

3. If the level is low, replenish the front and/or rear differential with fresh oil by using a lubricator.

   NOTE: For the specified oil, refer to GROUP 2, Periodic Inspection and Maintenance.

41. HOSES, FLUID LINES AND CONNECTIONS LOCATED UNDER VEHICLE

M6010901000145

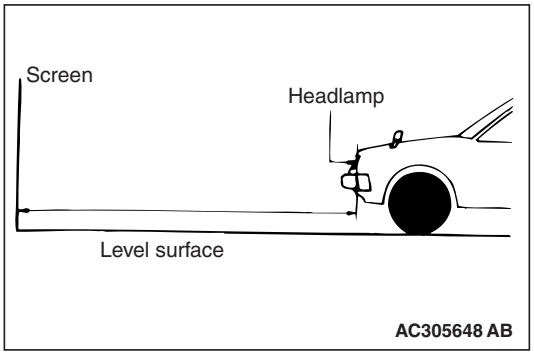


1. Check all hoses, fluid lines and connections for leaks.
2. Check all hoses and fluid lines for proper routing away from sharp edges and moving components.

FINAL STEPS

42. HEADLAMP AIMING

M6011000100116

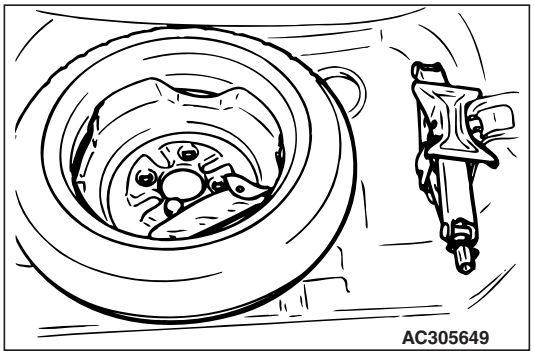


Check condition for headlamp aiming.

NOTE: For headlamp aiming procedures, refer to the Workshop Manual for that model.

43. EQUIPMENT

M6011000200050

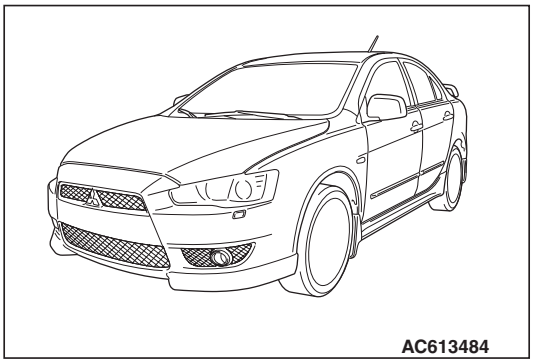


Check the installation of the various equipment.

1. Floor mats
2. Spare tyre
3. Jack, jack handle and tool set

44. EXTERIOR AND INTERIOR

M6011000300154



Finally check and clean the exterior and interior.

1. Wash the vehicle to remove all traces of road grime and other dirt on the vehicle as a result of new vehicle preparations.
2. Clean exterior and interior glass surface.
3. Remove all protective covers.
4. Remove undercoat overspray, excess window sealer, and excess weatherstrip adhesive.
5. Verify that the secondary key can not unlock the glove box and tailgate/boot lid (if so equipped).
6. Remove shipping and inspection stickers.

45. OWNER INSTRUCTIONS

M6011000400054

1. Verify that the owner's manual and service booklet is in the glove box.
2. Place the spare keys in envelope in the glove box before delivery.

GROUP 2

PERIODIC INSPECTION AND MAINTENANCE

CONTENTS

Continued on next page

PERIODIC INSPECTION AND MAINTENANCE SCHEDULE

M6020100100661

For items which indicate both distance and time (in months), the inspection should be made at whichever (distance or time) comes first.

Maintenance item			Maintenance operation	Maintenance interval	
OPERATIONS INSIDE THE ENGINE COMPARTMENT					
A1	Check V-belt for cracks, fraying, wear, and adjust its tension		Inspection	Every 15,000 km or every 12 months	
A2	Check intake air hose for damage (vehicles with turbocharger)		Inspection	Every 30,000 km or every 2 years	
A3	Replace engine timing belt (except vehicles with timing chain)		Inspection	Every 120,000 km	
A4	Check operation of crankcase emission control system		Inspection	Every 30,000 km or every 2 years	
A5	Replace spark plugs	Iridium-tipped type	Replace	Every 90,000 km	
A6	Check valve clearance (except vehicles with auto-lash adjuster)		Inspection	Every 90,000 km	
A7	Check radiator hoses for damage and proper connection		Inspection	Every 30,000 km or every 2 years	
A8	Check engine coolant level in reservoir		Inspection	Every 30,000 km or every 2 years	
A9	Change engine coolant		Change	Every 60,000 km or every 4 years	
A10	Check air cleaner element for clogging and damage		Inspection	Normal usage	Every 15,000 km or every 12 months
				Severe usage	Every 7,500 km or every 6 months
A11	Replace air cleaner element		Replace	Normal usage	Every 45,000 km or every 3 years
				Severe usage	More frequently
A12	Check fluid level in brake reservoir and clutch reservoir (for hydraulic type clutch)		Inspection	Every 15,000 km or every 12 months	
A13	Change brake fluid		Change	Every 30,000 km or every 2 years	
A14	Check battery electrolyte level		Inspection	Every 15,000 km or every 12 months	
A15	Replace fuel filter	4A9 engine	Replace	Every 150,000 km or every 10 years	
		BWC engine	Replace	Every 30,000 km or every 2 years	
OPERATIONS UNDER THE VEHICLE					
B1	Check suspension system for damage and looseness		Inspection	Every 30,000 km or every 2 years	
B2	Check suspension arm ball joints for play, and dust covers for damage		Inspection	Every 30,000 km or every 2 years	
B3	Check driveshaft boots for damage		Inspection	Normal usage	Every 30,000 km or every 2 years
				Severe usage	Every 7,500 km

Maintenance item		Maintenance operation	Maintenance interval	
B4	Check steering linkage for damage and loose connections (including seals and boots)	Inspection	Every 30,000 km or every 2 years	
B5	Check gear oil level in manual transmission	Inspection	Every 15,000 km or every 12 months	
B6	Change gear oil in manual transmission	Change	Normal usage	Every 195,000 km or every 13 years
			Severe usage	Every 90,000 km or every 6 years
B7	Check exhaust pipe connections for gas leakage, and check pipe installation	Inspection	Every 30,000 km or every 2 years	
OPERATIONS INSIDE THE VEHICLE				
C1	Check brake pedal and clutch pedal for free play	Inspection	Every 15,000 km or every 12 months	
C2	Check parking brake lever stroke and play	Inspection	Every 15,000 km or every 12 months	
C3	Replace air purifier filter	Replace	Every 15,000 km or every 12 months	
OPERATIONS OUTSIDE THE VEHICLE				
D1	Check uneven tyre wear	Inspection	Every 30,000 km or every 2 years	
D2	Check front and rear wheel bearings for play	Inspection	Every 60,000 km or every 4 years	
D3	Check brake hoses and pipes for leakage	Inspection	Every 30,000 km or every 2 years	
D4	Check brake pads and discs for wear	Inspection	Normal usage	Every 15,000 km or every 12 months
			Severe usage	Every 7,500 km or every 6 months
D5	Check brake shoe linings and discs for wear	Inspection	Normal usage	Every 30,000 km or every 2 years
			Severe usage	Every 15,000 km or every 12 months
D6	Check fuel hoses and pipes for leakage or deterioration	Inspection	Every 30,000 km or every 2 years	
OPERATIONS AFTER ENGINE IS WARMED UP				
E1	Check fluid level in automatic transmission	Inspection	Every 15,000 km or every 12 months	
E2	Change automatic transmission fluid	Change	Normal usage	Every 90,000 km or every 6 years
			Severe usage	Every 45,000 km or every 3 years

Maintenance item			Maintenance operation	Maintenance interval	
E3	Change engine oil <4A9>	ACEA classification "For service A1/B1, A3/B3, A3/B4 or A5/B5" API classification "For service SG" or higher	Change	Normal usage	Every 15,000 km or every 12 months
				Severe usage	Every 7,500 km
	Change engine oil <BWC>	<Vehicles without DPF> VW 50501 / 50601 / 50700 <Vehicles with DPF> VW 50700	Change	Every 15,000 km or every 12 months	
E4	Replace engine oil filter <4A9>		Replace	Normal usage	Every 15,000 km or every 12 months
				Severe usage	Every 7,500 km
	Replace engine oil filter <BWC>		Replace	Every 15,000 km or every 12 months	
E5	Check engine idling speed		Inspection	Every 15,000 km or every 12 months	
E6	Check CO concentration		Inspection	Every 15,000 km or every 12 months	
E7	Check exhaust gas recirculation (EGR) system		Inspection	Every 60,000 km or every 4 years	
OTHERS					
F1	Check body condition for damage		Inspection	Every year	
F2	Road test		Inspection	Every 15,000 km or every 12 months	

NOTE: "Severe usage" specifications apply to only vehicles used under severe operating conditions. Severe operating conditions include the followings cases:

1. *Driving in dusty area.*
2. *Driving on rough roads, on submerged roads, or hilly areas.*
3. *Driving cold zones.*
4. *Engine idling for a long time or short-distance travel during cold weather.*
5. *Frequent, sudden application of brakes.*
6. *Towing of a trailer.*
7. *Use as a taxi or as a rent-a-car.*
8. *When more than 50% of driving is in heavy city traffic and the ambient temperature is 32°C or more.*
9. *When more than 50% of driving is at 120 km/h or more and the ambient temperature is 30°C or more.*

OPERATIONS INSIDE THE ENGINE COMPARTMENT

A1. CHECK V-BELT FOR CRACKS, FRAYING, WEAR, AND ADJUST ITS TENSION

M6020200100527

V-BELT CONDITION

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

V-BELT TENSION

ALTERNATOR AND OTHERS BELT TENSION CHECK AND ADJUSTMENT <4A9>

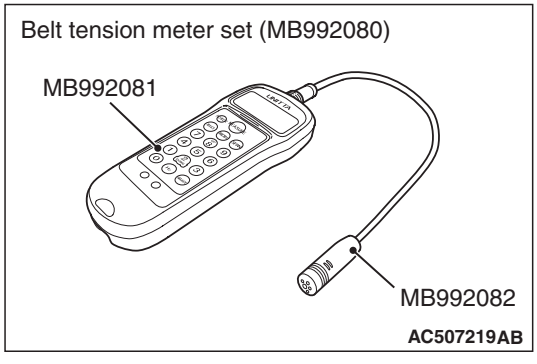
Check the alternator and others belt tension in the following procedure.

Standard value:

Item	When checked	When adjusted	When replaced
Vibration frequency Hz	140 – 171	148 – 164	198 – 221
Tension N	392 – 588	441 – 539	784 – 980
Deflection mm (Reference)	9.5 – 12.2	10.2 – 11.5	6.3 – 7.6

<When the vibration frequency is measured {Special tool (MB992080) is used}: Recommendation>

NOTE: The vibration frequency measuring method is recommended for check and adjustment of the alternator and others belt tension.



1. Connect the Special tool microphone assembly (MB992082) to the Special tool belt tension meter (MB992081) of the 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

   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.

   NOTE: 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.

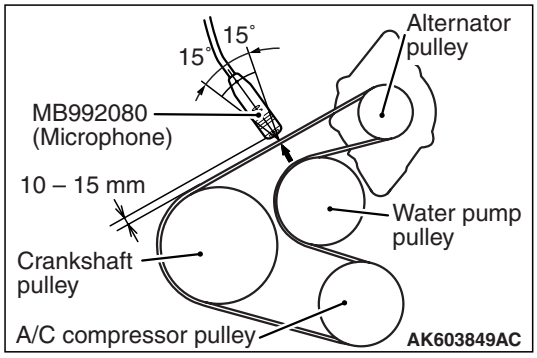
   (4) Press number keys 0, 1, 0, and 0 sequentially, and press the "SELECT" button to apply them. Check to ensure that "W 010.0 mm/R" appears on the display.

   (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

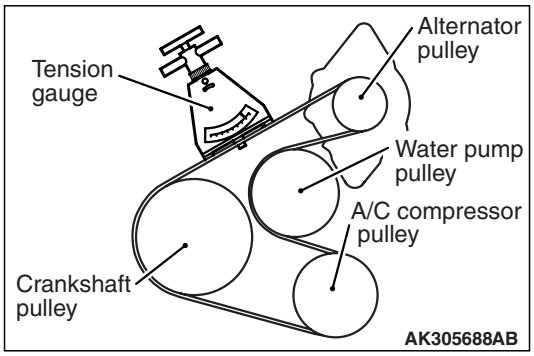
- **The temperature of the surface of the belt should be as close as possible to normal temperature.**
- **Do not let any contaminants such as water or oil get onto the microphone.**
- **If strong gusts of wind blow against the microphone or if there is loud sources of noise nearby, the values measured 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 the microphone to the middle of the alternator and others belt between the pulleys (at the place indicated by the arrow), about 10 – 15 mm away from the rear surface of the belt and so that it is perpendicular to the belt (within an angle of ± 15 °).
6. Press the "MEASURE" button.
7. Gently tap the middle of the belt between the pulleys (the place indicated by the arrow) with your finger as shown in the illustration, and check that the vibration frequency of the belt is within the standard value.

   NOTE: To take the measurement repeatedly, fillip the belt again.
8. After the completion of the measurement, press and hold the "POWER" button to turn off the power supply.

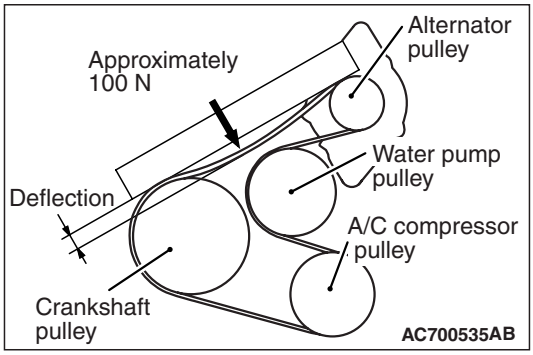
<When using the tension gauge>



Use a belt tension gauge to check that the belt tension is within the standard value.

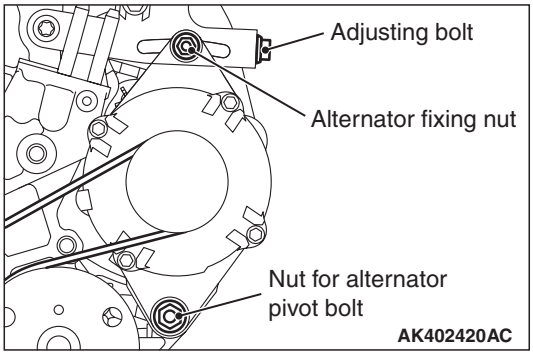
NOTE: Before inspection, remove the oil level gauge guide.

<Belt deflection check>



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

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



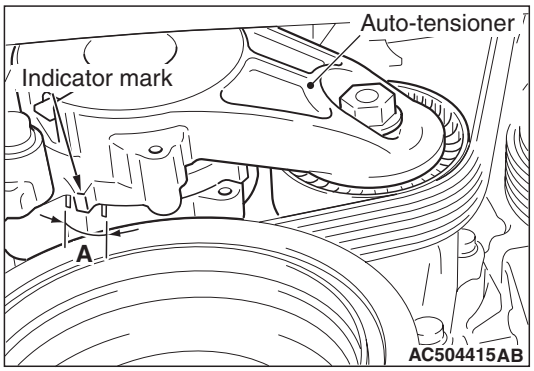
1. Loosen the nut of the alternator pivot bolt.
2. Loosen the alternator fixing nut.
3. Use the adjusting bolt to adjust the belt tension and belt deflection to the standard values.
4. Temporarily tighten the alternator fixing nut.

