DAIHATSU

TERIOS

J100

MA

TO INDEX

MAINTENANCE

JMA00001-00000

NO. 9710-JE

MAINTENANCE REQUIREMENTS

The scheduled maintenance service is important to ensure trouble-free, safe and economical driving. Failure to perform the scheduled maintenance may cause an accident or serious damage.

If you conduct the periodical maintenance, Daihatsu car owners may reduce the chance of accidents or car problems. Furthermore, it becomes possible for you to find at an earlier stage malfunctions which may lead to serious damages. Consequently, potential vehicle damage can be prevented or the degree of the damage can be minimized.

Therefore, all of the persons who are concerned with servicing the Daihatsu vehicles should offer the periodical maintenance service to Daihatsu car owners in order that they may be protected from accidents or unexpected problems.

To prevent malfunctions in advance, however, conducting the periodical maintenance service only is insufficient. It is essential that owners themselves perform maintenance, such as the pre-starting check described in the owner's manual, so that the vehicle exhibits no abnormal change or phenomenon. Hence, please explain to owners about the necessity of maintenance performed by them. However, malfunction may occur on those vehicles which are always checked by their owners. For instance, if a part instructed to be replaced periodically should be used beyond the replacement intervals and the life of the part has expired, there are cases where malfunction occurs suddenly despite the fact that no malfunction has taken place until yesterday. To prevent such malfunction in advance, be sure to replace parts recommended to be replaced periodically at the specified replacement intervals.

This section describes those items of the scheduled maintenance service recommended by the Daihatsu and their intervals. Be sure to observe the maintenance schedule.

JMA00002-00000

MAINTENANCE SCHEDULE

NOTE:
- Perform the periodical maintenance at the specified mileage or the time whichever comes first, unless otherwise specified.
- Continue to perform the periodical maintenance after 100,000 km (60,000 miles) at the same intervals as before 100,000 km.
- If the vehicle should be operated under severe driving conditions, operated occasionally, operated in dusty areas, repeating short trip, operated under extremely cold climate and/or on salted roads, it is necessary to perform some maintenance items more frequently than the regular maintenance schedule.
- This maintenance schedule prepared based on requirements mentioned in the owner's manual which are to be performed by the Daihatsu owner thoroughly.

○···Check or inspect. ●···Change or replace.

Section	Item	What to do	Inspection interval	×1000 km	1	10	20	30	40	50	60	70	80	90	100	See page
				×1000 miles	0.6	6	12	18	24	30	36	42	48	54	60	
				Years	—	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	
Engine	Air cleaner element	Cleaning Check • Damage					○		●		○		●		○	MA–6
	Valve clearance	Check & adjustment							○				○			MA–18
	Engine oil & oil filter	Change (Use API: SG or higher grade)		Every 12,000 km												MA–13
	Fuel filter	Change		Every 100,000 km												MA–9
	Fuel line & connections (Including fuel hoses)	Check • Crack • Tightness • Leakage • Damage		Every 40,000 km												MA–8
	Coolant (Long-life coolant)	Change		Every two years												MA–23
	Drive belt (Alternator, water pump, power steering)	Check • Tension • Crack • Damage					○		○		○		○		○	MA–6
	Timing belt	Change		Every 100,000 km												Refer to EM section.
	Spark plug	Cleaning & check • Condition • Gap • Damage					○		○		○		○		○	MA–14
	Ignition timing	Check & adjustment					○		○		○		○		○	MA–21
Exhaust emission control system	Blow-by gas recirculation hose (Positive crankcase ventilation hose)	Check • Connection • Damage							○				○			MA–7
	Charcoal canister	Check • Function • Damage							○				○			MA–11
	Evaporative emission hoses	Change		Every eight years												MA–12
	Exhaust pipe & muffler mounting	Check • Tightness • Damage					○		○		○		○		○	MA–37

* Replace every 10,000 km when API SF grade oil is used.

○···Check or inspect. ●···Change or replace.

Section	Item	What to do	Inspection interval												See page
			×1000 km	1	10	20	30	40	50	60	70	80	90	100	
			×1000 miles	0.6	6	12	18	24	30	36	42	48	54	60	
			Years	—	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	
Power train system	Clutch	Check • Free travel • Reserve travel • Damage				○		○		○		○		○	MA–38
	Manual transmission	Change • Oil						●				●			MA–39
	Automatic transmission	Change • Fluid		Every 80,000 km											MA–37
	Automatic transmission Oil cooler hose	Check • Crack, scratch, cut, twist and swelling		Every 40,000 km											MA–38
	Transfer	Change • Oil						●				●			MA–39
	Differential (Front & Rear)	Change • Oil						●				●			MA–39
	Propeller shaft	Check • Tightness • Rattle • Damage				○		○		○		○		○	MA–40
	Drive shaft boot	Check • Damage				○		○		○		○		○	MA–40
Suspen-sion system	Shock absorber	Check • Function • Oil leakage (Shock absorber) • Damage				○		○		○		○		○	MA–43
	Suspension arm (Front) Control arm (Rear) Dust boots	Check • Tightness • Damage						○				○			MA–43
Running system	Wheel bearing	Check • Tightness • Damage						○				○			MA–40
Steering system	Steering linkage, gear box	Check • Free play (Steering wheel) • Tightness • Rattle • Damage				○		○		○		○		○	MA–41
	Wheel alignment	Check • Toe-in						○				○			MA–42
	Fluid hose	Check • Crack, scratch, cut, twist and swelling		Every 4 years											MA–42

○···Check or inspect. ●···Change or replace.

Section	Item	What to do	Inspection interval												See page
			×1000 km	1	10	20	30	40	50	60	70	80	90	100	
			×1000 miles	0.6	6	12	18	24	30	36	42	48	54	60	
			Years	—	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	
Brake system	Brake pedal & Parking brake	Check • Free play (Brake pedal) • Reserve travel (Brake pedal) • Working travel (Parking brake)				○		○		○		○		○	MA–27
	Disc pad	Check • Wear • Damage				○		○		○		○		○	MA–29
	Brake hose, tube and P & B valve	Check • Leakage (Fluid level, connection) • Loose clamp • Damage				○		○		○		○		○	MA–28
	Brake fluid	Change		Every 2 years											MA–26
	Brake lining	Check • Wear • Damage				○		○		○		○		○	MA–32
	Brake booster vacuum hose	Check		Every 4 years											MA–34
	Master & wheel cylinder	Check • Leakage		Every 2 years											MA–35
Chassis & body	Wheel hub nut, other bolts & nuts	Check • Tightness				○		○		○		○		○	MA–40

JMA00003-00000

SCHEDULE FOR SEVERE DRIVING

○···Check or inspect. ●···Change or replace.

Section	Item	What to do	Inspection interval												See page
			×1000 km	1	10	20	30	40	50	60	70	80	90	100	
			×1000 miles	0.6	6	12	18	24	30	36	42	48	54	60	
			Years	—	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	
Engine	Engine oil & oil filter	Change		Every 5,000 km											MA–13
	Air cleaner element	Check & cleaning • Damage Change		Check and cleaning: Every 5,000 km Replacement: Every 20,000 km											MA–6
Exhaust emission control system	Exhaust pipe and mounting	Check • Tightness • Damage			○	○	○	○	○	○	○	○	○	○	MA–37
Power train system	Manual transmission	Change • Fluid		Every 25,000 km											MA–39
	Automatic transmission	Change • Fluid		Every 50,000 km											MA–37
	Transfer	Change • Fluid		Every 25,000 km											MA–39
	Differential (Front & Rear)	Change • Fluid		Every 25,000 km											MA–39
Steering system	Steering linkage	Check • Tightness • Damage			○	○	○	○	○	○	○	○	○	○	MA–41
Brake system	Disc & disc pad	Check • Wear • Damage			○	○	○	○	○	○	○	○	○	○	MA–29
	Brake drum & lining	Check • Wear • Damage			○	○	○	○	○	○	○	○	○	○	MA–32

JMA00004-00000

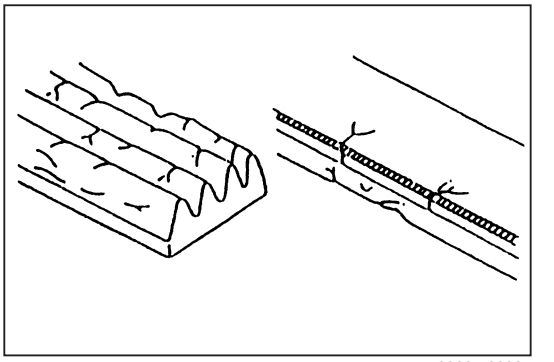
MAINTENANCE OPERATION

ENGINE

COLD ENGINE OPERATION

1. Inspection of drive belt

(1) Visual inspection of drive belt
Visually check the belt for separation of the adhesive rubber above and below the core, core separation from the belt side, severed core, separation of the rib from the adhesive rubber, cracks or separation of the ribs, torn or worn ribs or cracks in the inner ridges of the ribs. Replace the drive belt, if necessary.

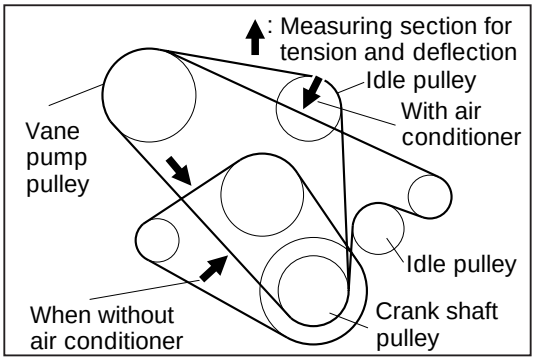


JMA00005-00001

(2) Inspection of drive belt tension
Measure the amount of the drive belt deflection when the midpoint of the drive belt between the alternator and the water pump pulley or between the crankshaft pulley and vane pump pulley is pushed with a force of 98 N (10 kgf).
Specified Belt Deflection

New Belt:	Alternator and water pump	4 - 5 mm
	Vane pump(Power steering)	8 - 11 mm
Used Belt:	Alternator and water pump	5 - 6 mm
	Vane pump(Power steering)	11 - 14 mm

If necessary, adjust the drive belt tension.
(Refer to the EM or SR section.)



JMA00006-00002

2. Inspection of air filter element

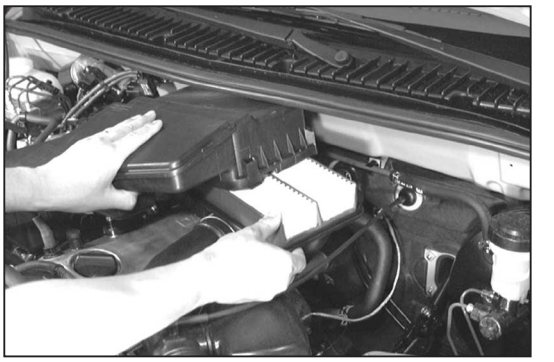
(1) Removal of air filter element
① Unlock the four clips.
② Gradually open the air filter case cover.

CAUTION:
- Do not open the air filter case cover beyond what is necessary to remove the air filter element. Failure to observe this caution may lead to disconnection of the rubber hoses.

③ Take out the air filter element from the air filter case.

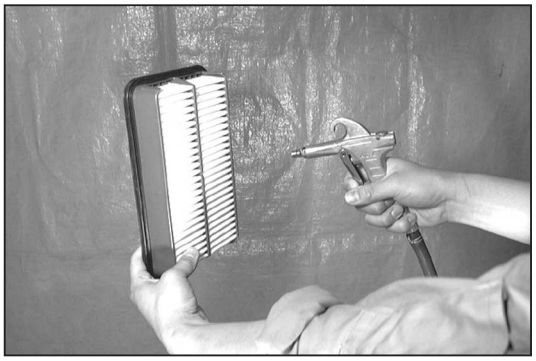
(2) Replacement of air filter element
Replace the air filter element with a new one when the replacement time arrives.

(3) Inspection of air filter element
Visually inspect the air filter element for being excessively dirty, damage or oily.
Replace the air filter element, if necessary.



JMA00007-00003

(4) Cleaning of air filter element
Clean the air filter element with compressed air.
First, blow compressed air from the back side of the element thoroughly. Then, blow off the upper side of the element.


JMA00008-00004

WARNING:
- Protect your eyes with safety goggles during the cleaning operation.

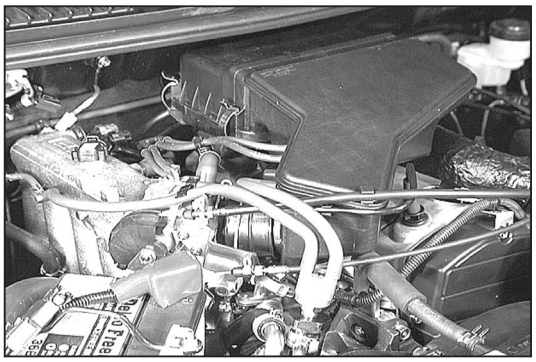
CAUTION:
- The air pressure to be used for this cleaning operation should not exceed 392.3 kPa (4.0 kgf/cm^2).

Replace the air filter element, if the element is excessively dirty.