   Tightening torque: 10.5 ± 3.5 N·m

5. Tighten the nut of the alternator pivot bolt.
   Tightening torque: 47.0 ± 5 N·m
6. Tighten the alternator fixing nut.
   Tightening torque: 22.5 ± 2.5 N·m
7. Tighten the adjusting bolt.
   Tightening torque: 5.0 ± 1.0 N·m

DRIVE BELT TENSION CHECK <BWC>

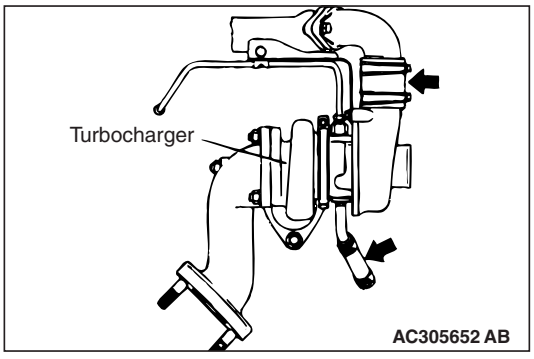
⚠ CAUTION
Check the drive belt tension after turning the crankshaft clockwise one turn or more.



1. Make sure that the indicator mark is within the area marked with A in the illustration.
2. If the mark is out of the area, replace the drive belt.
   NOTE: The drive belt tension check is not necessary as auto-tensioner is adopted.

A2. CHECK INTAKE AIR HOSE FOR DAMAGE (vehicles with turbocharger)

M6020200500279



1. Inspect the intake air hoses for cracks or damage.

A3. REPLACE ENGINE TIMING BELT (except vehicles with timing chain)

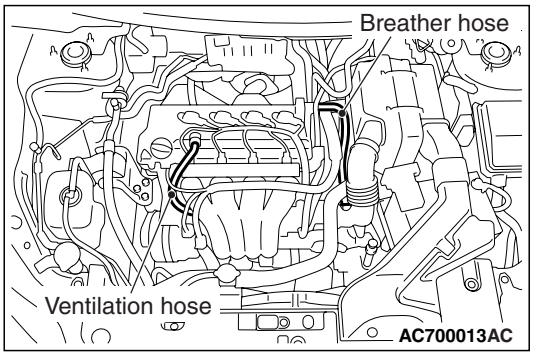
M6020200600339

For information concerning the replacement procedures, refer to the Workshop Manual.

A4. CHECK OPERATION OF CRANKCASE EMISSION CONTROL SYSTEM

M6020200700422

BREATHER HOSE

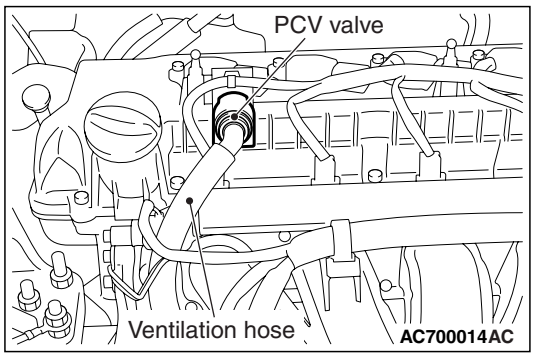


1. Inspect the breather hose for cracks or damage.
2. Clean the inside of the breather hose if necessary.
3. Inspect the ventilation filter for clogging.

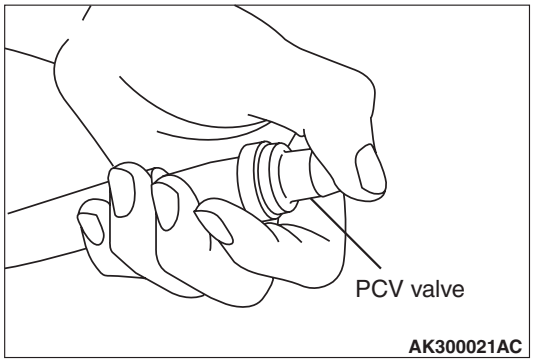
VENTILATION HOSE

1. Check entire circumference and length of hoses using a mirror as required.
2. Check all clamps for tightness and the connections for leakage.
3. Hoses should be replaced immediately if there is any evidence of deterioration or damage.

POSITIVE CRANKCASE VENTILATION SYSTEM CHECK



1. Remove the ventilation hose from the PCV (Positive crankcase ventilation) valve.
2. Remove the PCV valve from the rocker cover.
3. Reinstall the PCV valve at the ventilation hose.
4. Start the engine and run at idle.

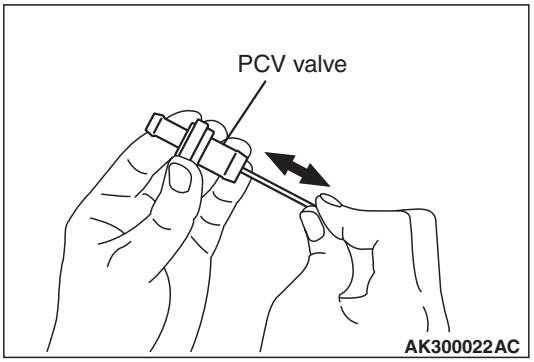


5. Place finger at the opening of the PCV valve and check that vacuum of the intake manifold is felt.

   NOTE: At this moment, the plunger in the PCV valve moves back and forth.
6. If vacuum is not felt, clean the PCV valve or replace it.
7. Apply a small amount of new engine oil to the O-ring on the PCV valve, and tighten to the specified torque.

   Tightening torque: 2.5 ± 0.4 N·m

PCV VALVE CHECK



1. Insert a thin rod into the PCV valve from the side shown in the illustration (rocker cover installation side), and move the rod back and forth to check that the plunger moves.
2. If the plunger does not move, there is clogging in the PCV valve. In this case, clean or replace the PCV valve.

A5. REPLACE SPARK PLUGS

M6020200800333

After removing old spark plugs, install new ones and tighten them at the specified torque.

A6. CHECK VALVE CLEARANCE (except vehicles with auto-lash adjuster)

M6020202400074

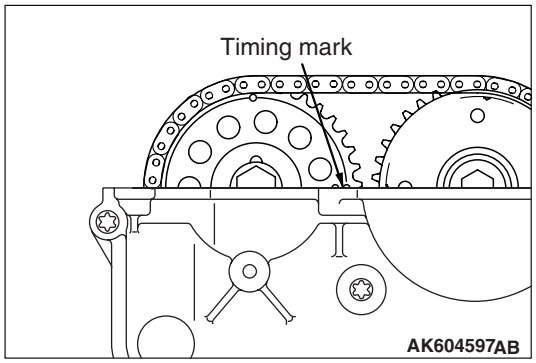
VALVE CLEARANCE CHECK AND ADJUSTMENT <4A9>

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

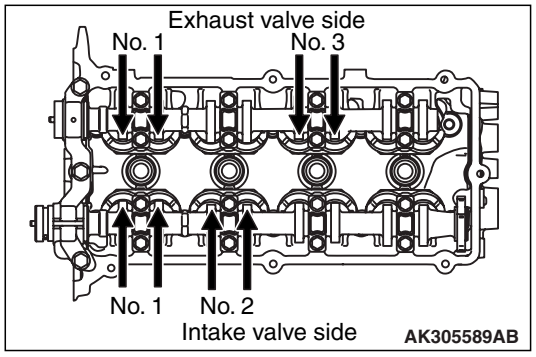
1. Remove all ignition coils.
2. Remove the cylinder head cover.

⚠ CAUTION

Turn the crankshaft always clockwise.

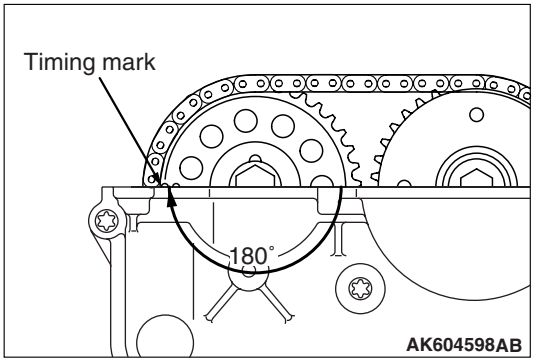


3. Turn the crankshaft clockwise, and align the timing mark on the exhaust camshaft sprocket against the upper face of the cylinder head as shown in Figure. Therefore, No.1 cylinder goes to the compression top dead centre.

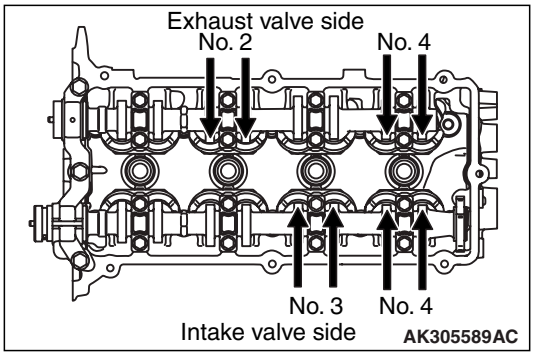


4. Using a thickness gauge, measure the valve clearance with the arrow shown in Figure. If deviated from the standard value, make note for the valve clearance.

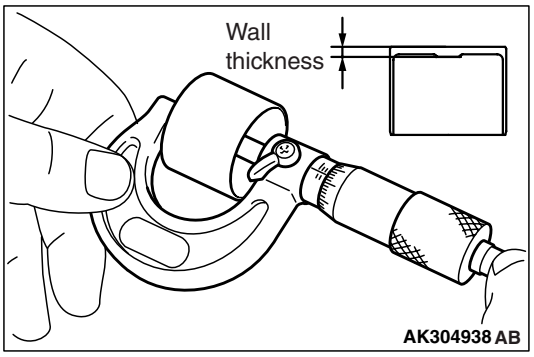
   Standard value:
   Intake valve 0.22 ± 0.04 mm
   Exhaust valve 0.30 ± 0.04 mm



5. Turn the crankshaft clockwise 360 degrees, and put the timing mark on the exhaust camshaft sprocket in position shown in Figure. Therefore, No.4 cylinder goes to the compression top dead centre.



6. Check the valve clearance with the arrow shown in Figure. In the same procedure as 4.
7. If the valve clearance is deviated from the standard value, remove the camshaft and the valve tappet.



8. Using a micrometer, measure the thickness of the removed valve tappet.
9. Calculate the thickness of the newly installed valve tappet through the following equation.

   A: thickness of newly installed valve tappet

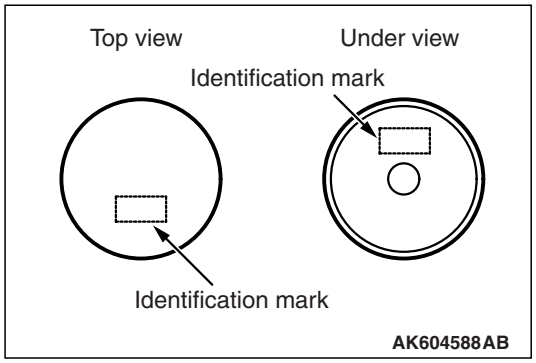
   B: thickness of removed valve tappet

   C: measured valve clearance

   Equation

   Intake valve: A = B + (C – 0.22 mm)

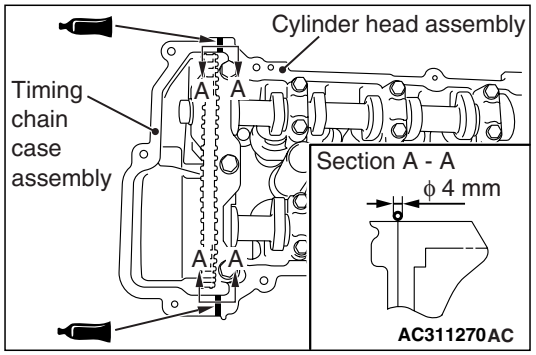
   Exhaust valve: A = B + (C – 0.30 mm)



NOTE: The valve tappet ranges 2.70 – 3.30 mm and has 31 types per 0.02 mm. The thickness below a decimal point is stamped on the reverse side of the valve tappet.
Example: In case of 2.90 mm, "90" is stamped.

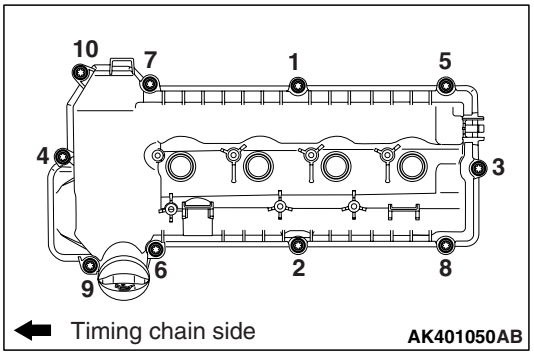
10. Install the valve tappet selected through the procedure 9, and put the camshaft in position.
11. After installing the timing chain, measure the valve clearance using the procedure 3 to 6. Confirm the clearance is within the standard value.
12. Remove any liquid gasket remaining on the cylinder head cover, the timing chain case and the cylinder head.

⚠ CAUTION
The timing chain should be installed within 3 minutes of applying liquid gasket.



13. Apply a 4 mm bead of liquid gasket as illustrated.

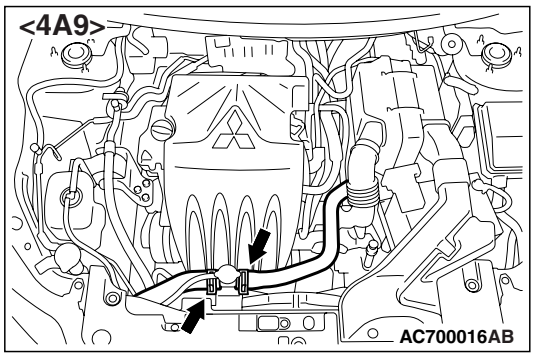
Specified sealant:
LOCTITE 5971 or exact equivalent

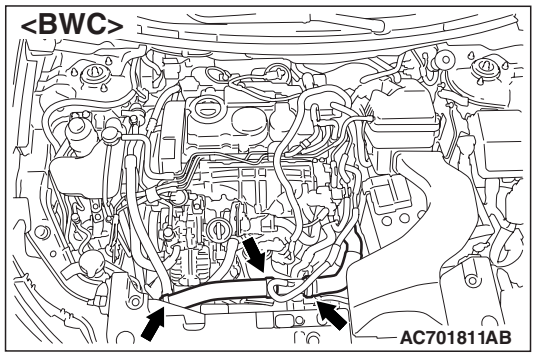


14. In accordance with the procedure shown in figure, tighten the bolt of the cylinder head cover to 9.0 ± 1.0 N·m.
15. Install the ignition coils.

A7. CHECK RADIATOR HOSES FOR DAMAGE AND PROPER CONNECTION

M6020200900493

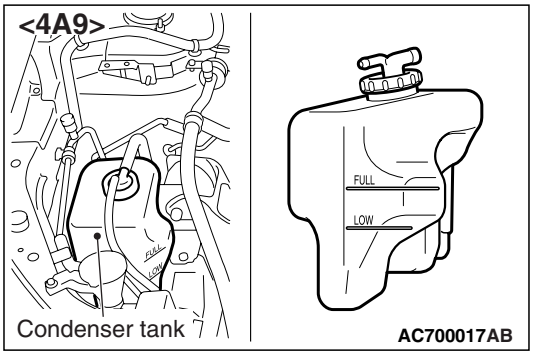


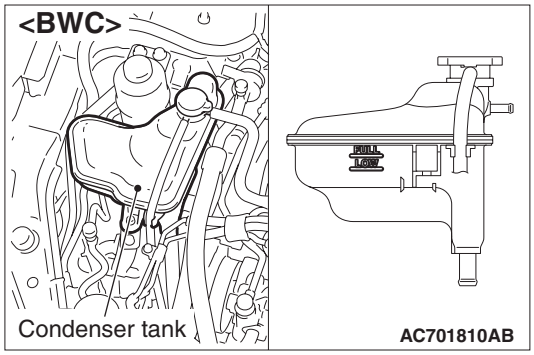


1. Check entire circumference and length of hoses, using a mirror as required.
2. Check that hoses installed in grommets pass through the centre of the grommets.
3. Check all clamps for tightness and connections for leakage.

A8. CHECK ENGINE COOLANT LEVEL IN RESERVOIR

M6020201000482



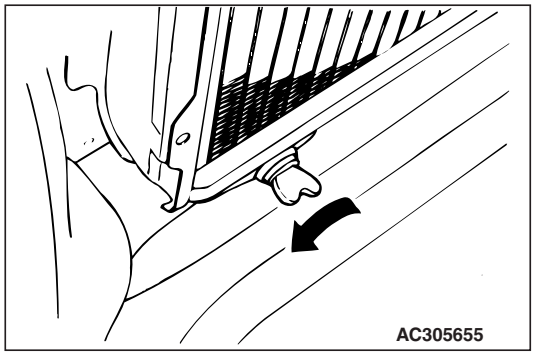


Check that the coolant level is between the "FULL" and "LOW" lines when the engine is at the normal operating temperature.

A9. CHANGE ENGINE COOLANT

M6020201100627

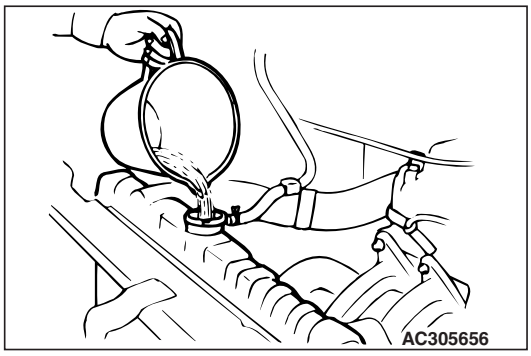
1. Stop the engine after it is fully warmed up.
2. Add detergent to the engine coolant in order to flush the cooling system, and start the engine.



3. Loosen the drain plug, remove the radiator can and drain the coolant.
4. Feed fresh water into the cooling system through the filler port of the radiator in order to wash the cooling system, and then tighten the drain plug.
5. Drain the coolant from the radiator condenser tank.
6. Install the radiator 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 the corrosion of the aluminium components.



7. Depending upon conditions of operation, determine the amount of long life coolant, antifreeze or antirust to be added to the coolant.

   Recommended antifreeze:

   <4A9>

   DIA QUEEN SUPER LONG LIFE COOLANT or equivalent

   <BWC>

   BASF Glysantin Alu Protect Premium/G30

8. Fill the cooling system with soft water through the filler port, and add long life coolant, if necessary.
9. Fill the radiator condenser tank with coolant.
10. Install the radiator cap and the radiator condenser tank cap.

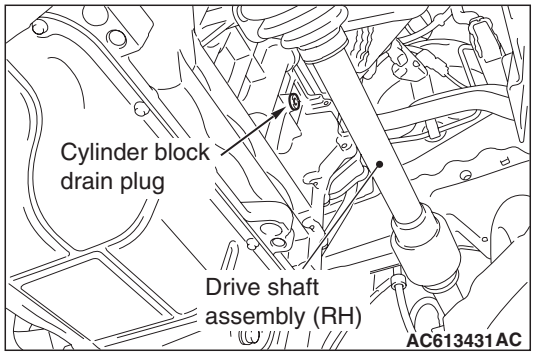
⚠ CAUTION

When removing the radiator cap, be careful to blow out steam and boiling water.

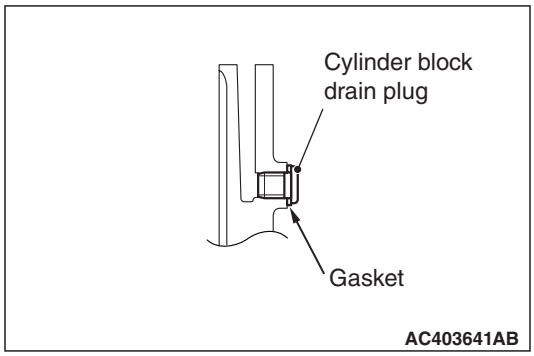
11. Recheck the engine coolant level after a road test.

REMOVAL OF ENGINE COOLANT FROM THE CYLINDER BLOCK DRAIN PLUG <4A9>

1. Drain the water from the radiator, heater core and engine after unplugging the radiator drain plug and removing the radiator cap.



2. Drain the water in the water jacket by unplugging the drain plug of the cylinder block.
3. Remove the radiator condenser tank and drain the coolant.
4. Drain the coolant then clean the path of the coolant by injecting water into the radiator from the radiator cap area.



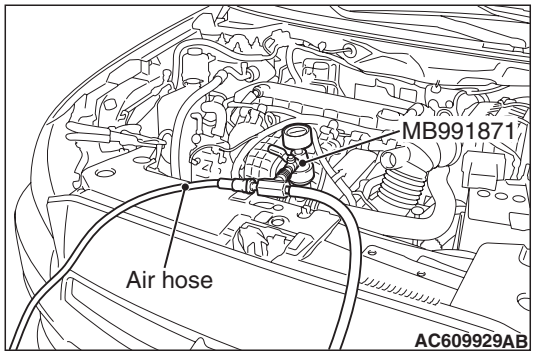
5. Replace the gasket, and tighten the cylinder block drain plug to the specified torque.

   Tightening torque: 27 ± 3 N·m

6. Securely tighten the drain plug of the radiator.
7. Reinstall the radiator 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 aluminium components.



8. By referring to the section on coolant, select an appropriate concentration for safe operating temperature within the range of 30 to 60%. Use special tool LLC changer (MB991871) to refill the engine coolant up to the top of the radiator port. A convenient mixture is a 50% water and 50% antifreeze solution (freezing point: –31°C).

   Recommended antifreeze: DIA QUEEN SUPER LONG LIFE COOLANT or equivalent
   Quantity: 6.0 L

   NOTE: For how to use special tool (MB991871), refer to its manufacturer's instructions.
9. Tighten the radiator cap securely.
10. Remove the radiator condenser tank cap, and add the engine coolant up to the "FULL" line.
11. Turn the A/C switch to OFF position to start the engine and warm up until the radiator fan operates.

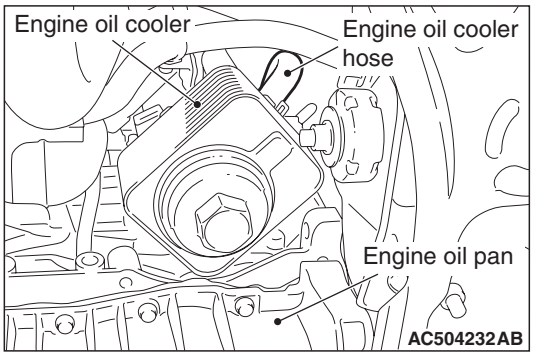
    NOTE: This work is to open the thermostat fully.
12. Rev the engine several times and then stop it. Check that there are no coolant leaks.
13. Remove the radiator cap with the engine cool, and then refill the engine coolant up to the top of the radiator port.
14. Tighten the radiator cap securely.

⚠ CAUTION
Do not overfill the radiator condenser tank.

15. Remove the radiator condenser tank cap, and add the engine coolant up to the "FULL" line.

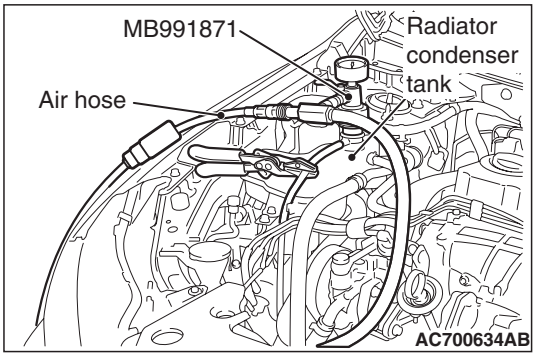
<BWC>

1. Drain the engine coolant from the radiator, heater core and engine after unplugging the radiator plug and removing the radiator condenser tank cap.



2. Drain the engine coolant in the water jacket by disconnect the engine oil cooler hose.
3. Remove the radiator condenser tank and drain the engine coolant.
4. Install the radiator condenser tank.
5. Drain the engine coolant then clean the path of the coolant by injecting water from the radiator condenser tank cap area.
6. Connect the engine oil cooler hose.
7. Securely tighten the drain plug of the radiator.

⚠ 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 aluminium components.



8. By referring to the section on engine coolant, select an appropriate concentration for safe operating temperature within the range of 50%. Use special tool LLC changer (MB991871) to refill the engine coolant to the "FULL" line of the radiator condenser tank. A convenient mixture is a 50% water and 50% antifreeze solution.

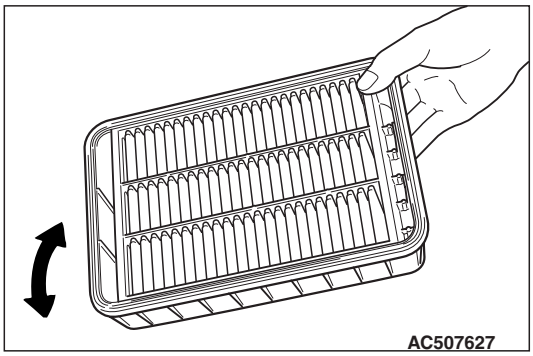
   Recommended antifreeze: BASF Glysantin Alu Protect Premium/G30
   Quantity: 7.5 L (Includes 0.62 L in the condenser tank)

   NOTE: For how to use special tool (MB991871), refer to its manufacturer's instructions.
9. Tighten the radiator condenser tank cap securely.
10. Turn the A/C switch to OFF position to start the engine and warm up until the radiator fan operates.

    NOTE: This work is to open the thermostat fully.
11. Rev the engine several times and then stop it. Check that there are no engine coolant leaks.
12. Remove the radiator condenser tank cap with the engine cool, and then refill the engine coolant again to the "FULL" line of the radiator condenser tank.

A10. CHECK AIR CLEANER ELEMENT FOR CLOGGING AND DAMAGE

M6020201200431

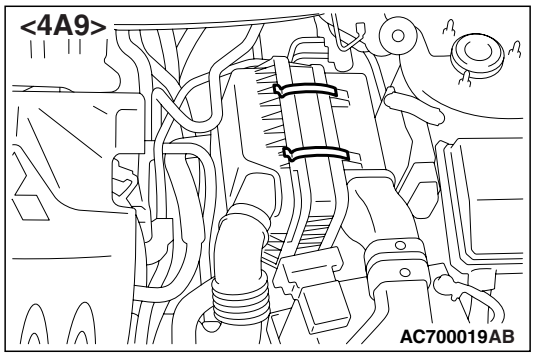


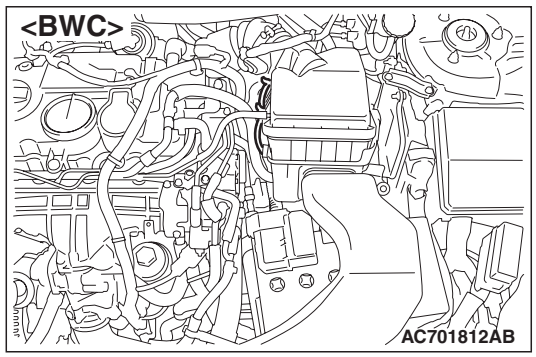
1. Check air cleaner element for clogging and damage.
2. Clean deposited dust from the element in the following manner.
   (1) Lightly tap the element against the top of a bench.
   (2) Blow compressed air from inside the element.
3. Wipe off dust on the air cleaner interior.
4. Install the air cleaner body.

A11. REPLACE AIR CLEANER ELEMENT

M6020201300483

The air cleaner element will become dirty and loaded with dust during use, and the filtering effect will be substantially reduced. Replace it with a new one.

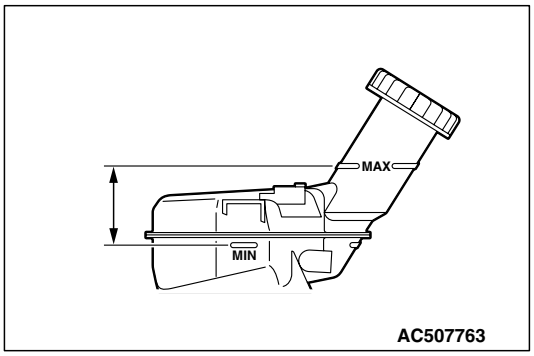




1. Unclasp the air cleaner cover clip.
2. Remove the air cleaner element and install a new one.
3. Be sure to close the air cleaner cover completely when clamping it.

A12. CHECK FLUID LEVEL IN BRAKE RESERVOIR AND CLUTCH RESERVOIR (for hydraulic type clutch)

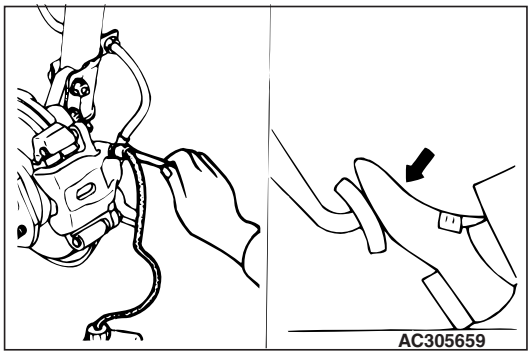
M6020202300107



1. Check that the fluid level is between the "MAX" and "MIN" mark.
2. If it is below the "MIN" marks, replenish with fresh brake fluid up to the "MAX" mark.

A13. CHANGE BRAKE FLUID

M6020201600547



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.

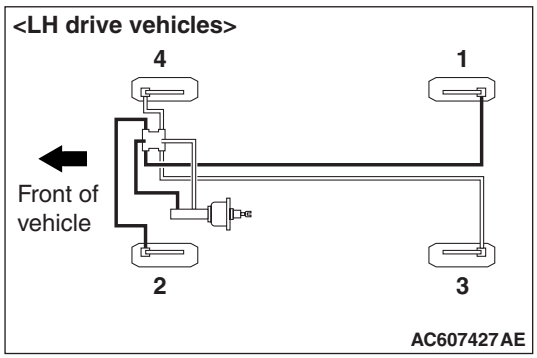
Specified brake fluid: DOT3 or DOT4

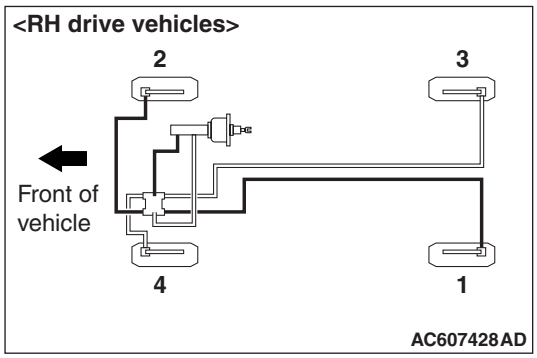
⚠ CAUTION

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 or 0.5 L 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 colour of fluid that flows out.



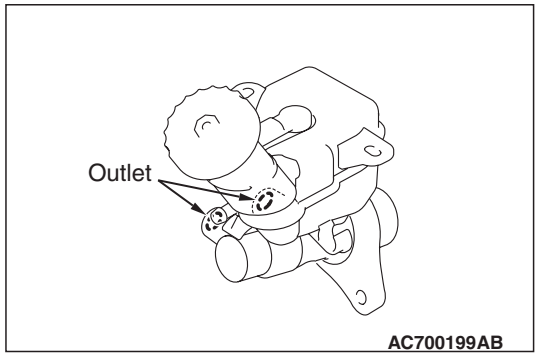


4. Repeat above steps for other bleeder screws.

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 brake fluid.
2. Depress and hold the brake pedal.