(5) Installation of air filter element
① Install the air filter element in the air filter case cover.

NOTE:
- Ensure that the air filter element faces in such a direction that the wider protrusion side comes to the air filter case cover side.

② Close the air filter case cover.
③ Latch the four clips properly.

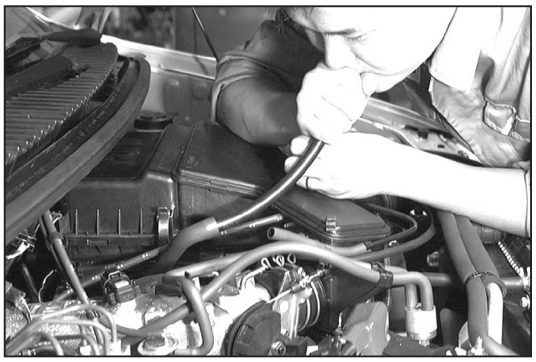

JMA00009-00005

3. Inspection of blow-by gas recirculation device

(1) Visually inspect the hoses for improper connections, cracks, leak and damage.

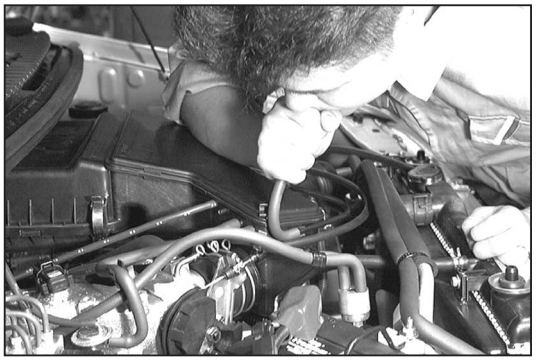
NOTE:
- Replace parts which exhibit damage as necessary.

(2) Remove the oil filler cap.
(3) Disconnect the blow-by gas hose from the throttle body.
(4) Ensure that no resistance exists when you blow your breath to the disconnected hose end (which was connected to the throttle body).
If resistance is felt or no air continuity exists, check blow-by gas hose and the cylinder head cover.
(5) Connect the blow-by gas hose to the throttle body.
(6) Install the oil filler cap securely.
(7) Disconnect the PCV hose which is connected to the throttle body at the throttle body side.


JMA00010-00006

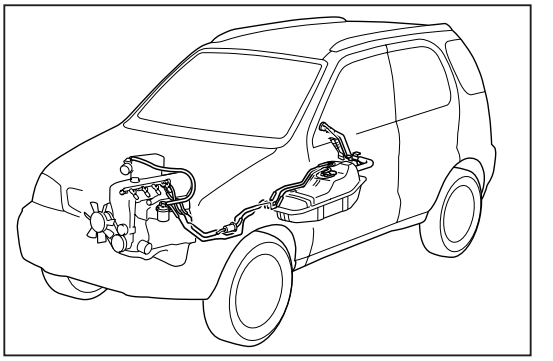
(8) Ensure that heavy resistance exists when you blow your breath from the disconnected hose end.
If no continuity exists or no resistance for air continuity exists, replace or repair the cylinder head cover.
(Refer to the EM section for the cylinder head cover replacement.)

NOTE:
- The orifice is built in the cylinder head cover. This procedure is required for ensuring the orifice function in the cylinder head. If this orifice is plugged, correct engine idle speed will not be obtained.


JMA00011-00007

(9) Connect the PCV hose to the throttle body properly.

4. Inspection of fuel line and connection

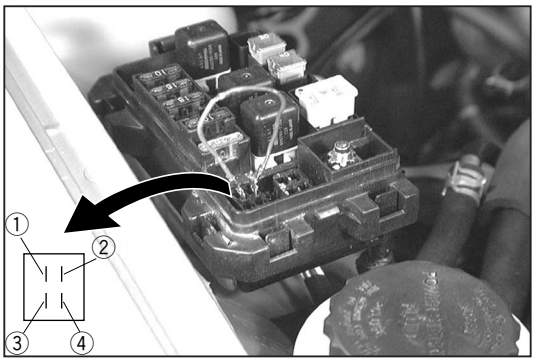


JMA00012-00008

(1) Visually inspect the fuel line including the fuel hose for connecting condition, cracks, tightness, leakage and damage.
If cracks or any other damage exists, repair or replace the part as required.
(2) Check the connecting section of the fuel line for looseness and leakage.
If looseness or leakage exists on the connected sections of the fuel line, repair or replace the parts as required.
(3) Ensure that the ignition switch is turned OFF.
(4) Open the relay box cover in the engine compartment.
(5) Remove the fuel pump relay from the relay box.

CAUTION:

- Prevent dust or water, etc. from entering the connector.
Entering of dust, water or contamination of the terminals in the fuel pump relay connector may cause fuel pump malfunction or other serious malfunctions, due to lowered insulation of each terminal.



JMA00013-00009

(6) Connect the No. 1 and No. 2 terminals of the fuel pump relay in the relay box with suitable wires or the like as shown.

CAUTION:

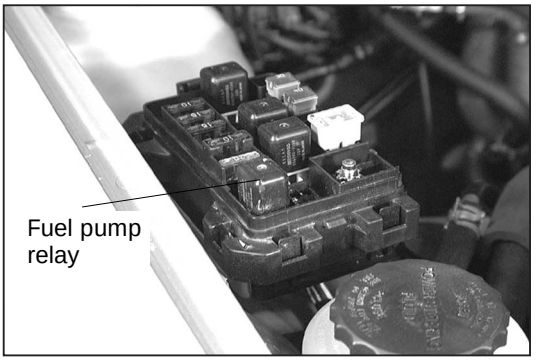
- Never deform or damage the terminals during the connection.
- Never make connection on a terminal except for those specified.
Even slight contact of the other terminal causes serious trouble.
- Prevent dust or water, etc. from entering the relay box.
Entering of dust, water or contamination of the terminals in the relay box causes serious malfunction, due to lowered insulation of each terminal.

(7) Turn ON the ignition switch.
(8) Ensure that no fuel leakage exists on the fuel line.
If fuel leakage exists, repair or replace the part as required.
(9) Turn OFF the ignition switch.

(10) Remove the wire from the fuel pump relay terminal in the relay box.

CAUTION:

- Never deform or damage the terminals during operation.
- Never make connection between terminals except for those specified.
  Even slight contact of the other terminal causes serious trouble.
- Prevent dust or water, etc. from entering the relay box.
  Entering of dust, water or contamination of the terminals in the relay box causes serious malfunction, due to lowered insulation of each terminal.



JMA00014-00010

(11) Install the fuel pump relay into the relay box.
(12) Close the relay box cover.

5. Replacement of fuel filter

WARNING:

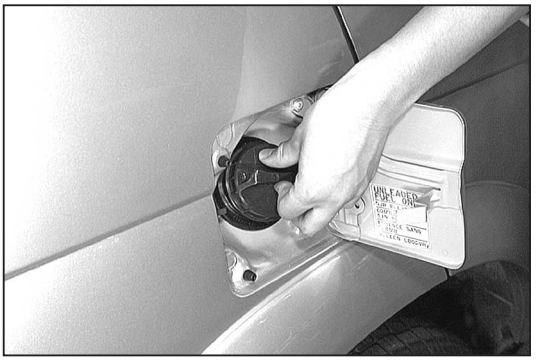
- Never smoke or work near open flame.
  Failure to observe this warning will cause fire.

Removal

(1) Ensure that the ignition switch is turned OFF.
(2) Open the fuel filler cap to release the inner pressure of the fuel tank.
(3) Remove the fuel pump relay from the relay box in the engine compartment. (See illustration above.)

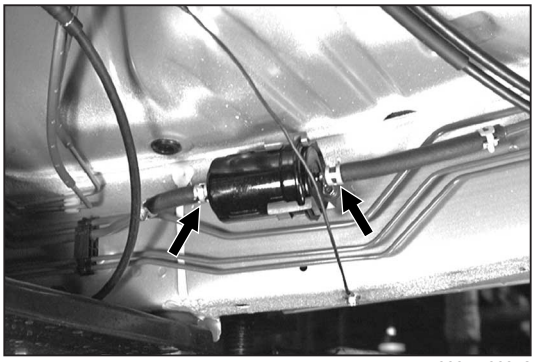
CAUTION:

- Never make connection on a terminal except for those specified.
  Even slight contact of the other terminal causes serious trouble.
- Prevent dust or water, etc. from entering the relay box.
  Entering of dust, water or contamination of the terminals in the relay box causes serious malfunction, due to lowered insulation of each terminal.


JMA00015-00011

JMA00016-00000

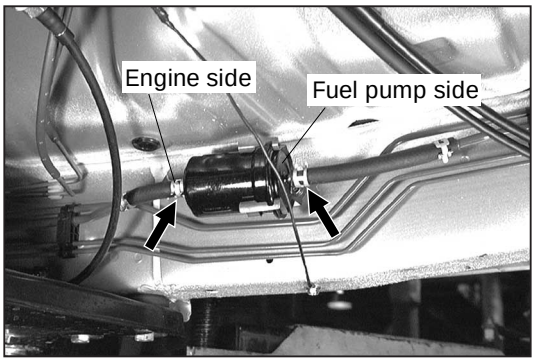
(4) Start the engine and wait for a little while until the engine stops.
(5) Turn off the ignition switch.
(6) Jack-up the vehicle and support it with safety stands. (Refer to the GI section.)
(7) Detach the fuel hose clips.
WARNING:
- Never reuse the used hose clips. Failure to observe this warning may lead to fire.


JMA00017-00012

(8) Disconnect the fuel hoses from the fuel filter and plug the disconnected hoses and fuel pipes of the fuel filter with a suitable plug or the like.
CAUTION:
- Quite a large amount of fuel will flow out during fuel hose disconnection. Therefore, be sure to plug the disconnected hose and pipes properly.

(9) Remove the fuel filter from the fuel filter clamp.

Installation
(1) Install the fuel filter to the fuel filter clamp as shown.
CAUTION:
- Be sure to install the fuel filter in such direction that the “IN” mark of fuel filter faces to fuel pump side and “OUT” mark faces to fuel pump side.
- Failure to observe this caution may lead to fuel filter malfunction.



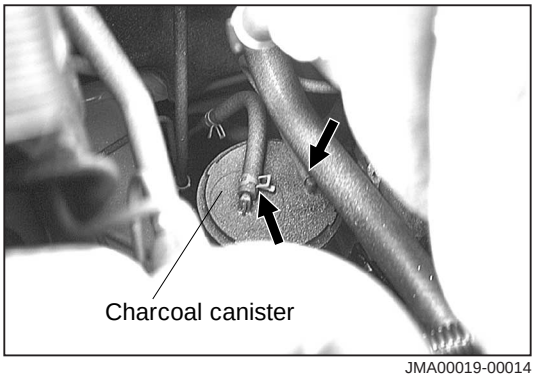
JMA00018-00013

(2) Insert new hose clips to the fuel hoses.
(3) Connect the fuel hoses to the fuel filter until the fuel hose end comes in contact with the fuel filter body .
(4) Place the new fuel hose clips at each point between the pipe end and the spool. Then remove the clip holder to secure the fuel hoses.
CAUTION :
- Never reuse the used hose clips.

(5) Install the fuel filler cap.
(6) Checking of fuel leakage
Perform the inspection described in the “Inspection of fuel line and connection”.

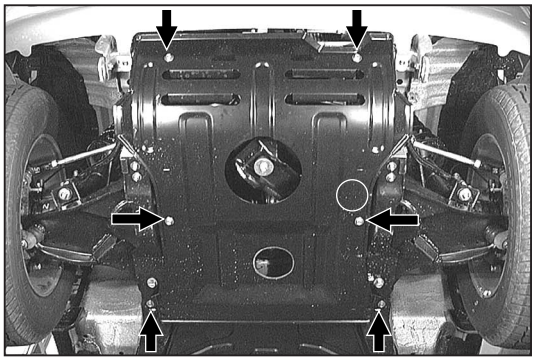
6. Inspection of charcoal canister
(1) Removal of charcoal canister
① Detach the hose bands from the hoses connected to the charcoal canister.
CAUTION:
- Never reuse the removed hose bands.

② Disconnect the rubber hoses from the upper side of the charcoal canister.
NOTE:
- Prior to the disconnection of the rubber hoses, put a tag on each of the rubber hoses so that they may be reconnected correctly to the original position.



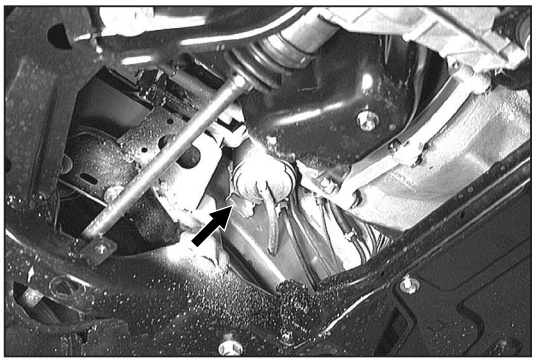
JMA00019-00014

③ Remove the engine undercover by removing the six attaching bolts.