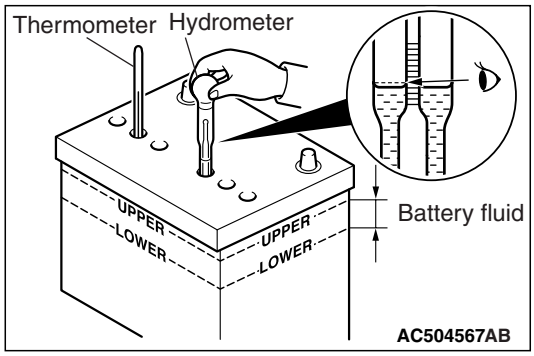
3. Another operator closes the master cylinder outlets with his fingers.
4. In this condition, release the brake pedal.
5. Repeat Steps 2 to 4 for 3 or 4 times to fill the master cylinder with brake fluid.

A14. CHECK BATTERY ELECTROLYTE LEVEL

M6020201700533

⚠ CAUTION

- **If the battery fluid is below the LOWER LEVEL, the battery could explode in using.**
- **If the battery fluid is over the UPPER LEVEL, leakage could result.**



1. Inspect whether or not the battery fluid is between the UPPER LEVEL and LOWER LEVEL marks.
2. Use a hydrometer and thermometer to check the specific gravity of the battery fluid.

   Standard value: 1.220 – 1.290 (electrolyte temperature 20°C)

3. The specific gravity of the battery fluid varies with the temperature, so use the following formula to calculate the specific gravity for 20°C. Use the calculated value to determine whether or not the specific gravity is satisfactory.

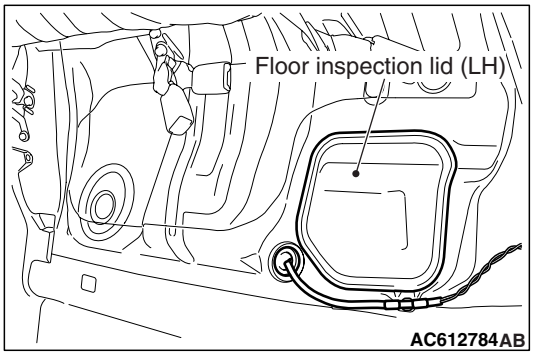
   D20 = (t - 20) × 0.0007 + Dt
   D20: Specific gravity converted to a value for electrolyte temperature of 20°C.
   t: Electrolyte temperature at the time of measurement
   Dt: Actual specific gravity

A15. REPLACE FUEL FILTER

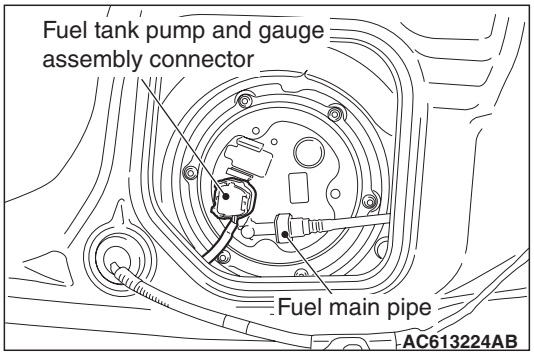
M6020201900537

<4A9>

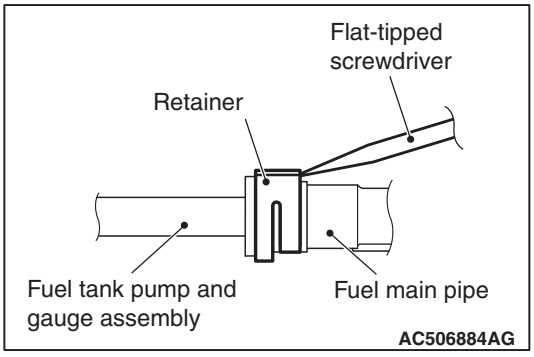
1. Remove the rear seat cushion assembly.



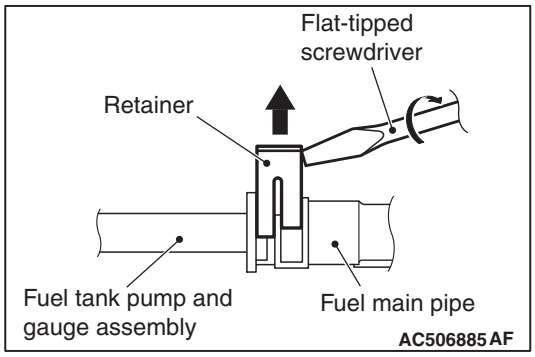
2. Remove the floor inspection lid (LH).



3. Disconnect the connector of fuel tank pump and gauge assembly connector.
4. Release the fuel pressure in the fuel line.



5. Insert a flat-tip screwdriver [6mm wide and 1mm thick] into the retainer of the fuel main pipe.

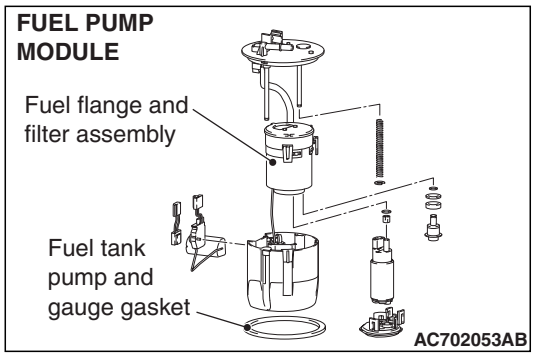


6. Turn the flat-tipped screwdriver by about 90 degrees to push up the retainer, and disconnect the fuel main pipe from the fuel tank pump and gauge assembly.
7. Remove the mounting nuts of fuel tank pump and gauge assembly.

⚠ CAUTION

Pay attention not to damage the fuel gauge unit and float of the fuel tank pump and gauge assembly when removing the fuel tank pump and gauge assembly from the fuel tank.

8. Remove the fuel tank pump and gauge assembly from service hole.



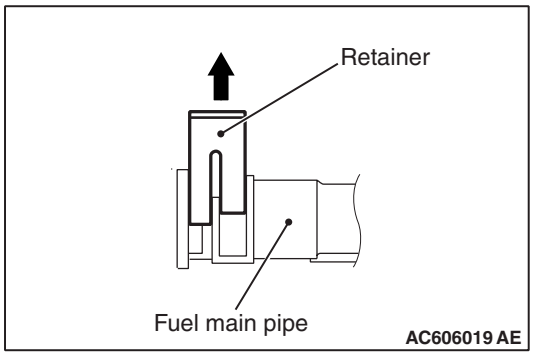
9. Replace the fuel flange and filter assembly and fuel tank pump and gauge gasket with a new one.

⚠ CAUTION

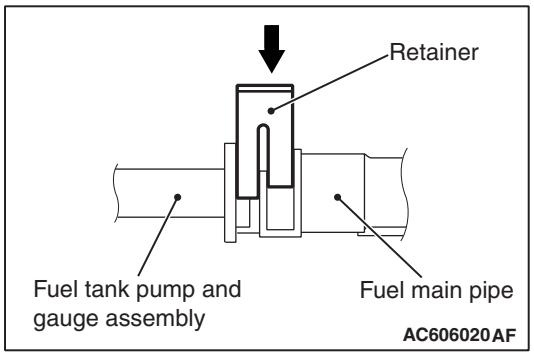
- **Pay attention not to damage the fuel gauge unit and the float of the fuel tank pump and gauge assembly when installing it to the fuel tank.**
- **When installing the fuel tank pump and gauge assembly to the fuel tank, check that the fuel gauge unit moving area moves smoothly.**

10. Install the fuel tank pump and gauge assembly to the fuel tank through the service hole, and tighten the mounting nuts to the specified torque.

Tightening torque: 2.5 ± 0.4 N·m

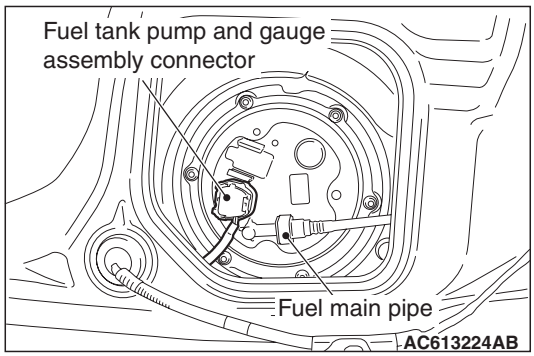


11.Before the installation, push up the retainer of the fuel main pipe.

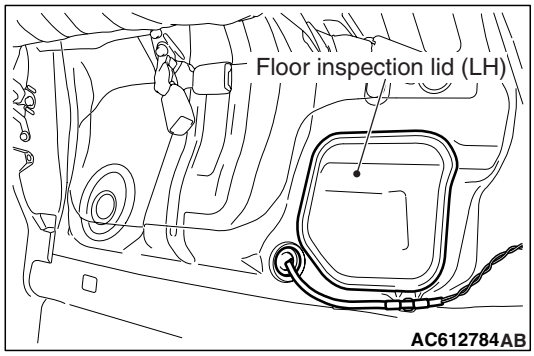


12.Connect the connector of fuel main pipe to the fuel tank securely and push down the retainer of the connector to lock it firmly.

13.After the installation, slightly pull the fuel main pipe to check that it is connected securely. At this time, also check that there is approximately 1 mm play.

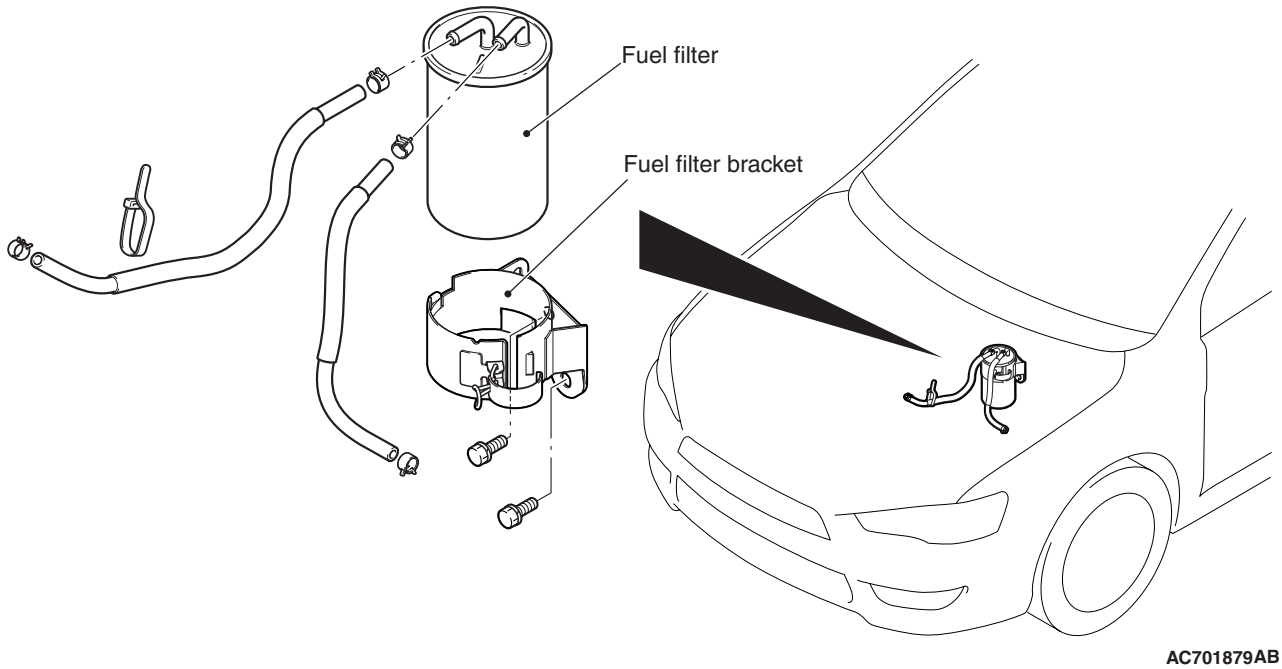


14.Connect the fuel tank pump and gauge assembly connector.



15.Install the floor inspection lid (LH).
16.Install the rear seat cushion assembly.

<BWC>



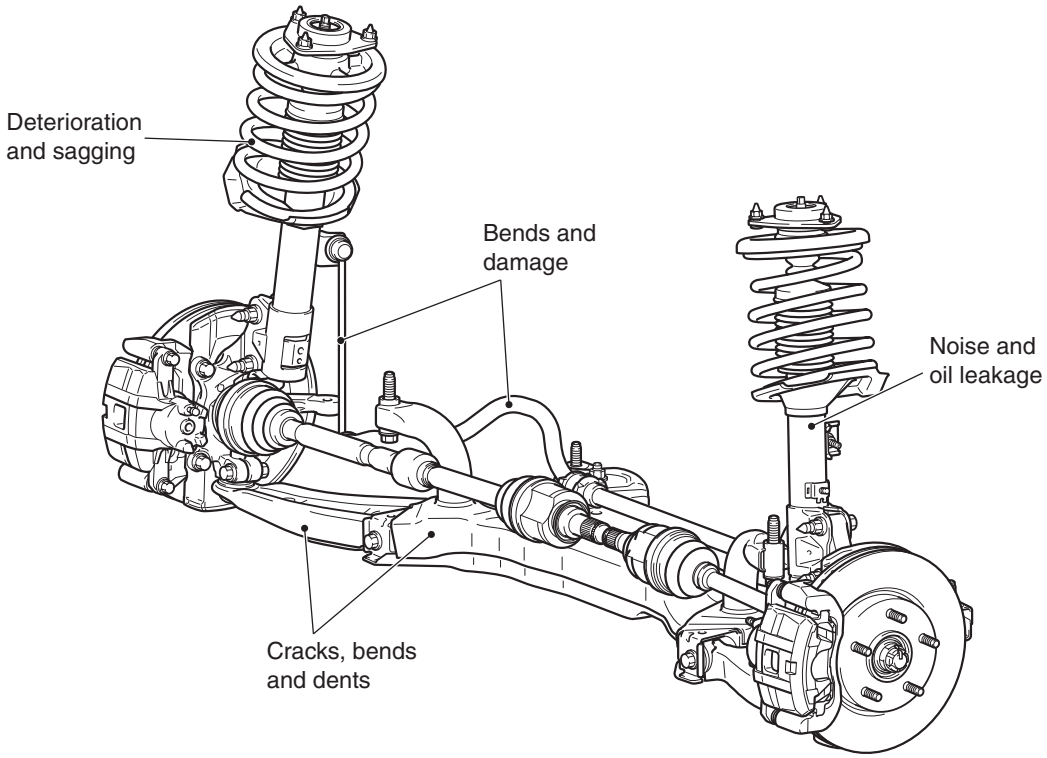
- Unclasp the fuel filter bracket clamp.

OPERATIONS UNDER THE VEHICLE

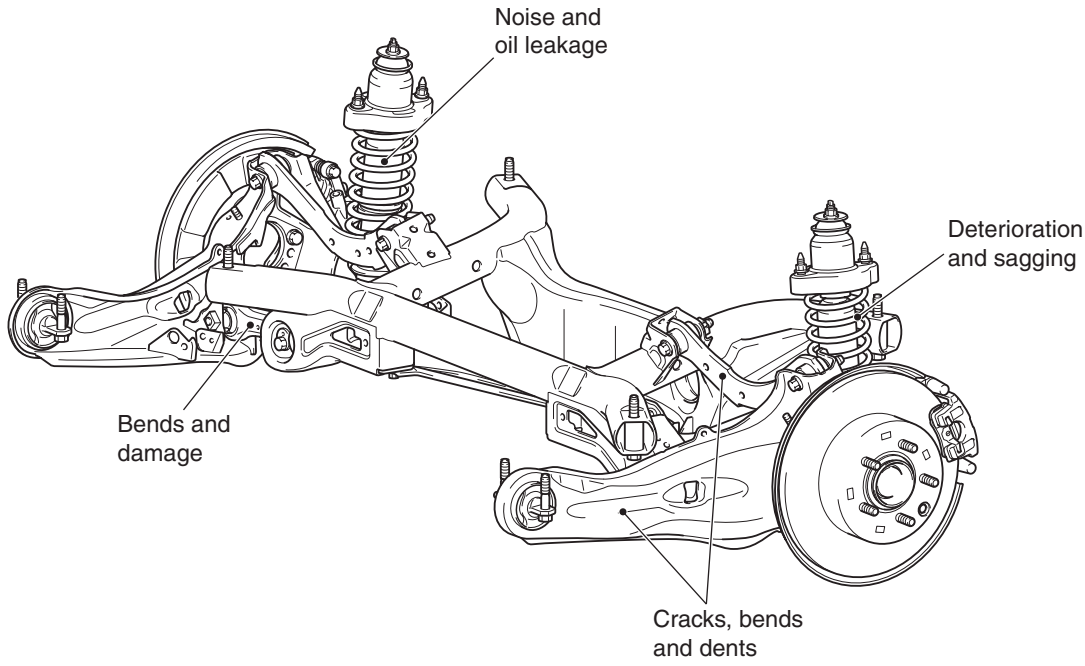
B1. CHECK SUSPENSION SYSTEM FOR DAMAGE AND LOOSENESS

M6020300100386

FRONT SUSPENSION



REAR SUSPENSION



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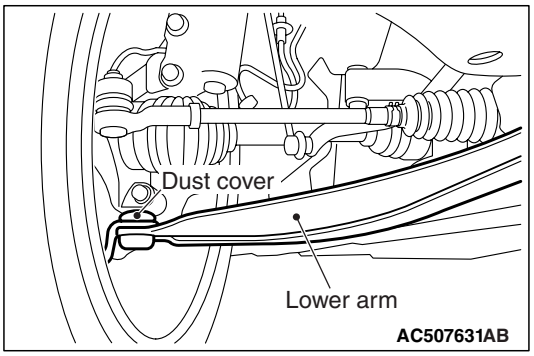
B2. CHECK SUSPENSION ARM BALL JOINTS FOR PLAY, AND DUST COVERS FOR DAMAGE

M6020300200394

LOWER ARM BALL JOINT AXIAL PLAY CHECK



1. Raise the vehicle.
2. Move the lower arm up and down with your hands to check for an excessive play in the axial direction of the ball joint. If there is an excessive play, replace the lower arm assembly.

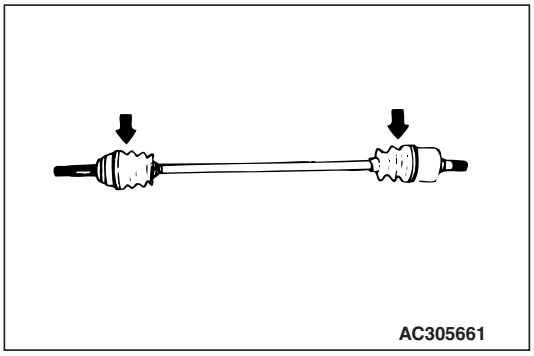
DUST COVERS FOR DAMAGE

1. Using your fingers, press the dust cover to check for a crack or damage.
2. If it dust cover has any crack or damage, replace the lower arm assembly.

   NOTE: If the dust cover has a crack or damage, the ball joint could be damaged.

B3. CHECK DRIVESHAFT BOOTS FOR DAMAGE

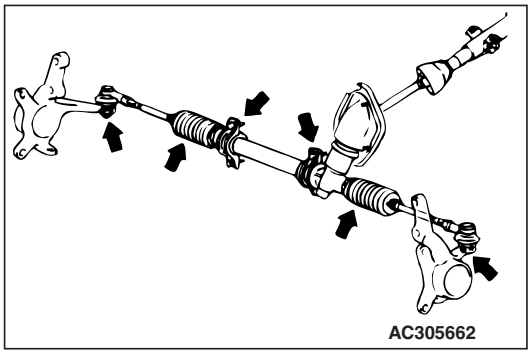
M6020300400387



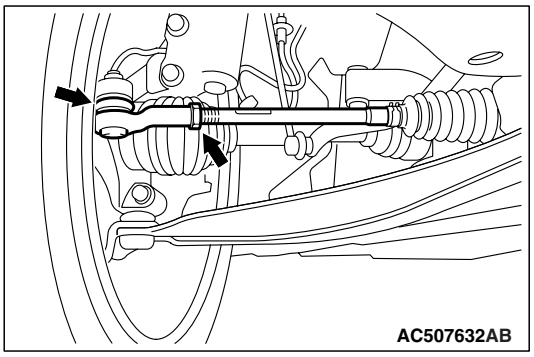
Check the driveshaft boots for damage.

B4. CHECK STEERING LINKAGE FOR DAMAGE AND LOOSE CONNECTIONS (including seals and boots)

M6020300500395



1. Move the steering wheel bit by bit to the left or right, and check to be sure that there is no play or looseness in the linkage coupling, that the installation is not loose, and that the rod or arm is not bent or damaged.

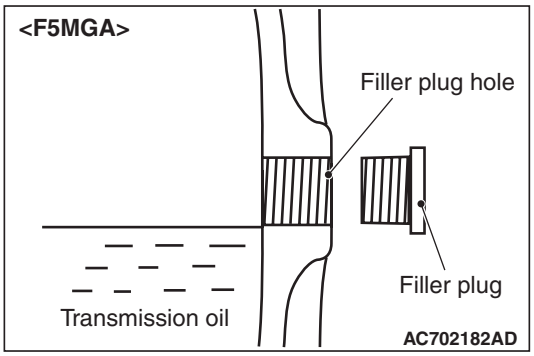


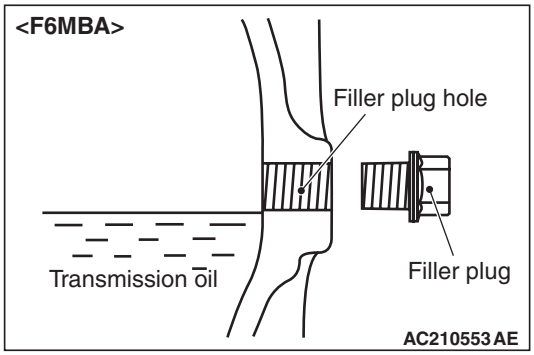
2. Check to be sure that the seal and boot of the ball joint are correctly installed (in the correct position), and that they are not damaged.
3. Check tie-rod end lock nut for looseness. If lock nut is loose, adjust toe-in and then tighten lock nut to the specified torque.

   Tightening torque: 51 ± 2 N·m

B5. CHECK GEAR OIL LEVEL IN MANUAL TRANSMISSION

M6020300600262



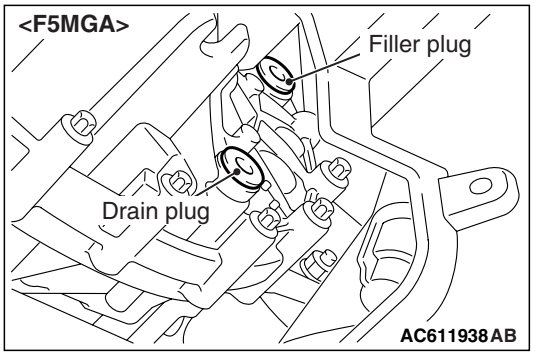


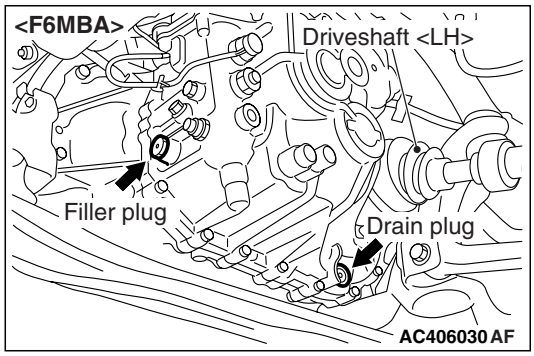
1. Remove the filler plug.
2. Check that the oil level is up to the lower edge of the filler plug hole.
3. Check that the oil is not noticeably dirty.
4. Tighten the filler plug to the specified torque.

   Tightening torque:
   <F5MGA> 43 ± 3 N·m
   <F6MBA> 32 ± 2 N·m

B6. CHANGE GEAR OIL IN MANUAL TRANSMISSION

M6020300800329





1. Remove the filler plug.
2. Remove the drain plug and drain the oil.
3. Tighten the drain plug to the specified torque.

   Tightening torque:
   <F5MGA> 43 ± 3 N·m
   <F6MBA> 32 ± 2 N·m

4. Fill with specified until the level comes to the lower portion of filler plug hole.

   Specified transmission oil: DiaQueen NEW MULTI GEAR OIL SAE 75W-80 API GL-3
   Quantity:
   <F5MGA> 1.9 L
   <F6MBA> 2.0 L

5. Tighten the filler plug to the specified torque.

   Tightening torque:
   <F5MGA> 43 ± 3 N·m
   <F6MBA> 32 ± 2 N·m

B7. CHECK EXHAUST PIPE CONNECTIONS FOR GAS LEAKAGE, AND CHECK PIPE INSTALLATION

M6020301200375

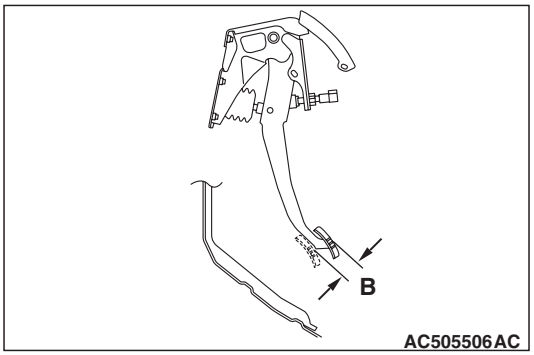
1. Confirm that the exhaust pipe does not interfere with any body components.
2. Check the exhaust pipe for damage by stones, etc.
3. Start the engine and check for gas leaks from the exhaust pipe connections.

OPERATIONS INSIDE THE VEHICLE

C1. CHECK BRAKE PEDAL AND CLUTCH PEDAL FOR FREE PLAY

M6020400100479

BRAKE PEDAL FREE PLAY



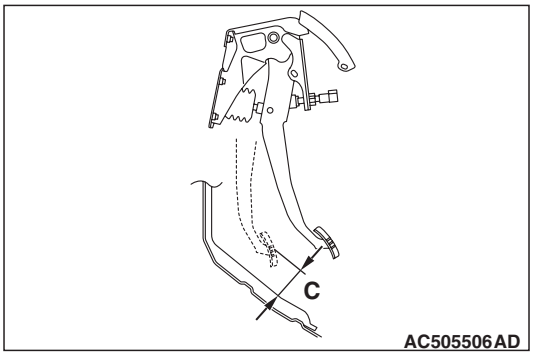
1. With the engine stopped, depress the brake pedal 2 or 3 times to release the vacuum in the brake booster. Then, press the brake pedal with your finger and check if the pedal stroke until the pedal becomes heavy (play) is within the standard value.

   Standard value (B): 3 – 8 mm

2. When the brake pedal play is not within the standard value, check the brake pedal-to-clevis pin looseness, clevis pin-to-booster operating rod looseness, brake pedal height, and stop lamp switch position, and adjust or replace as necessary.

CLEARANCE BETWEEN BRAKE PEDAL AND FLOOR PANEL

1. Turn up the floor carpet under the brake pedal.



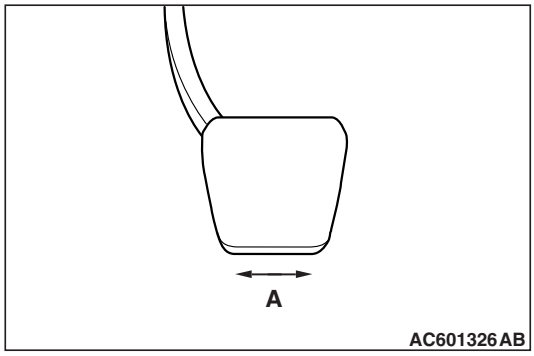
2. Start the engine and depress the brake pedal with approximately 500 N, and measure clearance between the brake pedal and the floor panel.

   Standard value (C): 85 mm or more

3. When the clearance is not within the standard value, check for air in the brake line and thickness of the disc brake pad, and correct or replace as necessary.
4. Recover the floor carpet under the brake pedal.

CLUTCH PEDAL CHECK AND ADJUSTMENT

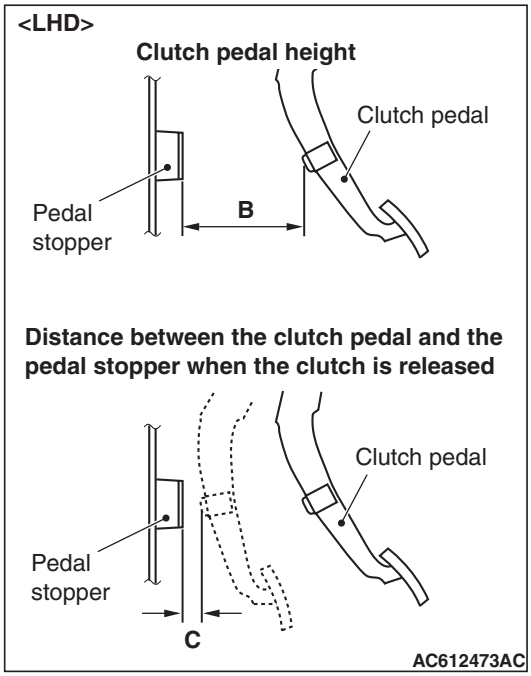
NOTE: This clutch pedal assembly is unadjustable because of its structure.

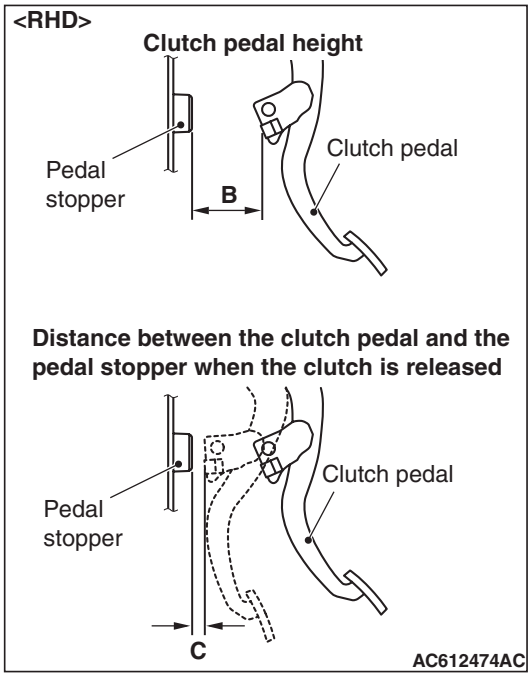


1. Measure the clutch pedal looseness (A).

   Standard value (A): 4 mm or less

2. When the clutch pedal looseness is not within the standard value, the clutch pedal assembly may be faulty. In this case, check the clutch pedal assembly, and replace it if necessary.





3. Check that the clutch pedal height (B) and the clearance (C) between the clutch pedal and the pedal stopper when the clutch is disengaged are within the standard value.

Standard value (B):
<4A9-LHD> 99 – 105 mm
<4A9-RHD> 71.5 – 76 mm
<BWC-LHD> 110 – 116 mm
<BWC-RHD> 79.5 – 84 mm
Standard value (C):
<LHD> 15 mm or more
<RHD> 11 mm or more

4. When the clutch pedal height and the clearance between the clutch pedal and pedal stopper when the clutch is disengaged are not within the standard value, the air may be intruded into the hydraulic system, or either the clutch master cylinder or the concentric slave cylinder may be faulty. In this case, perform air bleeding, or check the clutch master cylinder or the concentric slave cylinder, and replace it if necessary.