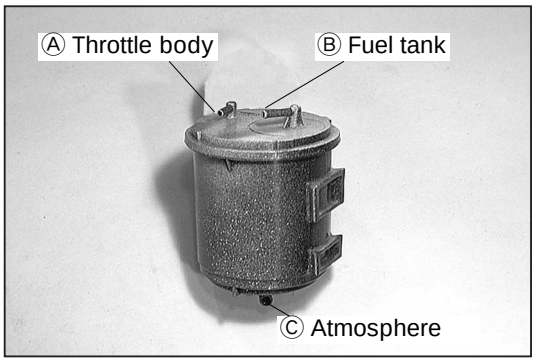
JMA00020-00015

④ Disconnect the atmosphere side hose from the frame.
⑤ Remove the charcoal canister from the vehicle by pulling up the charcoal canister case to unlock it from the bracket.
⑥ Remove the atmosphere side hose from the charcoal canister.



JMA00021-00016

(2) Inspection of charcoal canister
① Visually inspect the charcoal canister case for cracks or damage. If any damage is found, replace the charcoal canister with a new one.
② Check the charcoal canister for air leakage. Ensure that no air leakage exceeding 0.3 ml/min is present when applying compressed air of 29.4 kPa (0.3 kgf/cm^2) into the fuel tank side pipe Ⓑ with the throttle body side Ⓐ and atmosphere side Ⓒ pipes plugged.
If air leakage exceeding the above-specified value is present, replace the charcoal canister with a new one.
③ Ensure that no air continuity exists when you blow into the purge side A pipe of the charcoal canister.
If air continuity exists, replace the charcoal canister with a new one.
④ Check of charcoal canister for restriction
a. Ensure that air continuity exists to the atmosphere side Ⓒ pipe, when you blow into the fuel tank side pipe Ⓑ while the purge side Ⓐ pipe is plugged.
If no air continuity exists, replace the charcoal canister with a new one.
b. Ensure that air continuity exists when applying a negative pressure to the purge side pipe Ⓐ by a MityVac.
If no air continuity exists, replace the charcoal canister with a new one.



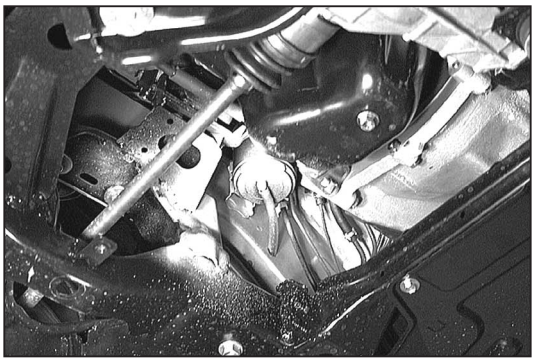
JMA00022-00017

⑤ Cleaning of charcoal canister
Clean the charcoal canister by blowing compressed air of 294.2kPa (3.0 kg/cm^2) into the fuel tank side pipe Ⓑ while holding the purge side of the canister pipes Ⓐ closed.

CAUTION:
- Never attempt to wash the charcoal canister.
  No activated carbon should come out during the test.
  If activated carbon comes out, replace the charcoal canister.

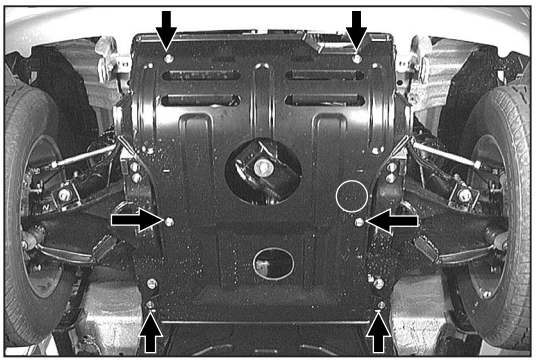
JMA00023-00000

(3) Installation of charcoal canister
The installation procedure is basically reverse to the removed procedure. Therefore, no illustration is given in this installation procedure.
① Install the charcoal canister to the charcoal canister holder and lock it securely.
② Connect the atmosphere side hose to the charcoal canister.



JMA00024-00018

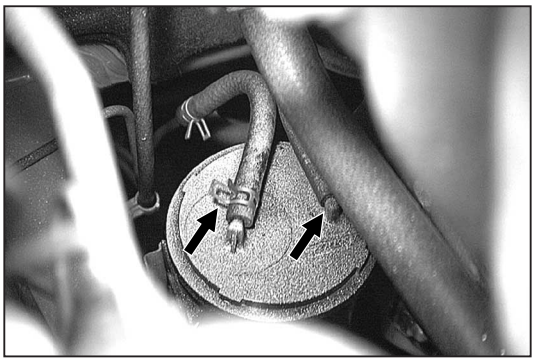
③ Install the engine undercover with the six attaching bolts and tighten them securely.



JMA00025-00019

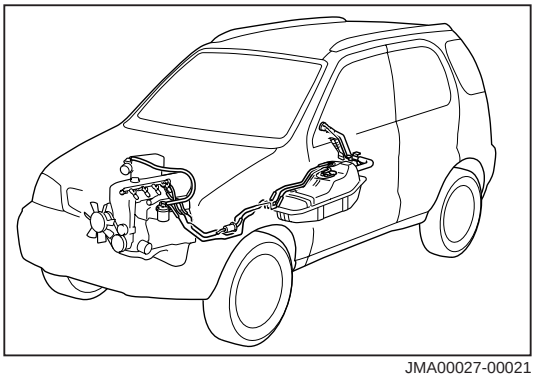
④ Connect the rubber hoses and attach new hose bands.

CAUTION:
- Never reuse the removed hose band.



JMA00026-00020

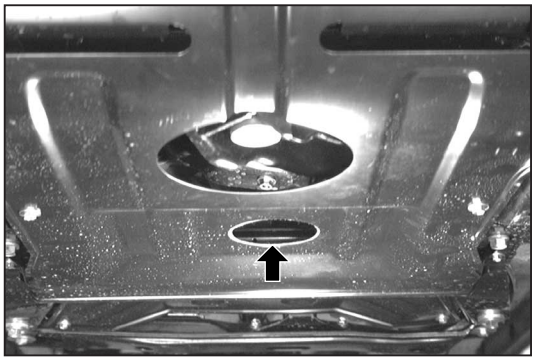
7. Replacement of evaporative emission control hose
Replace the fuel evaporative emission control hoses with new ones when the replacement interval arrives.
WARNING :
- Replace the hose bands and clips with new ones. Never reuse the removed hose bands and clips.



JMA00027-00021

HOT ENGINE OPERATION

1. Change of engine oil and oil filter

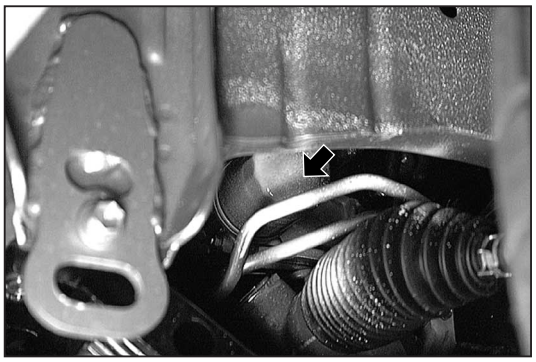

JMA00028-00022

WARNING:
- Protect your eyes by wearing safety goggles.
- Never burn yourself with hot engine oil or hot engine components during operation.

(1) Park the vehicle on a level surface.
(2) Check the oil level.
(3) Start the engine.
(4) Warm-up the engine to normal operating temperature.
(5) Place a suitable container under the oil drain plug.
(6) Remove the drain plug and gasket. Then, drain the engine oil into the placed container completely.
(7) Remove the oil filler cap.
(8) Place a suitable container or such to under the oil filter.
(9) Slacken the oil filter with an oil filter wrench.

CAUTION:
- Care must be exercised, for quite a large amount of engine oil may flow out.

(10) Remove the oil filter by hand.
(11) Wipe off the engine oil from the oil filter attaching part of the engine oil filter bracket.
(12) Thinly apply engine oil to the O-ring of a new oil filter.
(13) Screw in the oil filter by hand, until the O-ring of the oil filter comes in contact with the oil filter installing surface of the oil filter bracket.


JMA00029-00023

(14) Tighten the oil filter three fourths to one complete turn, by hand or using the following SST.
SST: 09228-87201-000

CAUTION:
- Never tighten the oil filter excessively. Failure to observe this caution will cause oil leakage or damage to the oil pump, or the oil filter.

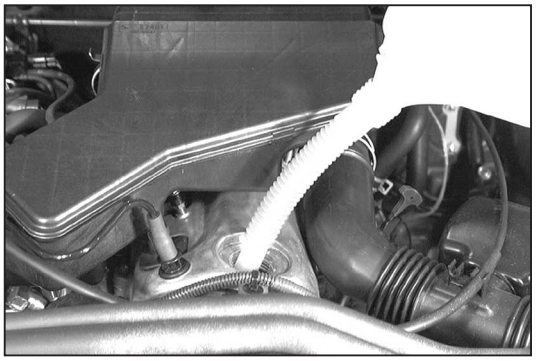
(15) Tighten the drain plug to the specified tightening torque with a new gasket interposed.
Tightening Torque: 19.6 - 29.4 N·m (2.0 - 3.0 kgf-m)

JMA00030-00000

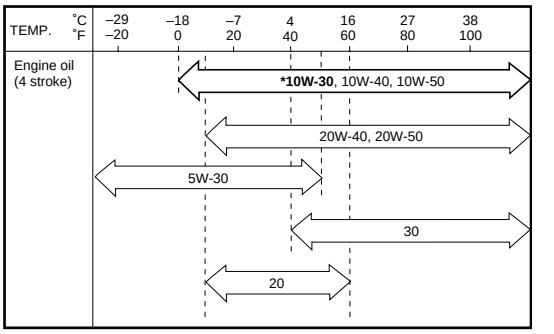
(16) Pour engine oil to the engine.

CAUTION:
- Use API grade SG or higher grade oil.

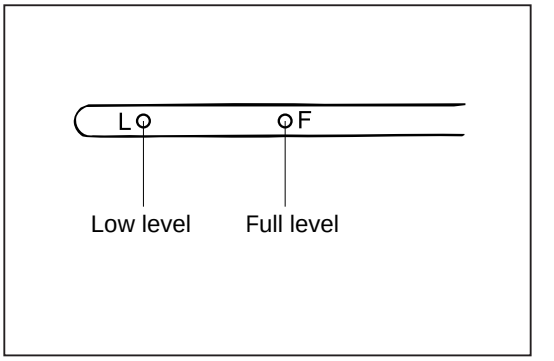
Oil Capacity
With Oil Filter: 3.6 liters
Without Oil Filter: 3.4 liters


JMA00031-00024

(17) Pull out the oil level gauge and wipe off the engine oil.
(18) Reinsert the oil level gauge as far as it will go.
(19) Pull out the oil level gauge again.
(20) Ensure that the engine oil level is between the “L” and “F” levels on the oil level gauge.
If the engine oil level is below the “L” level, replenish the specified engine oil to the “F” level.
(21) Close the oil filler cap.
WARNING:
- Securely close the oil filler cap to the cylinder head cover. Failure to observe this warning will cause engine seizure and fire.



JMA00032-00025

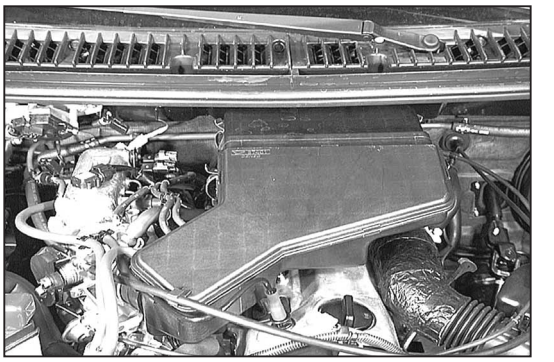


JMA00000-00026

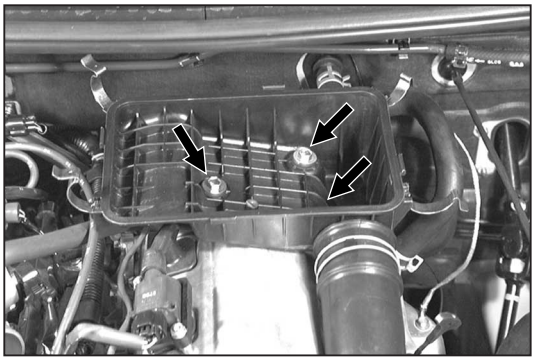
(22) Start the engine.
(23) Warm up the engine to normal operating temperature.
(24) Stop the engine.
(25) After a few minutes, slowly pull out the oil level gauge and wipe off the engine oil.
(26) Reinsert the oil level gauge as far as it will go.
(27) Pull out the oil level gauge again and check to see if the oil level is between “F” and “L” levels.
If the engine oil level is low, replenish the specified engine oil to the “F” level of the oil level gauge.
(28) Reinsert the oil level gauge as far as it will go.

JMA00034-00000

2. Inspection of spark plug
Inspection of electrode
When a megger is available:
(1) Removal of air cleaner
① Disconnect the hoses connected to the air cleaner case cover.
NOTE:
- Prior to the disconnection of the rubber hose, put a tag on each of the rubber hoses so that it may be reconnected correctly to the original position.

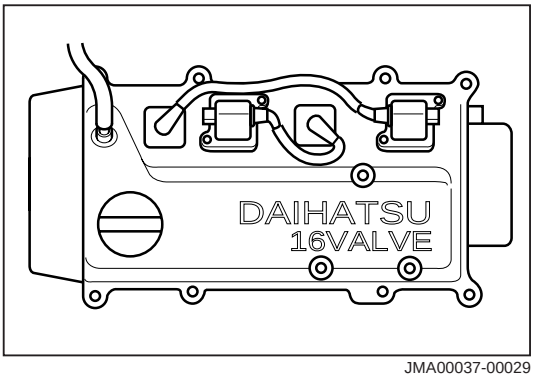

JMA00035-00027

② Displace the hose band of the air duct connected to the throttle body.
③ Unlock the four clips of the air cleaner case cover.
④ Remove the air cleaner element.
⑤ Remove the air cleaner case by removing the three attaching bolts.


JMA00036-00028

(2) Removal of resistive cords and ignition coils
① Disconnect the resistive cord from the ignition coil.
② Remove the No. 1 and No. 3 resistive cords by disconnecting the connectors from the ignition coils and spark plugs.

CAUTION:
- Never disconnect the resistive cords by holding the cord section of the resistive cords.

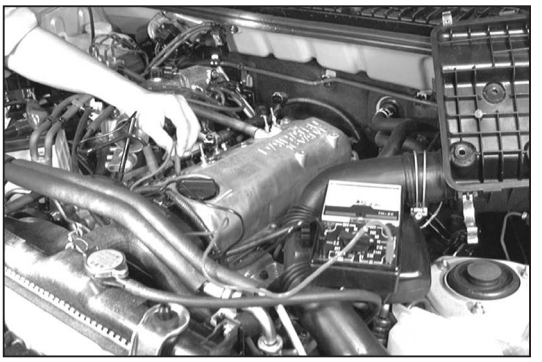


JMA00037-00029

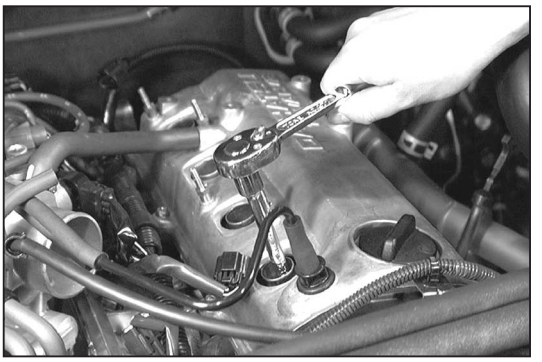
③ Disconnect the connectors from the ignition coils.
④ Remove the ignition coils on the spark plugs of No. 2 and No. 4 cylinders by removing the attaching nuts.

(3) Measurement of insulation resistance
Measure the insulation resistance of each spark plug, using a megger (Insulation resistance meter) and ensure that the measured insulation resistance of each spark plug is more than the specified value.
Minimum Insulation Resistance: 20 MΩ

If the measured insulation resistance is less than 15 MΩ proceed to the step (4) onward.
If the measured insulation resistance is more than the specified value, proceed to the step (4) onward except the step (8).


JMA00038-00030

When a megger is not available:
① Start the engine. Warm up the engine completely.
② Race the engine at 4000 rpm for five seconds.
③ Stop the engine.
④ Remove the air cleaner.(Refer to the removal of the air cleaner.)
⑤ Remove the resistive cords and ignition coils.
(Refer to the check and adjustment of the valve clearance section for the removal of the ignition coil and resistive cord.)
⑥ Remove the spark plug, using a suitable spark plug wrench or the following SST.
SST: 09268-87703-000


JMA00039-00031

WARNING:
- Be very careful not to get scalded with hot spark plugs, since spark plugs are hot.

⑦ Visually inspect the spark plug.
If the electrode is dry: Proceed to the step (6) (Satisfactory)
If the electrode is wet: Proceed to the step (5).

(4) Removal of spark plug
(Refer to the step (3)–6 above.)

(5) Visual inspection of spark plug
Visually inspect the spark plug for electrode wear, damage in threads or insulation.
Replace the spark plug if it exhibits any damage.
Recommended Spark Plug:

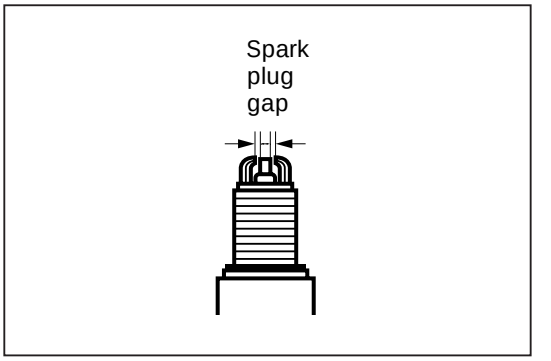
DENSO	NGK
K20TNR-S	BKUR6EK
K22TNR-S	BKUR7EK

CAUTION:
- All four spark plugs used for one engine should have the same heat range and be ones manufactured by the same manufacturer.
- Follow the information label in the engine compartment for selecting the spark plugs. Failure to observe this caution may cause problems.

JMA00040-00000

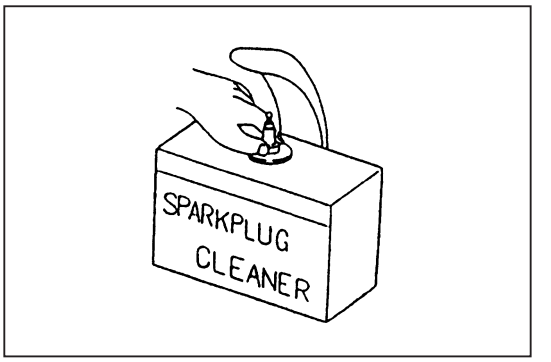
(6) Inspection of electrode gap
Measure the electrode gap, using a plug gap gauge.
Electrode Gap: 0.9 - 1.0 mm

If the electrode gap of a used spark plug is not within the specification, replace the spark plug with a new one.
If the electrode gap of a new spark plug is not within the specification, adjust the gap by bending the base of the ground electrode, being careful not to touch the tip.



JMA00041-00032

(7) Cleaning of spark plug
If the electrode has traces of wet carbon, dry the electrode and clean it with a spark plug cleaner.
Air Pressure: Not to exceed 588.4 kPa (6 kgf/cm^2)
Duration of Cleaning: Not more than 20 seconds.

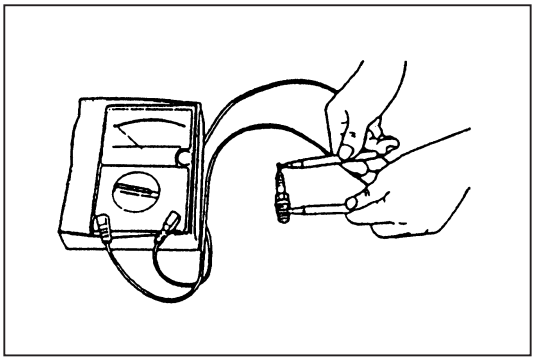


JMA00042-00033

NOTE:
- If there is trace of oil, remove it with gasoline before the spark plug is cleaned by the spark plug cleaner.

(8) Inspection of spark plug insulation resistance
Ensure that the insulation resistance of the spark plug is more than the specified value.
Minimum Insulation Resistance: More than 20 MΩ

If the insulation resistance is less than the specified value, replace the spark plug with a new one.



JMA00043-00034

CAUTION:
- All four spark plugs used for one engine should have the same heat range and be ones manufactured by the same manufacturer.

(9) Installation of spark plug
Install the spark plugs. Tighten them to the specified tightening torque, using a suitable spark plug wrench or the following SST.
SST: 09268-87703-000
Tightening Torque: 14.7 - 21.6 N·m (1.5 - 2.2 kgf-m)

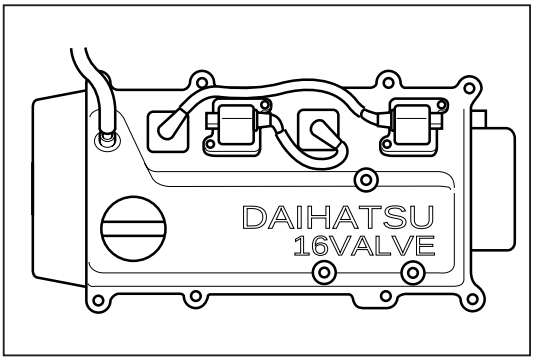

JMA00044-00035

NOTE:
- Since the insulator strength of a small spark plug is comparatively smaller than that of a regular spark plug, when tightening, be sure to use the tool exclusively used for this application. Also, when tightening, never use the wrench in a crooked way.

(10) Installation of ignition coils
Install the ignition coil on the No. 2 and No. 4 spark plugs with the attaching nuts and tighten the nuts to the specified tightening torque.
Tightening Torque: 8.5 N·m (0.85 kgf-m)

CAUTION:
- Never damage the boot section of the ignition coils by interfering with the cylinder head cover.

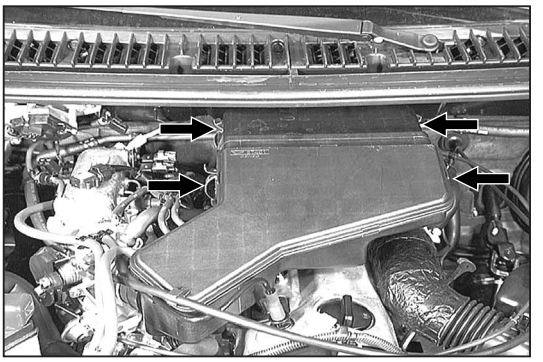
(11) Connect the ignition coil connectors to the ignition coils properly.
(12) Connect the resistive cords to the spark plugs and ignition coils properly as shown in the figure.



JMA00045-00036

NOTE:
- Never interfere the resistive cord with the ignition coils and attaching nuts of the ignition coils.
- Never bend or twist the resistive cord beyond what is necessary.

(13) Clamp the resistive cord to a clamp provided on the ignition coil as shown.
(14) Installation of air cleaner
① Install the air cleaner case to the cylinder head cover and throttle body with the three attaching bolts and tighten the attaching bolts properly.
② Attach the hose band of the air cleaner duct which is connected to the throttle body.
③ Install the air cleaner element on the air cleaner case.
④ Install the air cleaner case cover and secure the four clips.
⑤ Connect the rubber hoses to the air cleaner case cover.


JMA00046-00037

3. Inspection and adjustment of valve clearance

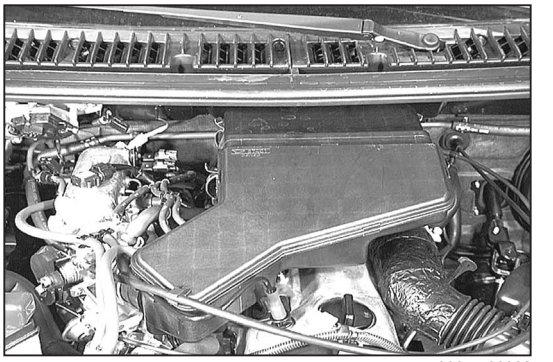
The measurement and adjustment of the valve clearance are carried out when each piston of the No. 1 and No. 4 cylinders is set to the top dead center at the end of compression stroke.

WARNING:

- Never burn yourself with hot engine components,etc. during operation.

CAUTION:

- The valve clearance adjustment is performed normally when the engine is in a hot condition.
- “HOT engine condition” denotes a condition in which the cooling water temperature is 75 - 85°C and the engine oil temperature is above 65°C.
  However, when the engine has been overhauled, it is necessary to adjust the valve clearances while the engine is cold and to readjust the valve clearance in a hot condition after warming up the engine.

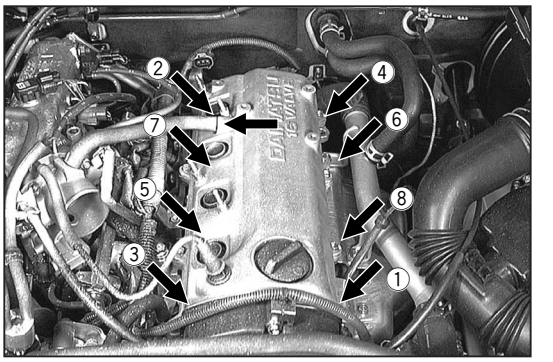


JMA00047-00038

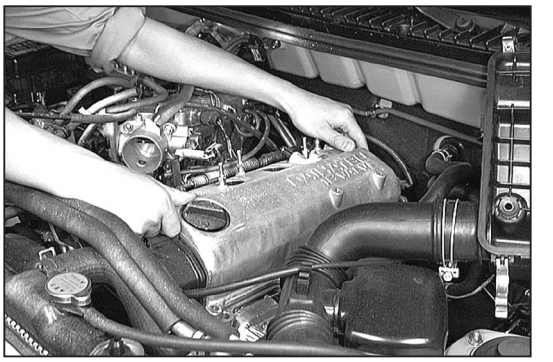
(1) Warm up the engine thoroughly. (Only when necessary.)
(2) Remove the air cleaner.
  (Refer to the Inspection of spark plug section for removal.)
(3) Remove the resistive cords and ignition coils.
  (Refer to the removal of resistive cords and ignition coil in the inspection of the spark plug section.)
(4) Disconnect the PCV hoses(blow-by gas hose) from the cylinder head cover.
(5) Remove the bolt attaching the timing belt cover to the cylinder head cover.
(6) Loosen the eight attaching bolts (6 mm) shown in the figure over two or three stages in the sequence in the right figure.
(7) Remove the cylinder head cover by removing the attaching bolts.