C2. CHECK PARKING BRAKE LEVER STROKE AND PLAY

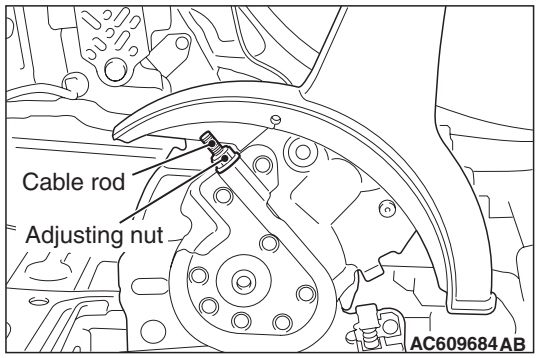
M6020400200539

Pull the parking brake lever with a force of approx. 196 N and count the number of notches.

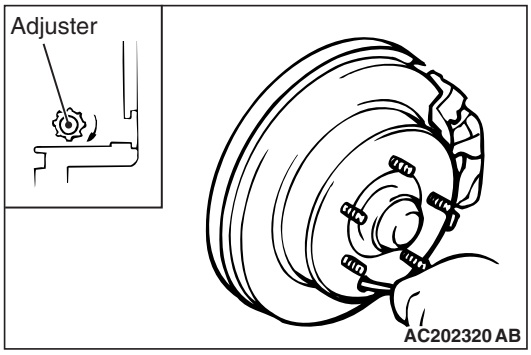
Standard value: 3 – 5 notches

If the parking brake lever stroke is out of the standard range, adjust as described below:

1. Remove the floor console assembly.



2. Loosen the adjusting nut to the end of the cable rod in order to allow slack in the cables.



3. Remove the rear brake disc adjusting hole plug. Then insert a flat-tipped screwdriver to turn the adjuster to the arrow direction (to expand the shoe) until the parking brake shoe makes contact and the disc can no longer be turned. Back off the adjuster to the opposite direction by five notches.

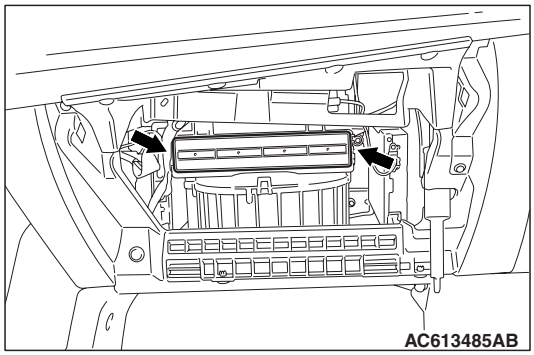
⚠ CAUTION

Be careful that the parking brake lever notch number should be within the standard range. If the notch number is too low, rear brake dragging can be caused.

4. Adjust the parking brake lever stroke to the standard value by turning the adjusting nut. After adjustment, check that there is no free play between the adjusting nut and the parking brake lever.
5. After the parking brake lever stroke is adjusted, raise the rear of the vehicle. Release the parking brake, and turn the rear wheels to confirm that the rear brakes are not dragging.

C3. REPLACE AIR PURIFIER FILTER

M6020400300310



1. Remove the glove box.
2. Remove the air purifier cover and the air purifier assembly.
3. Install a new air purifier assembly and install the air purifier cover.
4. Install the glove box.

OPERATIONS OUTSIDE THE VEHICLE

D1. CHECK UNEVEN TYRE WEAR

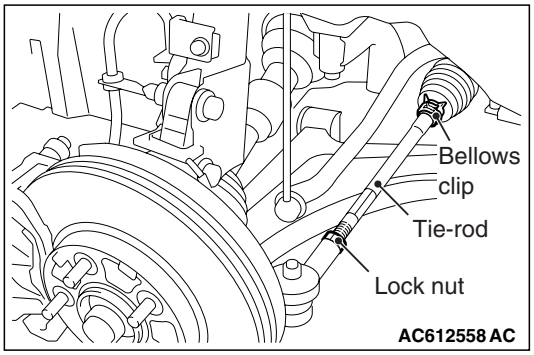
M6020500800066

FRONT WHEEL ALIGNMENT

Measure wheel alignment with alignment equipment on a level surface. The front suspension, steering system, wheels, and tires should be serviced to normal condition before measuring wheel alignment.

TOE-IN

Standard value:
At the centre of tyre tread: 1 ± 2 mm



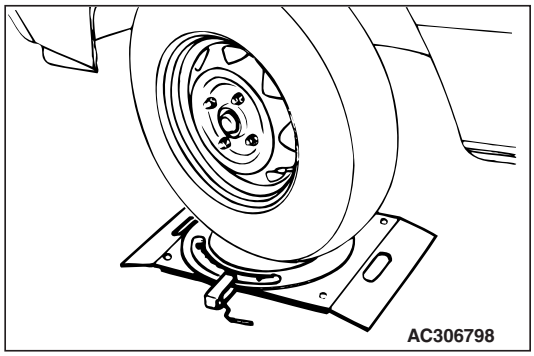
1. Adjust the toe-in by undoing the bellows clip and lock nut, and turning the left and right tie rod turnbuckles by the same amount (in opposite directions).

   NOTE: The toe will move out as the left turnbuckle is turned toward the front of the vehicle and the right turnbuckle is turned toward the rear of the vehicle.

2. Install the bellows clip and tighten the lock nut to the specified torque.

   Tightening torque: 52 ± 2 N·m

3. Confirm that the toe-in is at the standard value.



4. Use a turning radius gauge to check that the steering angle is at the standard value.

   Standard value:

Item	Specification
Inner wheels	40°50' ± 1°30'
Outer wheels (for reference)	33°50'

CAMBER, CASTER AND KINGPIN INCLINATION

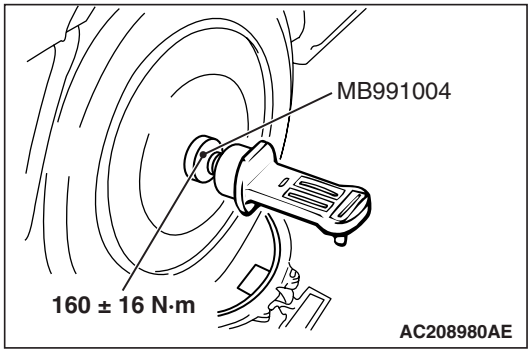
Standard value:

Item	Standard and sporty suspension	High-ground clearance suspension
Camber	–0°05' ± 0°30'*	0°10' ± 0°30'*
Caster	2°40' ± 0°30'*	2°30' ± 0°30'*
Kingpin inclination	13°30' ± 1°30'	13°10' ± 1°30'

*NOTE: The * Difference between right and left wheels must be less than 30'*

⚠ CAUTION

To prevent the wheel bearing from damage, never subject the wheel bearings to the vehicle load when the driveshaft nuts are loosened.



NOTE: For vehicles with aluminium wheels, attach the camber/caster/kingpin gauge to the driveshaft by using special tool wheel alignment gauge attachment (MB991004). Tighten the special tool to the same torque 160 ± 16 N·m as the driveshaft nut.

NOTE: The camber and the caster are pre-adjusted at factory and not adjustable.

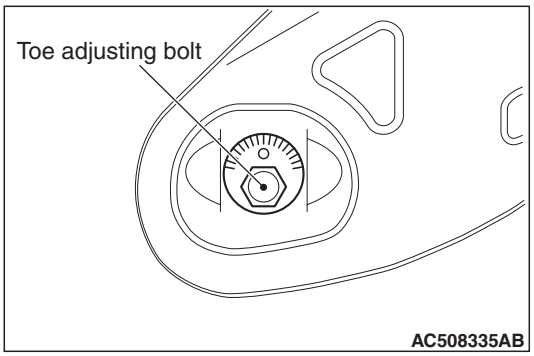
REAR WHEEL ALIGNMENT

1. Before the wheel alignment measurement, adjust the rear suspension, wheel, and tires in good condition.
2. Park the vehicle on a level surface to measure the wheel alignment.

TOE-IN

Standard value: 3 ± 2 mm

If toe-in is not within the standard value, adjust by following procedures.



1. Turn the toe adjusting bolt (the mounting bolt inside the body on the control link) to adjust.

   Left wheel: Turning clockwise (+) toe-in
   Right wheel: Turning clockwise (-) toe-in

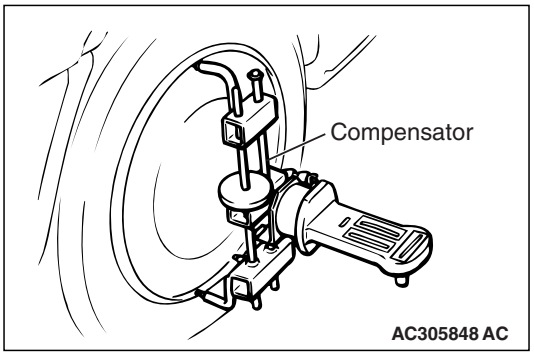
   NOTE: The scale has gradations of approximately 2.6 mm (single side toe angle equivalent to 16')

CAMBER

Standard value

Item	Standard and sporty suspension	High-ground clearance suspension
Camber	–0°55' ± 0°30'*	–0°35' ± 0°30'*

*NOTE: The * Difference between right and left wheels must be less than 30'*



NOTE: For vehicles with aluminium wheels, attach the camber/caster/kingpin gauge by using a compensator.

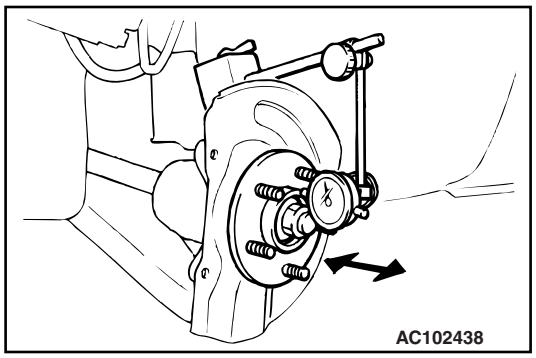
NOTE: The camber is pre-adjusted at factory and is not adjustable.

D2. CHECK FRONT AND REAR WHEEL BEARINGS FOR PLAY

M6020500900126

<Front>

1. Remove the caliper assembly, brake disc and retain it with a wire and the like to prevent from falling.

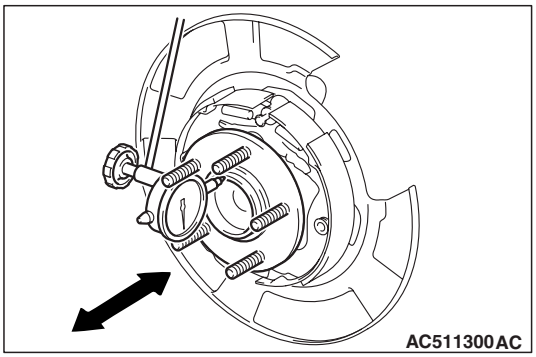


2. Set a dial gauge as shown in the figure. Move the hub in the axial direction and measure the axial play.

Limit : 0.05 mm

<Rear>

1. Remove the caliper assembly, and suspend the caliper assembly with a wire and remove the brake disc.



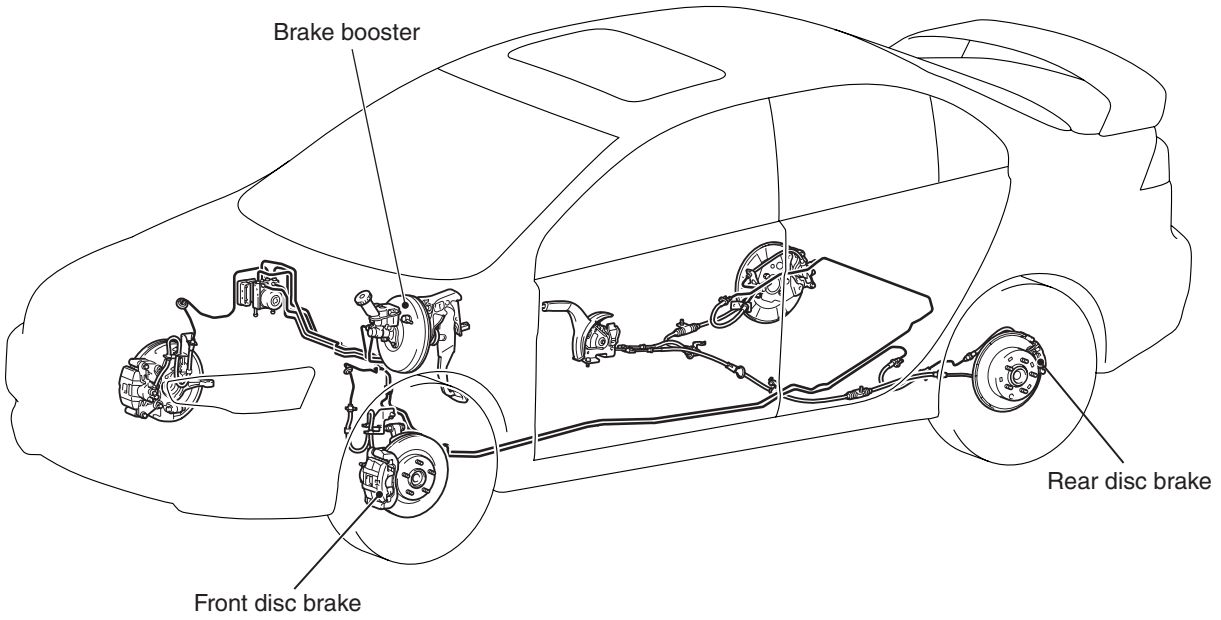
2. Check the bearing's axial play. Place a dial gauge against the hub surface; then move the hub in the axial direction and check whether or not there is axial play.

Limit: 0.05 mm

3. Replace the rear hub assembly if an adjustment cannot be made to within the limit.

D3. CHECK BRAKE HOSES AND PIPES FOR LEAKAGE

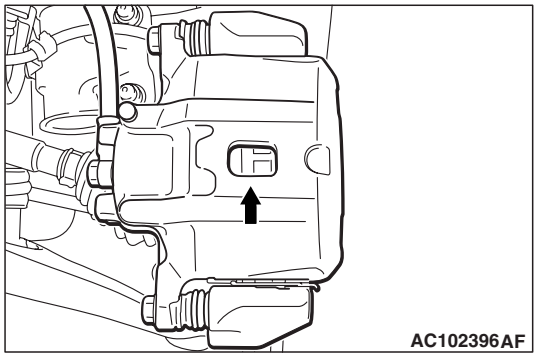
M6020500300403



1. Check entire circumference and length of hoses and pipes.
2. Check all clamps for tightness and connections for leakage.

D4. CHECK BRAKE PADS AND DISCS FOR WEAR

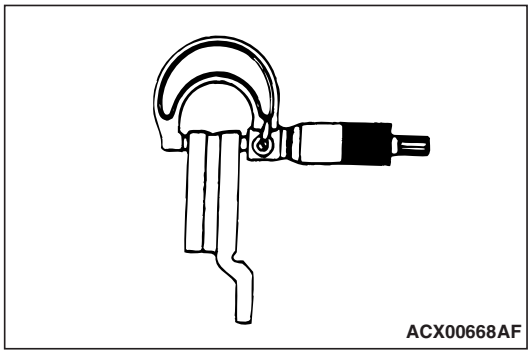
M6020500400499



1. Check the brake pad thickness through the caliper body check port.

   Standard value: 10.0 mm
   Limit: 2.0 mm

2. When the thickness is less than the limit, always replace the pads at an axle set.



3. Using a micrometer, measure disc thickness at eight positions, approximately 45° apart and 10 mm in from the outer edge of the disc.