CAUTION:

- Never damage the spark plug grommets of the spark plug tubes and cylinder head cover gasket during the removal of the cylinder head cover.



JMA00048-00039



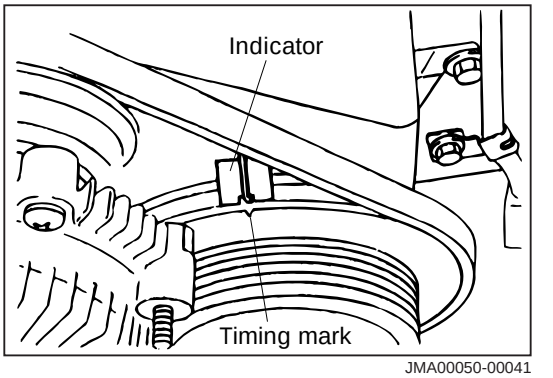
JMA00049-00040

(8) Inspection and adjustment of valve clearances

CAUTION:

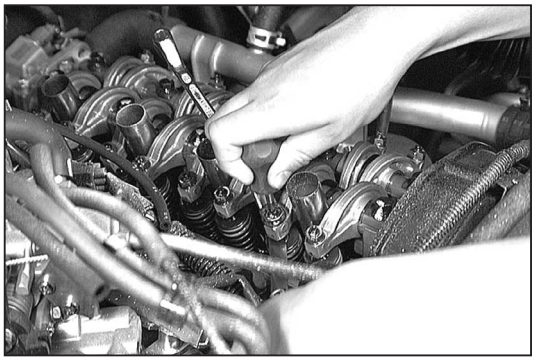
- Before the adjusting screw is tightened with lock nuts, apply engine oil to between the lock nut and the valve rocker arm.

  ① Remove the engine undercover by removing the six attaching bolts.
  ② Turn the crankshaft until the recessed mark on the crankshaft pulley is aligned with the indicator mark on the timing belt cover.



JMA00050-00041

③ Check to see if the valve rocker arms of the No. 1 cylinder are free or are being pushed. According to the table below, check and adjust the valve clearance, using a thickness gauge.



JMA00051-00042

Pistion position		1	2	3	4
When valve rocker arms of No. 1 cylinder are free: (Piston of No. 1 cylinder is at top dead center under compression stroke)	Inkate	○	○		
	Exhaust	○		○	
When valve rocker arms of No. 4 cylinder are free: (Piston of No. 4 cylinder is at top dead center under compression stroke)	Inkate			○	○
	Exhaust		○		○

NOTE:

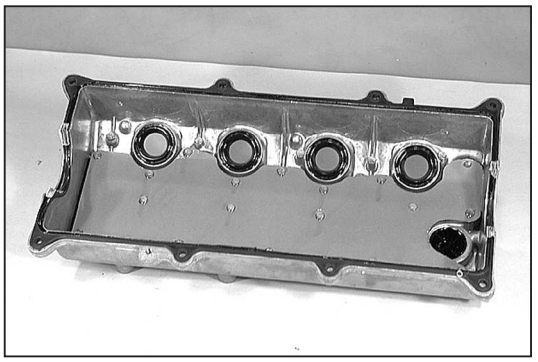
- The “O” mark denotes those valves that can be adjusted under that setting.
  Valve Clearance (HOT)
  Intake: 0.25 ± 0.05 mm
  Exhaust: 0.33 ± 0.05 mm

  (Reference)
  Valve Clearance (COLD)
  Intake: 0.18 mm
  Exhaust: 0.25 mm
  Tightening Torque (Lock nut): 16.7 - 22.6 N·m (1.7 - 2.3 kgf-m)

④ Turn the crankshaft 360 degrees (one turn).
⑤ Proceed to check and adjust the remaining valve clearances.

JMA00052-00000

(8) Installation of cylinder head cover
① Wipe off the oil from the gasket attaching surface of the cylinder head.
② Check the cylinder head cover gasket for evidence of damage.
Replace the gasket, as required.



JMA00053-00043

CAUTION:

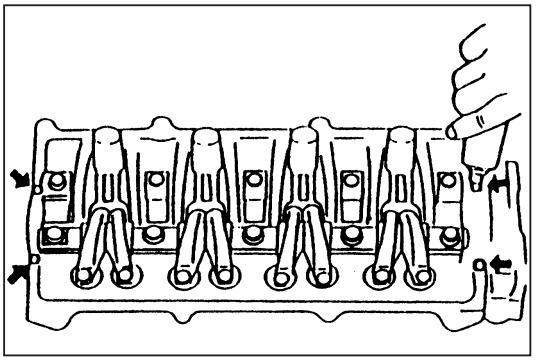
- Install the cylinder head gasket in such a direction that the identification mark may come at the intake side.

③ Check the rubber grommets of the spark plug tubes for evidence of damage.
Replace the rubber grommet, as required.
(For replacement of the rubber grommet, refer to the EM section of the service manual.)
④ Install the cylinder head cover gasket on the cylinder head.

NOTE:

- Install the cylinder head cover gasket in such a direction that the identification mark may come at the intake side.

⑤ Apply the Three Bond® 1104 to the four points on the cylinder head, as indicated in the figure.

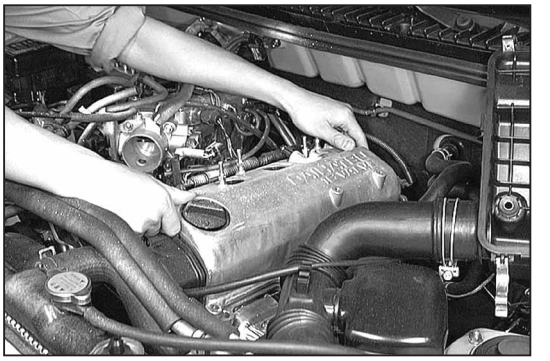


JMA00054-00044

⑥ Install the cylinder head cover on the cylinder head.

NOTE:

- Never damage the rubber grommets for the spark plug tubes during the installation of the cylinder head cover.
- Make sure that the rubber grommet is fitted over the spark plug tube properly.



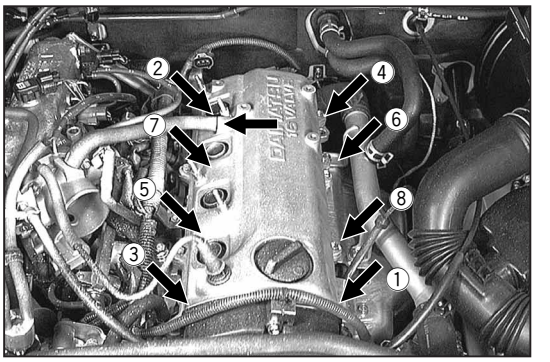
JMA00055-00045

⑦ Install the attaching bolts of the cylinder head cover and tighten them to the specified tightening torque over two or three stages in the sequence shown in the right figure.

Tightening Torque: 2.9 - 4.9 N·m (0.3 - 0.5 kgf-m)

⑧ Install the timing belt attaching bolts with wire clamp and tighten them to the specified tightening torque.

Tightening Torque: 2.0 - 3.9 N·m (0.2 - 0.4 kgf-m)



JMA00056-00046

⑨ Connect the PCV hoses(blow-by gas hose) to the cylinder head cover.

⑩ Install the ignition coils and resistive cords to the spark plugs and ignition coils.
(Refer to installation procedure described in the inspection of spark plug section.)

⑪ Install the air cleaner assembly.
(Refer to installation procedure described in the inspection of spark plug section.)

4. Inspection and adjustment of ignition timing

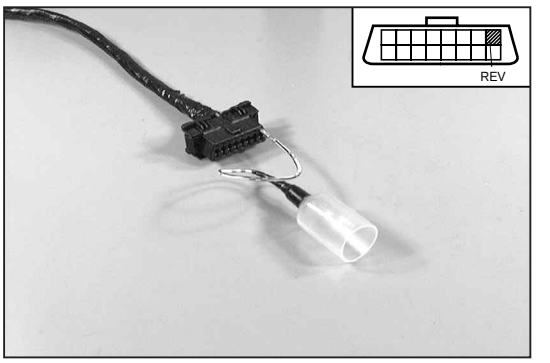
(1) Start the engine.
(2) Warm up the engine.
(3) Stop the engine.
(4) Connection of tachometer

① Connect the following SST to the diagnosis connector.

SST: 09991-87401-000

② Connect the tachometer to the REV (⑧) terminal of the SST, in combination with the following SST.

SST: 09991-87402-000

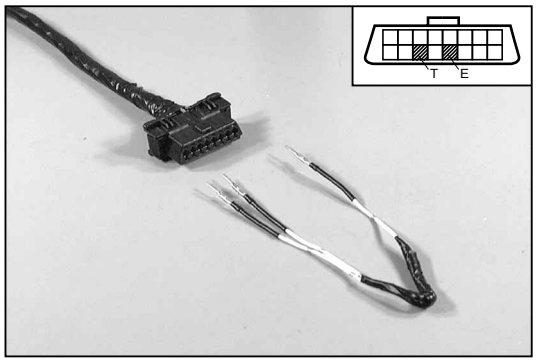


JMA00057-00047

CAUTION:
- Never allow the tachometer terminal to touch ground. It could result in damage of the ignition system.
- As some tachometer are not compatible with this ignition system, it is recommended to confirm the compatibility with your unit before its use.
- Care must be exercised to ensure that no connection is made on terminals except for those specified.
  Even slight contact of the other terminal causes serious malfunction.

JMA00058-00000

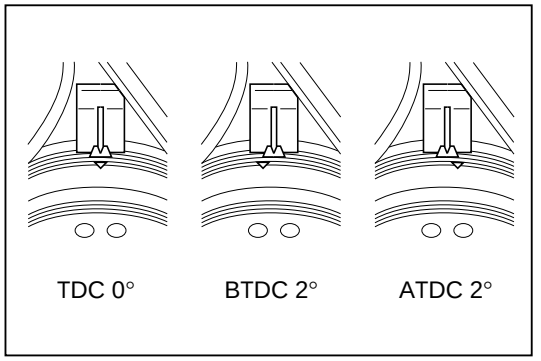
(5) Connect a timing light to the resistive cord of the No. 1 cylinder (at the timing belt side)
(6) Connect the T (⑪) terminal and E (⑬) terminal in the SST which was connected, using the following SST.
  SST: 09991-87403-000



JMA00059-00048

CAUTION:
- Care must be exercised to ensure that no connection is made on terminals other than that specified.
  Even slight contact of the other terminal causes serious malfunction.

(7) Start the engine.
(8) Ensure that the engine revolution speed is stable.
  If the engine revolution speed becomes unstable, proceed to check ISC system.
  (Refer to the EM section.)
(9) Check to see if the ignition timing mark of the crankshaft pulley is aligned with the indicator provided on the timing belt cover, using a timing light.
  If the ignition timing mark on the crankshaft pulley is not aligned with the indicator provided on the timing belt cover, adjust the ignition timing by turning the cam angle sensor attaching position.



JMA00060-00049

(10) Adjustment of ignition timing
  ① Loosen the cam angle sensor attaching bolt.
  ② Adjust the ignition timing to the specified timing by turning the cam angle sensor.
  ③ Tighten the cam angle sensor attaching bolt to the specified tightening torque.
  Tightening Torque : 14.7 - 21.6 N·m (1.5 - 2.2 kgf-m)

  ④ Ensure that the ignition timing is not disturbed by tightening of the attaching bolts of the cam angle sensor.
  Readjust the ignition timing, if the timing is not in the specified position.
(11) Stop the engine.
(12) Remove the tachometer.
(13) Remove the SST from the diagnosis connector.
CAUTION:
- Care must be exercised to ensure that no connection is made on terminals except for those specified.
  Even slight contact of the other terminal causes serious malfunction.

(14) Check the idle speed.
  (See the check of the idle speed procedure in this service manual.)

JMA00061-00000

5. Inspection of dashpot

(For automatic transmission-equipped model only)

Preparation to be made prior to idle speed adjustment

- Check and adjust the ignition timing.
- Check and adjust the idle speed.
- Apply the parking brake fully.
- Warm up the engine thoroughly.
- All accessory switches are turned OFF.
  (On those vehicles equipped with a day-light system, set the light control switch to the first stage, in order to turn OFF the head lights.)
- The air element is installed.
- All vacuum hoses are connected properly.
- Ensure that the intake system exhibits no gas leakage or air admission.
- Ensure that there is no gas leakage.
- Place the shift lever in the “N” or “P” range.
- Place the steering wheel to the straight ahead position and do not operate it during the inspection.

JMA00062-00000

(1) Connection of tachometer
(Refer to the “Inspection and adjustment of ignition timing” section for the connection of tachometer.)

CAUTION :

- Never allow the tachometer terminal to touch ground. It could result in damage of the ignition system.
- As some tachometers are not compatible with this ignition system, it is recommended to confirm the compatibility with your unit before its use.

(2) Start and warm up the engine.

(3) Ensure that the adjusting screw of the dashpot is not in contact with the dashpot shaft when the engine revolution is held at about 2400 ± 100 rpm.
If the adjusting screw of the dashpot is in contact with the dashpot shaft, adjust the height of the adjusting screw.

(4) Ensure that the duration of time from dash pot adjusting screw contacts to the dash pot shaft to engine revolution returns to idle speed is within specified value when the throttle lever released slowly from the engine revolution at 3500 rpm.
Specified Duration: 0.5 - 5.0 seconds.

If the measured duration of time fails to meet with the specified value, replace the dashpot with a new one.
(Refer to the EC section.)

JMA00063-00000

6. Change of engine coolant

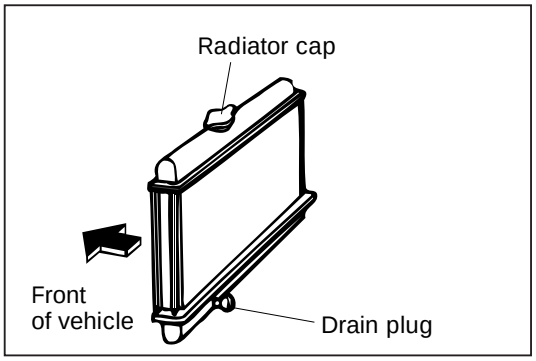
JMA00064-00050

WARNING:
- Never open the radiator cap when the engine is still hot.

CAUTION:
- As regards water to be used as cooling water, use soft water which does not contain salts of minerals, calcium, magnesium, and so forth.
- If the coolant gets to the vehicle body, immediately flush away the coolant, using fresh water.

(1) Ensure that the coolant temperature is nearly the ambient temperature.
(2) Turn the radiator cap one step in an opening direction (counterclockwise direction) until you feel the first clicking.
(3) Lightly press the radiator cap two or three times to release the inner pressure of the radiator.
(4) Close the radiator cap.
(5) Place an adequate container under the drain plug.
(6) Drain the coolant by loosening the drain plug.
(7) Remove the radiator cap.
(8) Drain the coolant in the reserve tank.
(9) Close the drain plug, after draining the coolant.
(10) Fill the water to the radiator and reserve tank.
(11) Start the engine.

NOTE:
- If the water level in the radiator drops, replenish the water.



JMA00065-00051

(12) Close the radiator cap.
(13) Warm up the engine.
(14) Stop the engine.
(15) Cool down the water temperature to the ambient temperature.
(16) Repeat the steps (1) through (15) two or three times.
(17) Ensure that the coolant temperature is nearly the ambient temperature.
(18) Turn the radiator cap one step in an opening direction (counterclockwise direction) until you feel the first resistance.
(19) Lightly press the radiator cap two or three times to release the inner pressure of the radiator.
(20) Close the radiator cap.
(21) Place an adequate container under the drain plug.
(22) Drain the water by loosening the drain plug.
(23) Remove the radiator cap.
(24) Drain the water in the reserve tank.
(25) Replace the O-ring of the radiator drain plug with a new one, after draining the water.
(26) Install the radiator drain plug to the radiator securely.

JMA00066-00052

(27) Slowly pour a proper amount of antifreeze solution into the radiator in accordance with the instruction of the manufacturer of antifreeze solution.

CAUTION:

- Use a good brand of ethylene-glycol base antifreeze solution.

Coolant Capacity:

Automatic Transmission: 5.3 liters
Manual Transmission: 5.4 liters

NOTE:

- The amount above includes 0.6 liter for the reserve tank.

JMA00067-00000

(28) Fill the water to the radiator and reserve tank.
(29) Start the engine.

NOTE:

- If the water level in the radiator drops, replenish the water to the full level.

JMA00068-00053

(30) Close the radiator cap.
(31) Ensure that no water leakage is present.
If water leakage is present, repair the water leakage.
(32) Warm up the engine thoroughly.
(33) Stop the engine.
(34) Cool down the coolant temperature to the ambient temperature.
(35) Ensure that the coolant level in the reserve tank will not decrease.
If the coolant level in the reserve tank decreases excessively or no coolant remains in the reserve tank, check the coolant level in the radiator to see whether the coolant in the radiator is full or not. If not, replenish the water to the radiator, and repeat the steps (30) through (35) again.
(36) Turn the radiator cap one step in an opening direction (counterclockwise) until you feel the first resistance.
(37) Lightly press the radiator cap two or three times to release the inner pressure of the radiator.

JMA00069-00000

(38) Remove the radiator cap.
(39) Ensure that the concentration of antifreeze solution in the radiator meets the instruction of the manufacturer of antifreeze solution by a densitometer.
Adjust the concentration of the antifreeze solution in the radiator according to the instruction of the manufacturer of the antifreeze solution, if the concentration does not meet the instruction of the manufacturer of the antifreeze solution.


JMA00070-00054

(40) Secure the radiator cap.
(41) Drain the water in the reserve tank.
(42) Pour the coolant which is mixed with antifreeze solution and water in accordance with the instruction of the manufacturer of the antifreeze solution.
(43) Secure the reserve tank cap.


JMA00071-00055

CHASSIS

BRAKE FLUID

CHANGE

WARNING:

- Do not mix the different kind and manufacture of brake fluid.
  Recommended brake fluid:
  FMVSS116 DOT3 or SAE J1703

CAUTION:

- If the brake fluid is spilled inadvertently over the paint finish surface of the vehicle or the resin made part, immediately wipe off the brake fluid and flush with fresh water.
- Be sure to follow the draining order of each wheel cylinder. The draining should be performed from the farthermost wheel cylinder from the brake master cylinder, one by one.

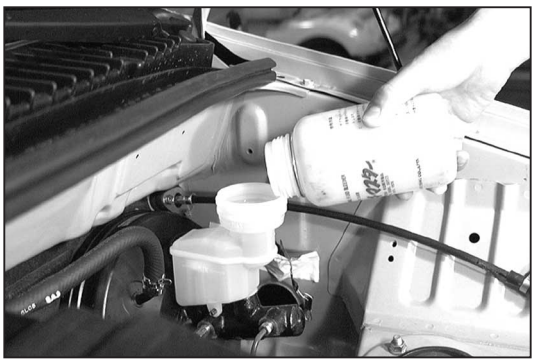
JMA00072-00000

1. Remove the brake bleeder plug cap.
2. Connect the suitable bleeder hose to the bleeder plug.
3. Prepare a suitable container and connect one end of the bleeder hose in the container.
4. Depress the brake pedal and have a person hold it in a depressed state.
5. Slacken the bleeder plug to drain the brake fluid by another person and tighten the bleeder plug temporarily.
6. Repeat the steps 4 to 5 until the brake fluid in the reservoir tank becomes zero.
   However, at this state be very careful not to suck the air into the brake line, except cases where draining of the brake fluid is required.

JMA00073-00056

JMA00074-00057

7. Replenish the new brake fluid into the reservoir tank and maintain the brake fluid level in the reservoir tank at the MAX level during the following operation.
8. Drain the old brake fluid or air from each brake line starting from the farthest wheel cylinder from the master cylinder one by one following the manner mentioned in the steps 4 to 5 repeatedly.
9. Tighten the air bleeder plugs to the specified tightening torque.
   Tightening Torque: 6.9 - 9.8 N·m (0.7 - 1.0 kgf-m)
10. Ensure that no air exists in the brake line by depressing the brake pedal firmly.
    If air is remaining in the brake line, perform the air bleeding by following the procedure described in the steps 4 to 5 repeatedly, until air will be discharged. Then, tighten the bleeder plug to the specified tightening torque.
11. Install the brake bleeder plug cap.



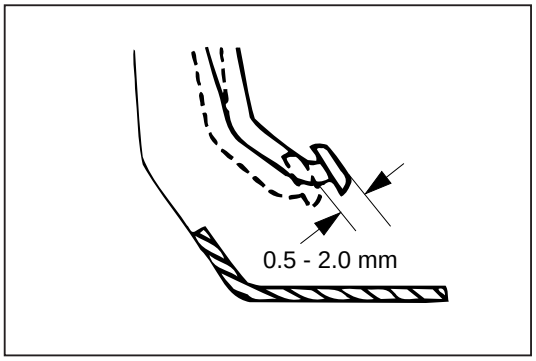
JMA00075-00058

BRAKE PEDAL

FREE PLAY

1. Ensure that the ignition switch is turned OFF.
2. Depress the brake pedal more than five times to release the vacuum saved in the brake booster.
3. Ensure that the specified free play exists on the brake pedal by pushing the brake pedal lightly by hand.
   Free Play: 0.5 - 2.0 mm

   If the free play is not within the specified value, adjust the free play by adjusting the push rod length.
   (Refer to the BR section.)



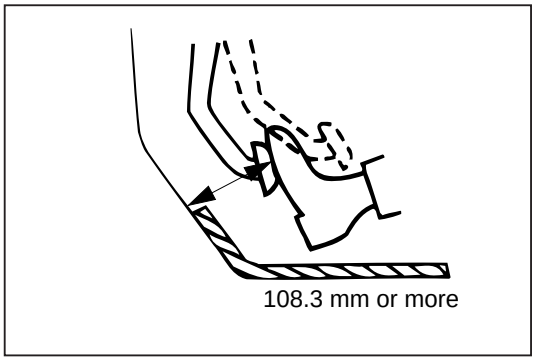
JMA00076-00059

RESERVE TRAVEL

1. Place chocks at the wheels.
2. Place the transmission in the neutral position.
3. Start the engine.
4. Depress the brake pedal with an applying force of 300 N (30 kgf).
   CAUTION:
   - At this stage the hand brake should not be applied.

5. Measure the distance between the position where the brake pedal pad upper surface is depressed and the floor panel as shown.
6. Ensure that the reserve travel meets with the specification.
   Reserve Travel: 108.3 mm or more

   If the reserve travel fails to meet with the specification, check/ adjust or repair the brake shoe clearance as necessary.
   (Refer to the BR section.)



JMA00077-00060

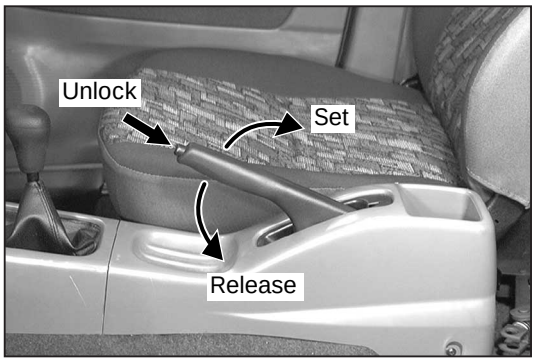
JMA00078-00000

PARKING BRAKE HANDLE

WORKING TRAVEL

1. Chock the wheels.
2. Ensure that the number of notches is within the specified value when the parking brake handle is pulled with a force of 196 N (20 kgf) by hand.
   Specified Number of Notches: 5 to 7

   If the working travel fails to meet with the specification, adjust the parking brake handle working travel to the specified value.
   (Refer to the BR section in this service manual.)
3. Ensure that the parking brake handle rachet operates properly and retains the handle at each notch position properly and will not be skipped or jumped.
   If any trouble exists, replace the parking brake handle with a new one.
   (Refer to the BR section.)



JMA00079-00061

INSPECTION OF EFFECTIVENESS

Check to see if the vehicle can be retained in a stationary state on a dry slope with a grade of 1/5 when the parking brake is applied fully.
If not, check and repair the rear brake system.