   Standard value:
   <Front> 26.0 mm
   <Rear> 10.0 mm

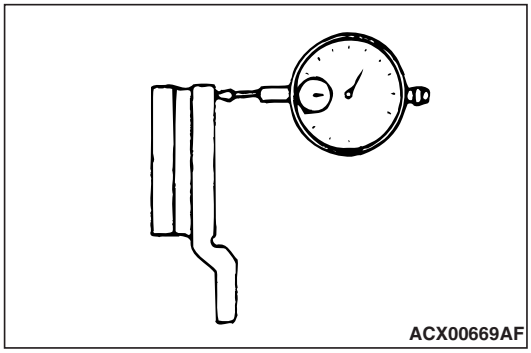
   Limit:
   <Front> 24.4 mm
   <Rear> 8.4 mm

   NOTE: Thickness variation (at least 8 positions) should not be more than 0.015 mm.

4. If the disk thickness is less than the limits, replace it with a new one.

BRAKE DISC RUN-OUT CHECK

1. Remove the brake assembly, and then hold it with wire.
2. Temporarily install the disc with the hub nut.



3. Place a dial gauge approximately 5 mm from the outer circumference of the brake disc, and measure the run-out of the disc.

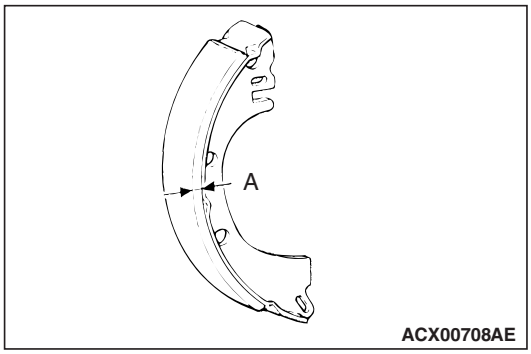
   Limit:
   <Front> 0.06 mm
   <Rear> 0.08 mm

D5. CHECK BRAKE SHOE LININGS AND DISCS FOR WEAR

M6020500500407

BRAKE LINING THICKNESS CHECK

1. Remove the brake disc.



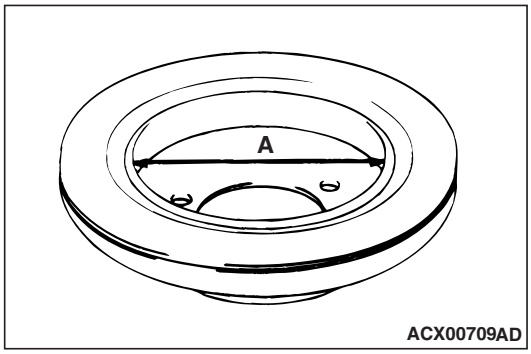
2. Measure the thickness of the brake lining at the place worn the most.

   Standard value (A): 2.8 mm
   Limit (A): 1.0 mm

3. Replace the shoe and lining assembly as an axle set if brake lining thickness is less than the limit.

BRAKE DISC INSIDE DIAMETER CHECK

1. Remove the brake disc.



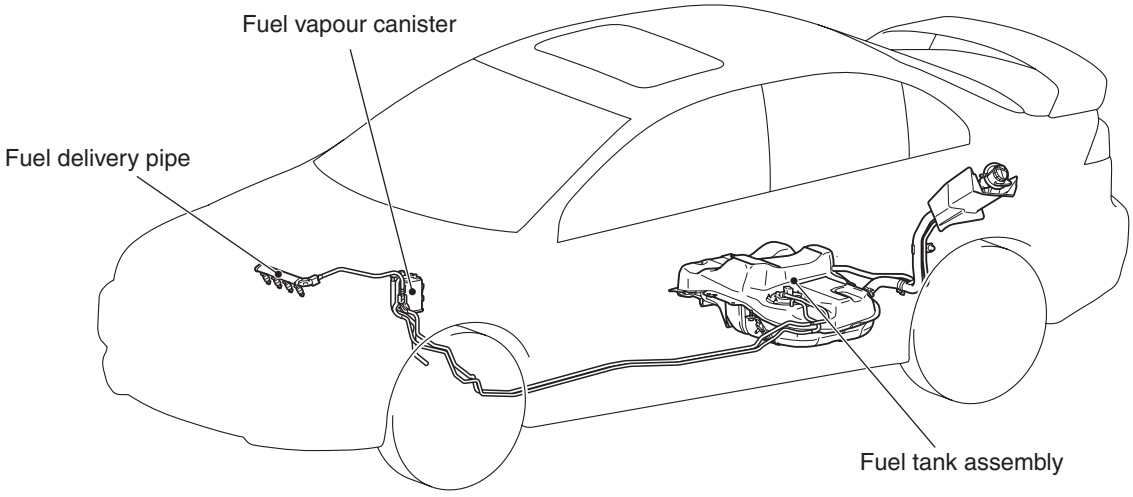
2. Measure the inside diameter of the brake disc at two or more locations.

   Standard value (A): 168.0 mm
   Limit (A): 169.0 mm

3. Replace the brake disc when the inside diameter exceeds the limit value or the brake disc is worn unevenly.

D6. CHECK FUEL HOSES AND PIPES FOR LEAKAGE OR DETERIORATION

M6020500600415



1. Check entire circumference and length of hoses and pipes.
2. Check all clamps for tightness and connections for leakage.

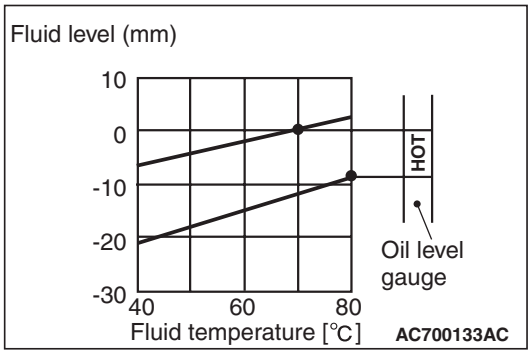
OPERATIONS AFTER ENGINE IS WARMED UP

E1. CHECK FLUID LEVEL IN AUTOMATIC TRANSMISSION

M6020600100387

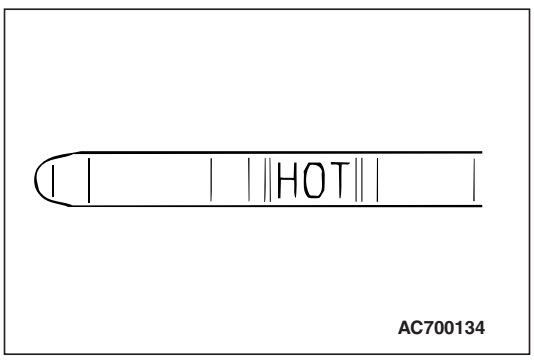
1. Drive the vehicle until the A/T fluid temperature reaches the normal temperature (70 – 80°C)

   NOTE: Measure A/T fluid temperature using M.U.T.-III.



   NOTE: Check the oil level referring to the characteristics chart shown if it takes some time to reach the normal operation temperature of A/T fluid (70 – 80°C).
2. Park the vehicle on a level surface.
3. Move the selector lever to all positions to fully charge the torque converter and the fluid lines with A/T fluid, and then move the selector lever to the P position.
4. Pull out the oil level gauge, and wipe off the A/T fluid and dirt. Then, insert the oil level gauge again and pull it to check the condition of the A/T fluid.

   NOTE: If the A/T fluid has a burnt smell, or if it has become very contaminated or dirty, it means that the A/T fluid has become contaminated by minute particles form bushings (metal) or worn parts. In such a case, the transmission needs to be overhauled and the A/T fluid cooler line needs to be flushed out.



5. Check that the A/T fluid level is between the HOT marks on the oil level gauge. If the A/T fluid level is too low, add more A/T fluid until the level reaches between the HOT marks.

   Automatic transmission fluid: DIA QUEEN ATF SP III

   NOTE: If the A/T fluid level is too low, the oil pump draws air into the system along with the A/T fluid, and air bubbles will thus from in the fluid circuit. This will cause a drop in fluid pressure and cause the shift points to change and the clutches and brakes to slip. If the A/T fluid level is too high, the gear will churn the A/T fluid and cause bubbles to develop, which can then cause the same problems as when the A/T fluid is too low. In either case, the air bubbles can cause overheating and oxidation of the A/T fluid, and also prevent the valves, clutches and brakes from operating normally. In addition, if bubbles develop in the A/T fluid, the A/T fluid can overflow from the transmission vent holes and be mistaken for leaks.
6. Securely re-insert the oil level gauge.

E2. CHANGE AUTOMATIC TRANSMISSION FLUID

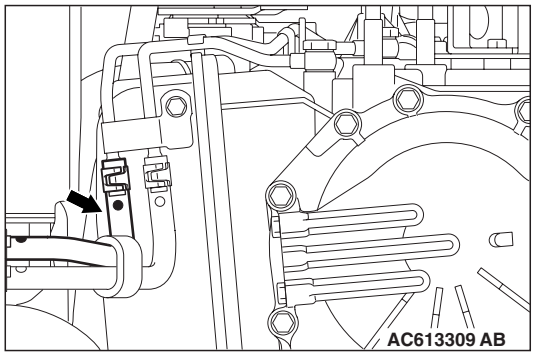
M6020600200469

Specifications

A/T fluid	Quantity	Remarks
DIA QUEEN ATF SP III	7.7 L	F4A4A

CHANGE PROCEDURE

In you have an A/T fluid changer, use the A/T fluid changer to flush the A/T fluid. If you do not have an A/T fluid changer, follow the procedure given below.



1. Remove the hose shown in the illustration which allows the A/T fluid to flow from the A/T fluid cooler (built into the radiator) to the transmission.

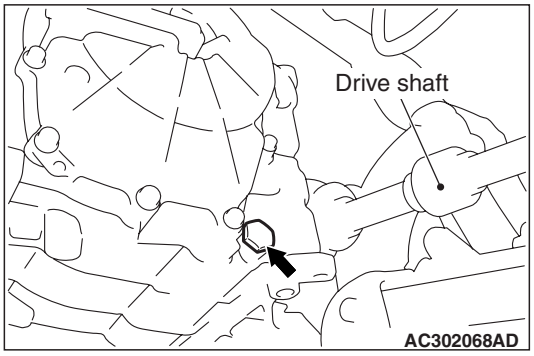
⚠ CAUTION

The engine should be stopped within one minute of it being started. If the A/T fluid has all been discharged before this, stop the engine at that point.

2. Start the engine and discharge the A/T fluid.

   Driving conditions: N range, idling

   Discharge amount: Approx. 3.5 L



3. Remove the drain plug at the bottom of the transmission case to drain out the remaining A/T fluid.

   Discharge amount: Approx. 2.0 L

4. Install the drain plug with a gasket in between, and tighten it to the specified torque.

   Tightening torque: 32 ± 2 N·m

⚠ CAUTION

Stop pouring in the A/T fluid once 5.5 L has been poured in.

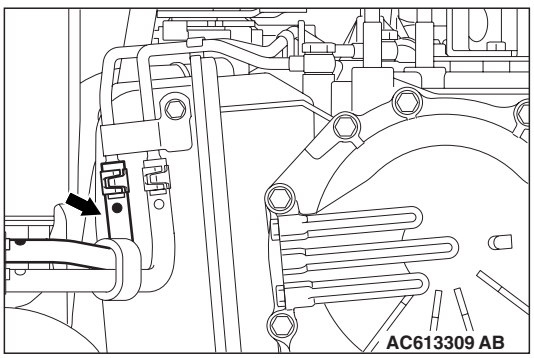
5. Pour in new A/T fluid through the oil filler tube.

   Amount to add: Approx. 5.5 L

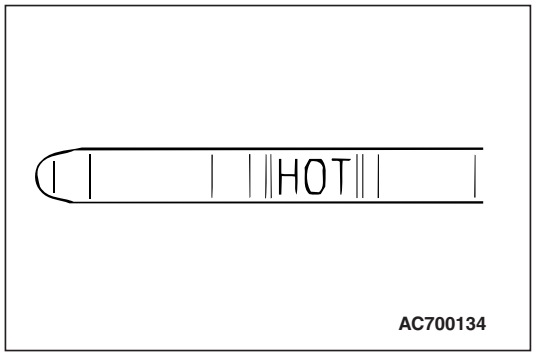
6. Repeat the operation in step 2.
7. Pour in new A/T fluid through the oil filler tube.

   Amount to add: Approx. 3.5 L

   NOTE: Carry out steps 2 and 7 so that at least 8.0 L has been discharged from the cooler hose. After this, discharge a small quantity of A/T fluid and check for contamination. If the A/T fluid is contaminated, repeat steps 6 and 7.



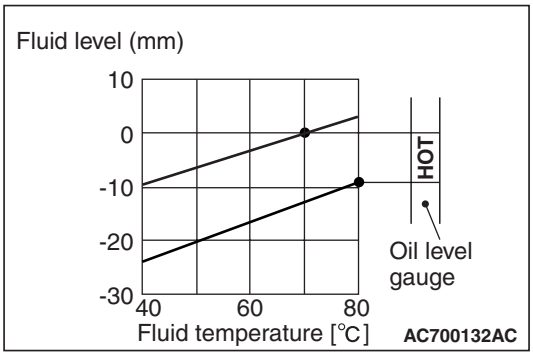
8. Connect the hose which was disconnected in step 1, and then securely re-insert the oil level gauge.
9. Start the engine, and let it run at idle for 1 – 2 minutes.
10. Move the selector lever to all positions once, and then return it to the N position.



11. Check that the A/T fluid level on the oil level gauge is at the COLD mark. If it is not up to this mark, add more A/T fluid.
12. Drive the vehicle until the A/T fluid temperature reaches the normal temperature (70 – 80°C), and then re check the A/T fluid level.

    NOTE: The COLD mark is for reference only; the HOT marks should be used as the standard for judgment.

    NOTE: A/T fluid temperature using M.U.T.-III.



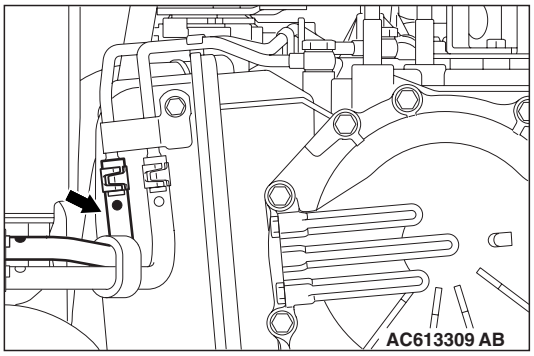
    NOTE: Check the oil level referring to the characteristics chart shown if it takes some time until reaching the normal operation temperature of A/T fluid (70 – 80°C).

13. When A/T fluid is under the specified level, top up A/T fluid. When A/T fluid is over the specified level, drain the excessive A/T fluid from the drain plug to adjust A/T fluid level to the specified level.
14. Securely insert the oil level gauge into the oil filler tube.

AUTOMATIC TRANSMISSION FLUID COOLER LINE FLUSHING

⚠ CAUTION

If replacing the transmission with a new one, if overhauling the existing transmission, or if the A/T fluid has deteriorated or is contaminated, the A/T fluid cooler line must always be flushed out.



1. Remove the hose shown in the illustration which allows the A/T fluid to flow from the A/T fluid cooler (built into the radiator) to the transmission.

⚠ CAUTION

The engine should be stopped within one minute of it being started. If the A/T fluid has all been discharged before this, stop the engine at that point.

2. Start the engine and discharge the A/T fluid.

   Driving conditions: N range, idling

   Discharge amount: Approx. 3.5 L

⚠ CAUTION

Stop pouring in the A/T fluid once 3.5 L has been poured in.