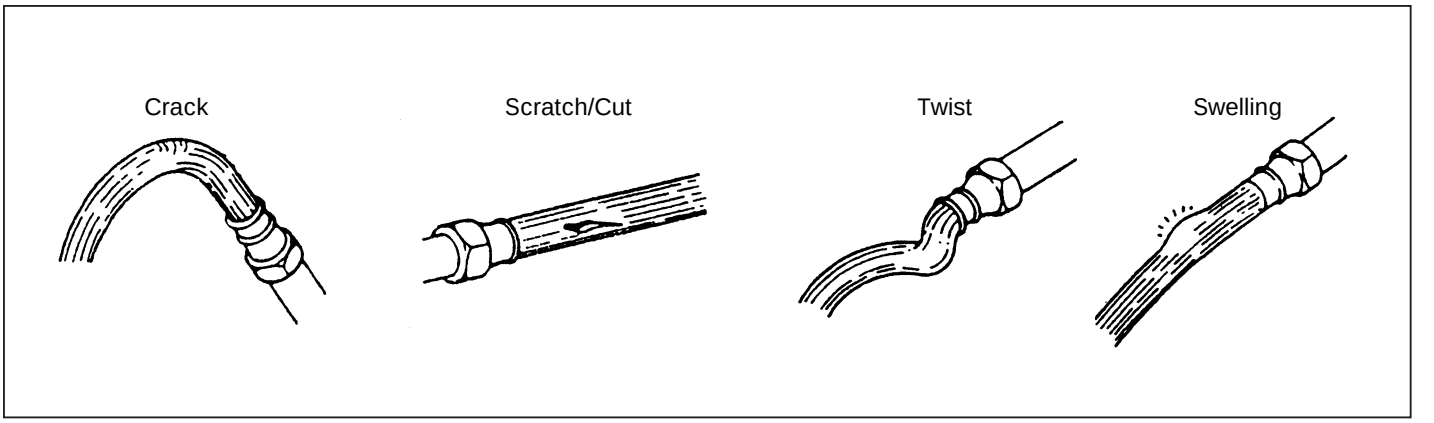
JMA00080-00000

BRAKE HOSE & TUBE

LEAKAGE, LOOSE CLAMP AND DAMAGE

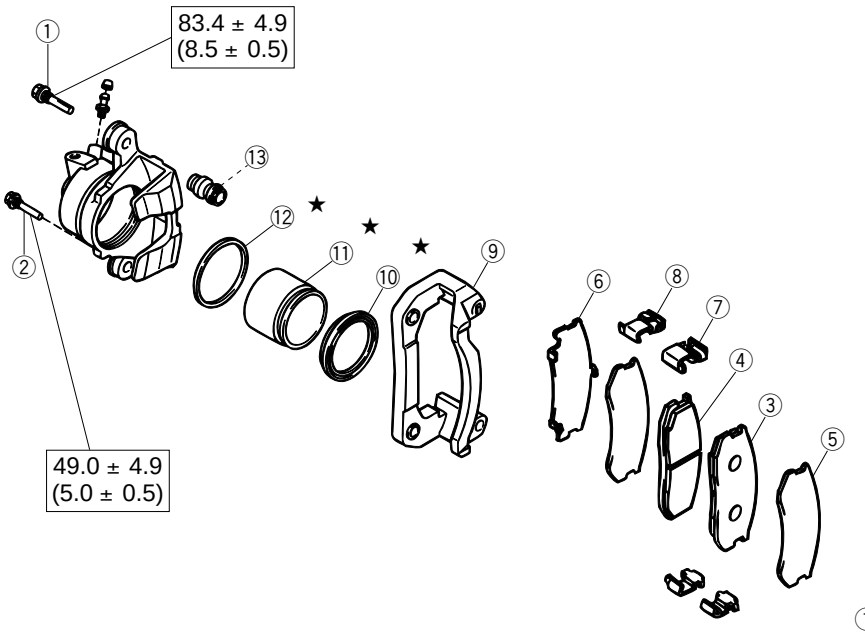
Inspect the following points. If any problem is found, repair them, as required.

1. Hoses and tubes for scratches or cracks.
2. Hoses for aging such as deformation or swelling.
3. Tubes for corrosion or rusting.
4. Tube clamps and related parts for tightness, rattle or damage.
5. Connection for fluid leakage.
6. Hoses for extreme bending, twisting or pulling.



JMA00081-00062

FRONT BRAKE
COMPONENTS



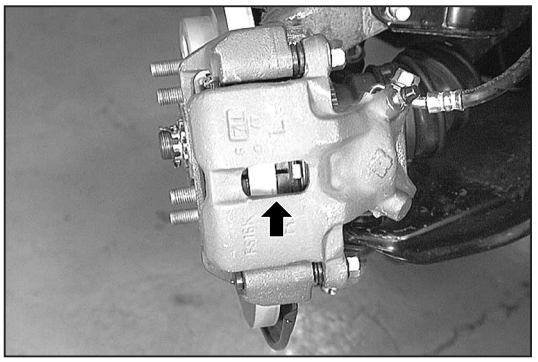
① Cylinder slide main pin
② Cylinder slide sub-pin
③ Disc brake No. 1 pad
④ Disc brake No. 2 pad
⑤ Anti-squeal shim
⑥ Shim
⑦ Disc brake pad guide No. 2 plate
⑧ Disc brake pad guide plate
⑨ Disc brake cylinder mounting (R, L)
⑩ Cylinder boot
⑪ Front disc brake piston
⑫ Piston seal
⑬ Pin boot

JMA00082-00063

INSPECTION OF BRAKE PAD THICKNESS

1. Jack up the vehicle and support the vehicle with safety stands.
   (Refer to the GI section.)
2. Remove the front wheel.
3. Check the brake pad thickness through the inspection hole provided on the caliper as shown.
   Brake Pad Thickness:
   Standard Thickness: 10 mm
   Minimum Thickness: 1 mm

   If the brake pad thickness is less than the specified value or the wear indicator emits a warning sound, replace the brake pad with a new one.
   (Refer to the BR section.)
   CAUTION:
   - Be sure to replace the right and left side brake pads as a set. Failure to observe this caution may lead to side pull of the brake function.

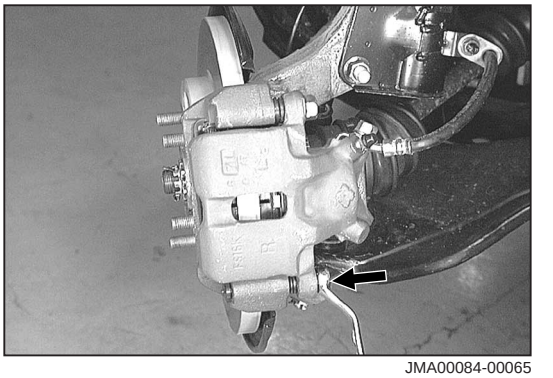


JMA00083-00064

4. Install the front wheel.
   (Refer to FS section.)

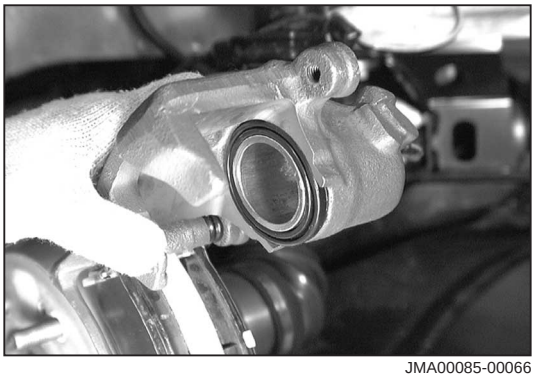
INSPECTION OF FRONT BRAKE RUBBER PARTS AND BRAKE PAD FOR DAMAGE

1. Jack up the vehicle and support the vehicle with safety stands.
2. Remove the front wheel.
3. Remove the sub-cylinder slide pins.



JMA00084-00065

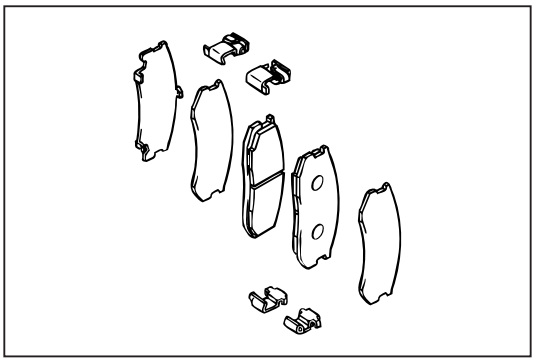
4. Turn up the disc brake assembly as shown.
   CAUTION :
   - Never pull the brake hoses not more than necessary.



JMA00085-00066

5. Ensure that no damage exists on the cylinder boot.
   If any damage exists, replace the cylinder boots and piston seal with new ones as a set.
   (Refer to the BR section.)
6. Ensure that no leakage of brake fluid exists from the disc brake cylinder, piston and around the cylinder boot.
   If any leakage exists, replace the piston seal and cylinder boot with new ones.
   (Refer to the BR section.)

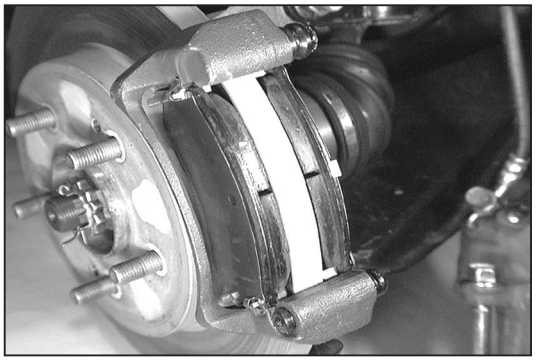
7. Inspect the disc pads and disc brake pad-related parts for damage.
   If any damage is found, replace the damaged part, as required.
   (Refer to the BR section for details.)
8. Ensure that no damage exists on the disc brake pad guide plates, disc brake pad guide No. 2 plates, disc pads, shims and anti-squeal shims.
   If any damage exists, replace the damaged parts with new ones.
9. Install the disc brake pad guide plates, disc brake pad guide No. 2 plates, disc pads, shims and anti-squeal shims as shown.
   CAUTION :
   - Prior to installation, apply brake grease to the sliding surface of the component parts.



JMA00086-00067

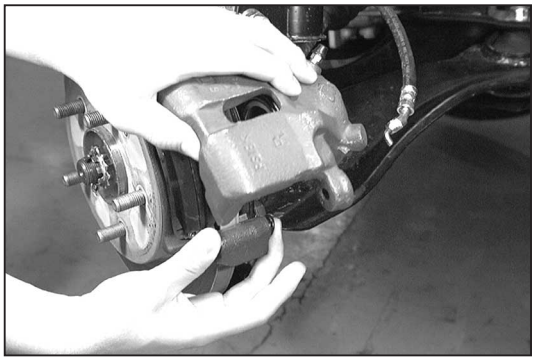
10. Ensure that no damage exists on the pin boots.
    If any damage is present, replace the pin boots with new ones.
    (Refer to the BR section.)

11. Ensure that the brake pads, anti-squeal shims and pad guide plates are installed properly.
    CAUTION:
    - Be very careful not to deform or lose the anti-squeal shims.

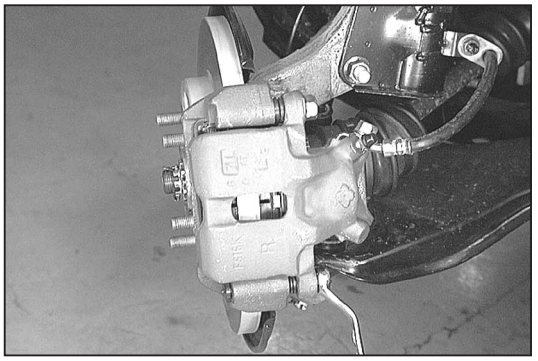

JMA00087-00068

12. Thinly apply the brake rubber grease to the sub-cylinder slide pin boot.

13. Turn over the disc brake assembly onto the disc brake pads while pushing the pin boots of the sub-cylinder slide pin by finger.
    CAUTION :
    - Never pull the brake hoses not more than necessary.
    - Never damage the pin boots during the operation.
    - Never interfere with the disc brake cylinder assembly with the brake pads and anti-squeal shims during the installation


JMA00088-00069

14. Thinly apply the brake rubber grease to the sliding surface of the sub-cylinder slide pin.
15. Install the sub-cylinder slide pin of the disc brake cylinder assembly to the disc brake mounting.
    CAUTION:
    - Be very careful not to damage the pin boot during the assembly.