3. Pour in new A/T fluid through the oil filler tube.

   Amount to add: Approx. 3.5 L

4. Repeat the operation in step 2 and 3.

   NOTE: Carry out steps 2 and 3 so that at least 8.0 L has been discharged from the cooler hose. After this, discharge a small quantity of A/T fluid and check for contamination. If the A/T fluid is contaminated, repeat steps 2 and 3.

5. Carry out the procedure in "CHANGE PROCEDURE" from step 2 onwards.

E3. CHANGE ENGINE OIL

M6020600300574

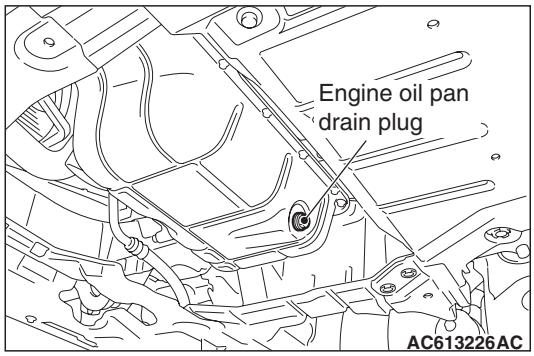
<4A9>

1. Start the engine and allow it to warm up until the temperature of the coolant reaches 80 °C to 90 °C.

⚠ CAUTION

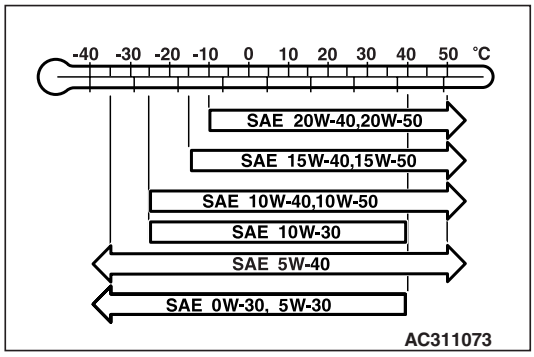
Use care as engine oil could be hot.

2. Remove the engine oil filler cap.
3. Remove the engine room under cover extension.
4. Remove the engine oil pan drain plug to drain engine oil.



5. Install a new drain plug gasket so that it faces in the direction shown in the illustration, and then tighten the drain plug to the specified torque.

   Tightening torque: 39 ± 5 N·m



6. Refill with specified quantity of engine oil.

   Specified Engine Oil
   - **ACEA classification: A1/B1, A3/B3, A3/B4 or A5/B5**
   - **API classification: SG or higher**

   Total quantity (Includes volume inside engine oil filter): 4.2 L

   NOTE: SAE 0W-30, 5W-30, and 5W-40 engine oils can only be used if they meet ACEA A3/B3, A3/B4 or A5/B5 and API SG (or higher) specifications.

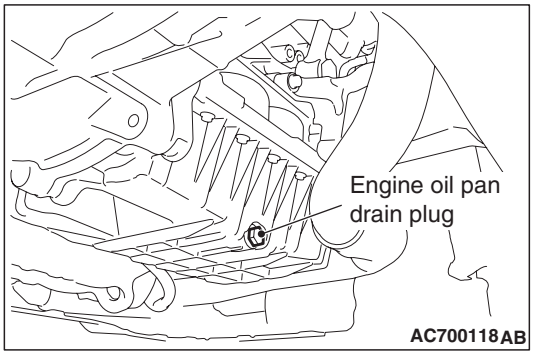
7. Install the engine oil filler cap.
8. Check engine oil level.

<BWC>

1. Start the engine and allow it to warm up until the temperature of the coolant reaches 80 °C to 90 °C.

⚠ CAUTION
Use care as engine oil could be hot.

2. Remove the engine oil filler cap.
3. Remove the engine room under cover extension.



4. Remove the engine oil pan drain plug to drain engine oil.
5. Tighten the engine oil pan drain plug to the specified torque.

   Tightening torque: 30 N·m

6. Refill with specified quantity of engine oil.

   Specified Engine Oil:
   <Vehicles without DPF> VW 50501/50601/50700
   <Vehicles with DPF> VW 50700
   Total quantity (Includes volume inside engine oil filter): 4.0 L

7. Install the engine oil filler cap.
8. Check engine oil level.

E4. REPLACE ENGINE OIL FILTER

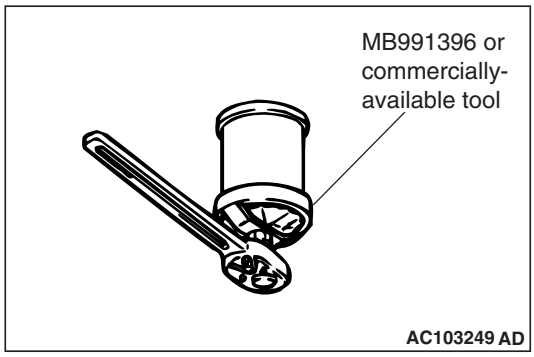
M6020600400496

<4A9>

1. Start the engine and allow it to warm up until the temperature of the coolant reaches 80 °C to 90 °C.

⚠ CAUTION
Use care as oil could be hot.

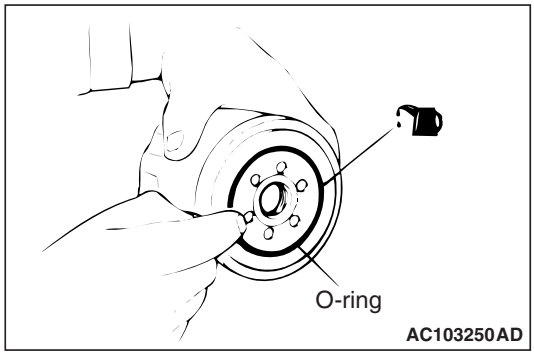
2. Remove the engine oil filler cap.
3. Remove the engine room under cover extension.
4. Remove the drain plug to drain oil.



5. Use the respective tool in the following table to remove the engine oil filter.

Number	Special tool
MR984204	Commercially-available tool
MD360935	Oil filter wrench (MB991396) or equivalent

6. Clean the filter bracket side mounting surface.

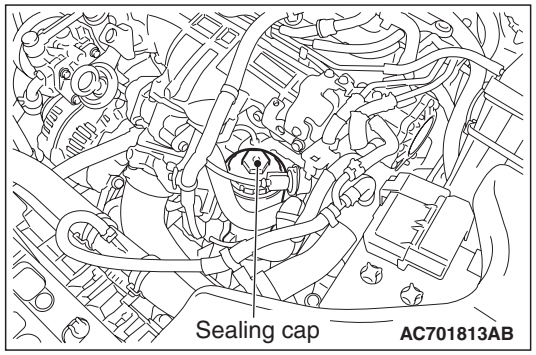


7. Apply a small amount of engine oil to the O-ring of the new oil filter.
8. Once the O-ring of the oil filter is touching the flange, use the respective tool in the following table to tighten to the specified torque.

Number	Special tool	Tightening torque
MR984204	Commercially-available tool	Approximately 3/4 turn (11 ± 1 N·m)
MD360935	Oil filter wrench (MB991396) or equivalent	Approximately 1 turn (14 ± 2 N·m)

9. Install the drain plug and refill the engine oil.
10. Rev the engine a few times, and check to be sure that no engine oil leaks from the installation section of the oil filter.

<BWC>



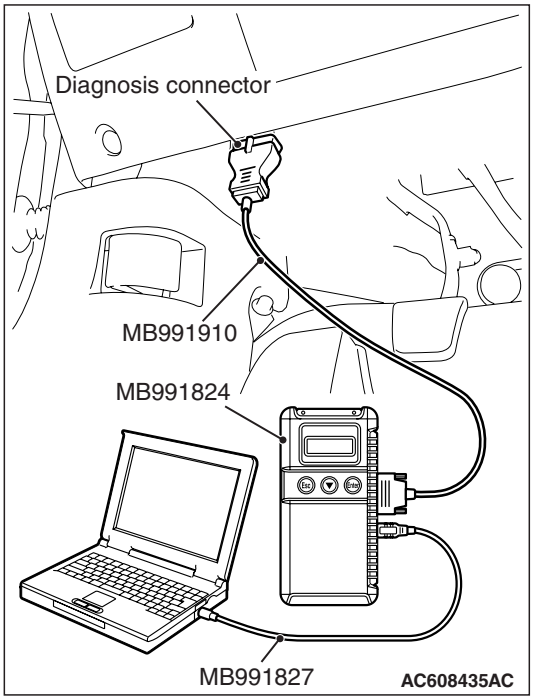
1. Remove the sealing cap.
2. Replace the oil filter element.

E5. CHECK ENGINE IDLING SPEED

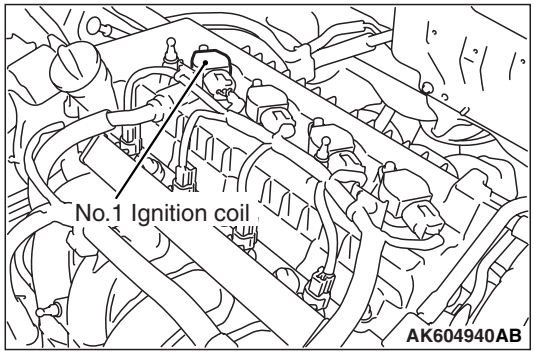
M6020601300094

<4A9>

1. Before inspection, set the vehicle to the pre-inspection condition.
2. Turn the ignition switch to "LOCK" (OFF) position.



3. Connect the M.U.T.-III to the diagnosis connector.



4. Set a timing light to the power supply line (terminal No. 1) of the ignition coil No. 1.

   NOTE: The power supply line is looped and also longer than the other ones.
5. Start the engine and let it run at idle.
6. Check that ignition timing is at the standard value.

   Standard value: approximately 10° BTDC
7. Check the idle speed.

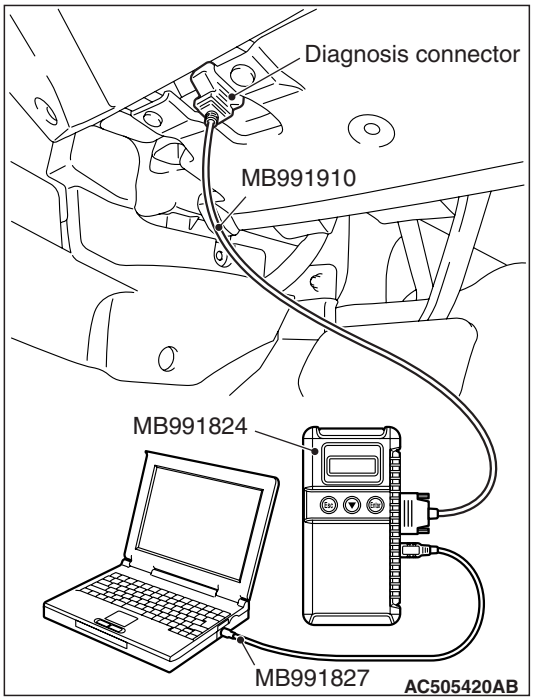
   Standard value: 750 ± 100 r/min

   NOTE: The idle speed is controlled automatically by the idle speed control system.

   NOTE: When using the M.U.T.-III, select item No.2 and take a reading of the idle speed.
8. If the idle speed is outside the standard value, inspect the MPI system (Refer to WORKSHOP MANUAL GROUP 13 – Troubleshooting).
9. Remove the timing light.
10. Turn the ignition switch to "LOCK" (OFF) position and then disconnect the M.U.T.-III.

<BWC>

1. Set the vehicle to the pre-inspection condition.



2. Turn the ignition switch to "LOOK" (OFF) position, and connect the diagnosis connector to the M.U.T.-III.
3. Start the engine, and let it run at idle.
4. Check the idle speed. Select item No. 2 and take a reading of the idle speed.

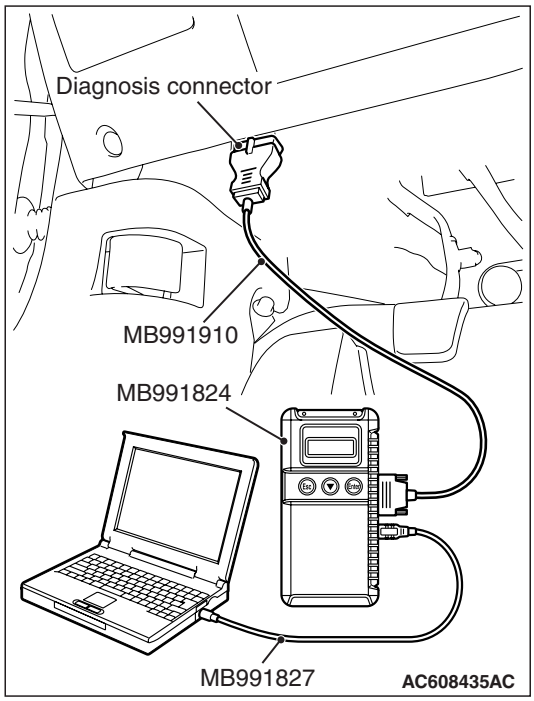
   Standard value: 830 ± 50 r/min

5. If the idle speed is not within the standard value, inspect the diesel system.

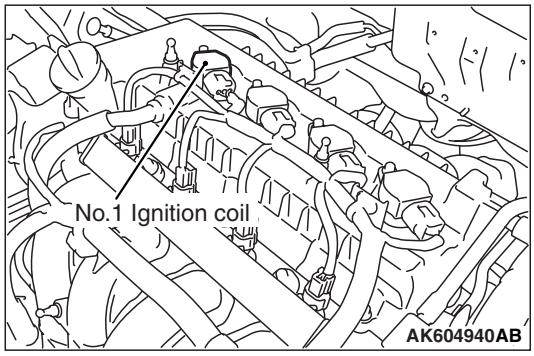
E6. CHECK CO CONCENTRATION

M6020601000242

1. Before inspection, set the vehicle to the pre-inspection condition.
2. Turn the ignition switch to "LOCK" (OFF) position.



3. Connect the M.U.T.-III to the diagnosis connector.



4. Set a timing light to the power supply line (terminal No. 1) of the ignition coil No. 1.

   NOTE: The power supply line is looped and also longer than the other ones.

5. Start the engine and let it run at idle.
6. Check that ignition timing is at the standard value.

   Standard value: approximately 10° BTDC

7. Run the engine at 2,500 r/min for 2 minutes.
8. Set the CO, HC tester.

9. Check the CO contents and the HC contents at idle.

   Standard value
   CO contents: 0.5 % or less
   HC contents: 100 ppm or less

10. If there is a deviation from the standard value, inspect the MPI system (Refer to WORKSHOP MANUAL GROUP 13 – Troubleshooting).
11. Remove the timing light and CO, HC tester.
12. Turn the ignition switch to "LOCK" (OFF) position and then disconnect the M.U.T.-III.

OTHERS

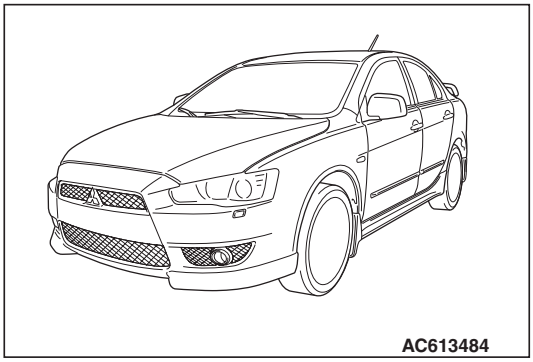
F1. CHECK BODY CONDITION FOR DAMAGE

M6020700100306

1. Check underbody coating for damage.
2. Check body painting for damage.

F2. ROAD TEST

M6020700200400



Drive the vehicle and check for conditions.

1. Check free play of steering wheel.
2. Check efficiency of service brakes and parking brakes system.
3. Check driveability of engine.
4. Check condition of instruments, gauges indicators, exterior lamps, heater and ventilators.
5. Check abnormal noise of each part.
6. Check the tyres for wear and for the correct air pressure.