JMA00089-00070

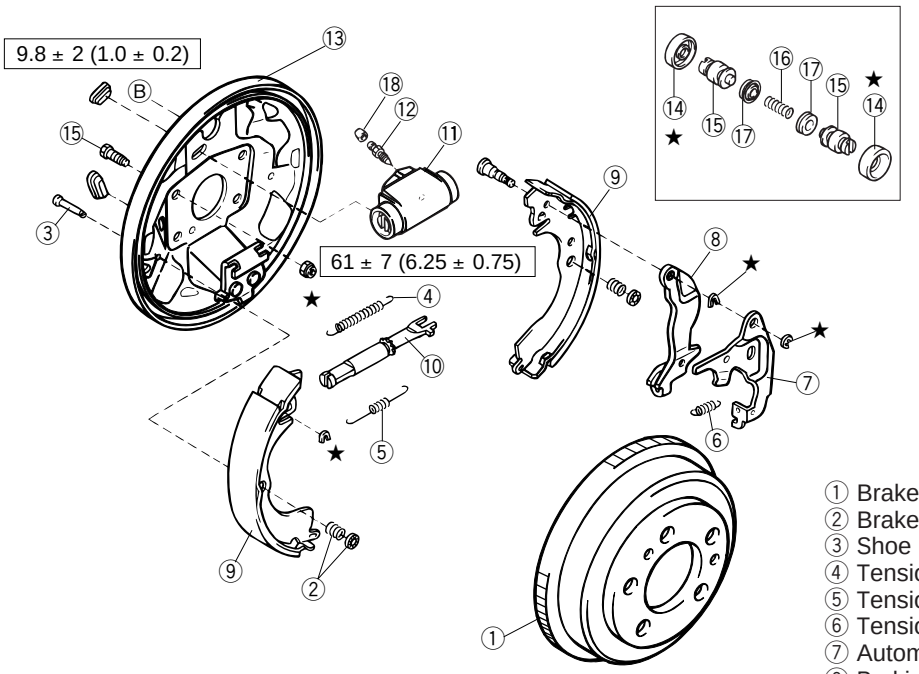
16. Tighten the sub-slide pin to the specified tightening torque.
    Tightening Torque: 44.1 - 53.9 N·m (4.5 - 5.5 kgf-m)
17. Depress the brake pedal more than 10 times.
18. Check to see if the brake disc can rotate smoothly.
19. Ensure that no abnormal sound is emitted or no drag exists when the wheel is rotated.
20. Install the front wheels with the attaching nuts and tighten them evenly in two or three stages to the specified tightening torque.
    Tightening Torque: 88.2 - 117.6 N·m
    (9.0 - 12.0 kgf-m)

21. Check effectiveness of the brake with a brake tester.

JMA00090-00000

REAR BRAKE

COMPONENTS



□ : Tightening torque
Unit : N·m (kgf-m)
★ : Non-reusable parts

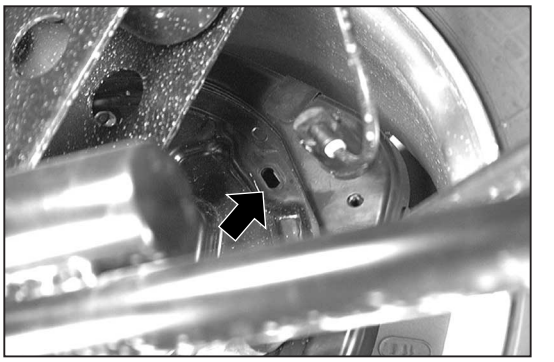
① Brake drum subassembly
② Brake shoe hold down spring
③ Shoe hold down spring pin
④ Tension No. 4 spring
⑤ Tension No. 3 spring
⑥ Tension spring
⑦ Automatic adjust lever (R, L)
⑧ Parking brake shoe lever subassembly (R, L)
⑨ Brake shoe assembly
⑩ Parking brake shoe strut
⑪ Rear wheel brake cylinder assembly
⑫ Bleeder plug
⑬ Brake backing plate subassembly
⑭ Wheel cylinder boot
⑮ Wheel brake cylinder piston
⑯ Compression spring
⑰ Cylinder cup
⑱ Bleeder plug cap

JMA00091-00071

INSPECTION OF BRAKE LINING THICKNESS

1. Jack up the vehicle and support it with safety stands. (Refer to the GI section.)
2. Remove the hole plug provided on the backing plate as shown in the figure.
3. Inspect that the thickness of the brake shoe lining is more than the specified value through the inspection hole.
   Thickness of Brake Lining
   Standard Thickness: 5 mm
   Minimum Thickness: 1 mm

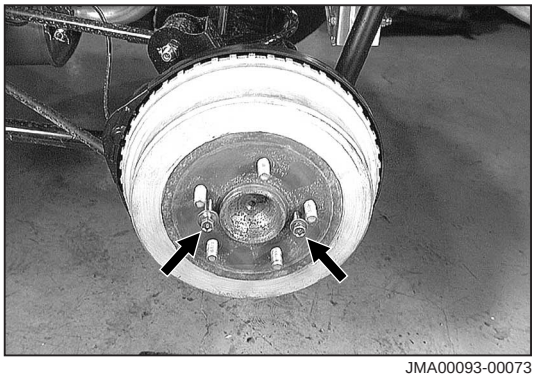
   Replace the brake shoe, if the lining thickness is less than the specified value.
   If the brake lining is less than the specified value, check the brake drum inner diameter.
   (Refer to the BR section.)
4. Install the hole plug securely.
   CAUTION:
   - Be sure to install the hole plug securely. Failure to observe this caution may lead to rear brake problems owing to admission of dust, mud, water, etc.



JMA00092-00072

INSPECTION OF WHEEL CYLINDER FOR LEAKAGE

1. Jack up the vehicle and support it with safety stands.
   (Refer to the GI section.)
2. Remove the wheels.
3. Release the parking brake fully.
4. Remove the rear brake drum from the rear axle hub by pulling it out.
   NOTE:
   - If any difficulty is encountered in removing the brake drum, screw in the 8 mm bolts to the brake drum evenly.
   - The bolt hole is of the offset type. Therefore, after tightening the bolt to a certain extent, make the brake drum float evenly by lightly tapping the brake drum with a plastic hammer or the like.



JMA00093-00073

5. Ensure that no damage exists on the brake shoe lining surfaces.
   If any damage is found, replace the brake shoes with new ones.
   (Refer to the BR section.)
   CAUTION :
   - Replacement should be performed for the right and left side shoes as a set.

JMA00094-00074

6. Ensure that no brake fluid leakage exists around the wheel cylinder boots.
   Replace the piston cups and cylinder boots if brake fluid leakage exists.
   (Refer to the BR section.)

JMA00095-00000

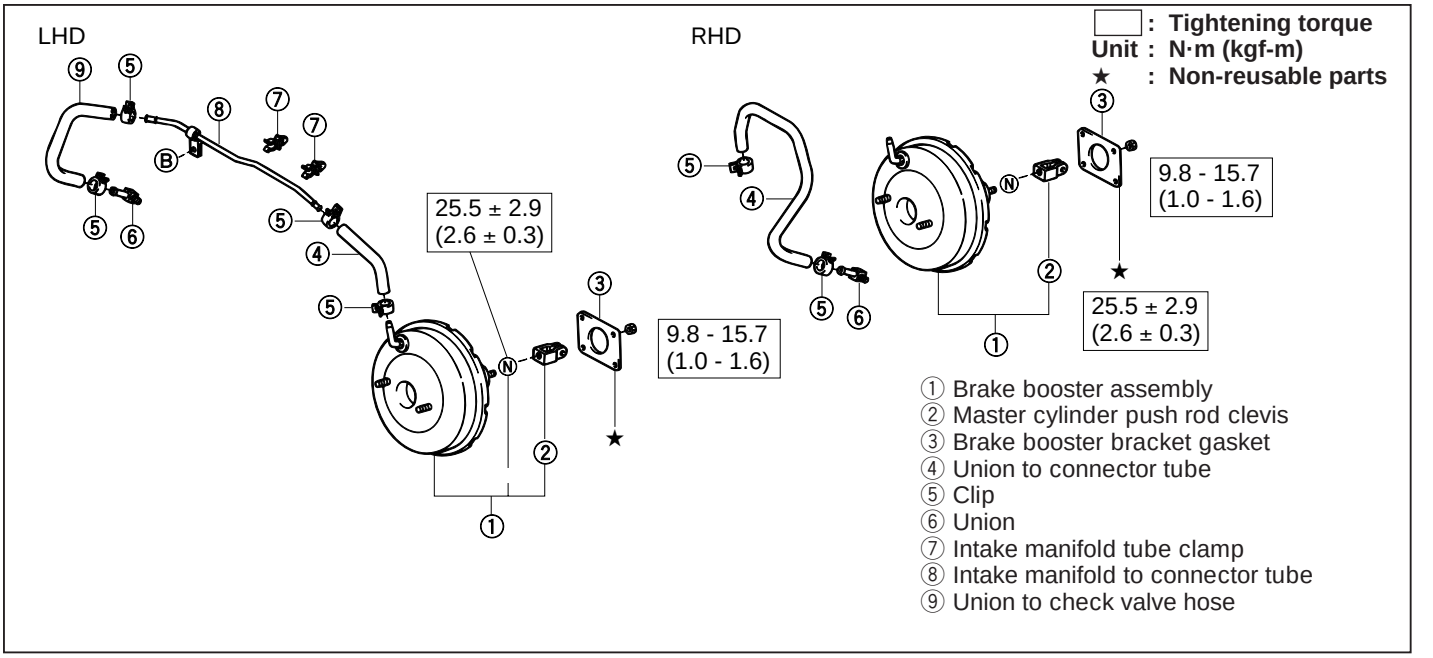
7. Clean the attaching surface of the brake drum and rear axle hub.
8. Install the brake drum on the rear axle hub.
9. Clean the attaching surface of the brake drums and wheels.
10. Install the wheels and tighten the attaching bolts to the specified tightening torque.
    Tightening Torque: 103.0 ± 14.7 N·m (10.5 ± 1.5 kgf-m)

JMA00096-00075

11. Apply the brake pedal fully several times until the clicking sound is emitted.
12. Ensure that the brake drum turns lightly without being caught.
13. Check effectiveness of the rear brake with a brake tester.

BRAKE BOOSTER HOSE

COMPONENTS



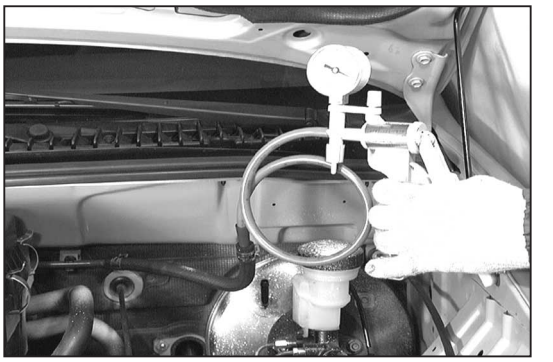
JMA00097-00076

CHECK OF VACUUM HOSE

1. Visually check vacuum hose for aging, cracks, scratches or cut.
   If any damage exists, replace the vacuum hose with a new one.
2. Disconnect the vacuum hose from the brake booster.
3. Ensure that the negative pressure is retained when applying negative pressure to the disconnected hose.
   If not, replace the vacuum hose with a new one.

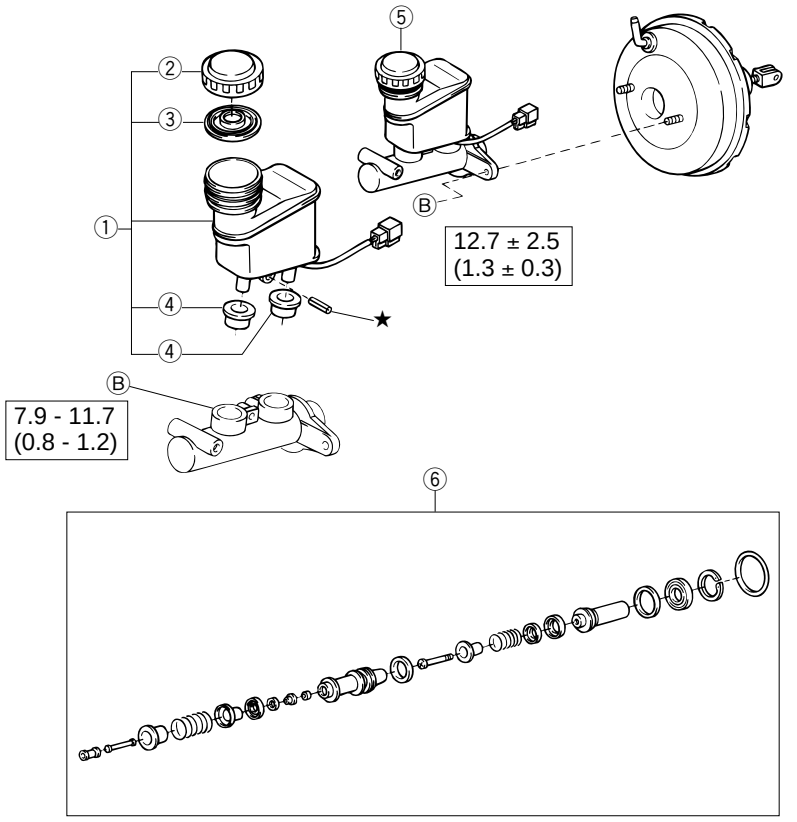
JMA00098-00077

4. Ensure that the air continuity exists when air is blown into the vacuum hose from the brake booster side.
   If not, replace the vacuum hose with a new one.
5. Connect the vacuum hose to the brake booster.
6. Install new hose bands.
   CAUTION :
   - Never reuse the removed hose bands.
   - Insert the vacuum hose up to the spool of the brake booster.



JMA00099-00078

BRAKE MASTER CYLINDER
COMPONENTS



□ : Tightening torque
Unit : N·m (kgf-m)
★ : Non-reusable parts

① Brake master cylinder reservoir tank
② Reservoir filler cap
③ Reservoir diagram
④ Grommet
⑤ Brake master cylinder assembly
⑥ Tandem master cylinder repair kit

JMA00100-00079

INSPECTION OF BRAKE MASTER CYLINDER FOR FLUID LEAKAGE

1. Ensure that no brake fluid leakage exists from the grommet sections on the brake master cylinder.
   If leakage exists, replace the grommet with a new one.
   (Refer to the BR section.)
2. Disconnect the connecter of the brake fluid level switch.
3. Drain the brake fluid from the master cylinder.
   (Refer to the “brake fluid change” section.)
4. Place a suitable piece of cloth under the master cylinder to prevent the brake fluid from being splashed on the painted surface.
5. Disconnect the brake pipes from the master cylinder.
   CAUTION:
   - If the brake fluid is spilled inadvertently over the paint-finish surface of the vehicle or resin made parts, immediately wipe off the brake fluid and wash with fresh water.
6. Remove the master cylinder by removing the attaching nuts.

JMA00101-00080

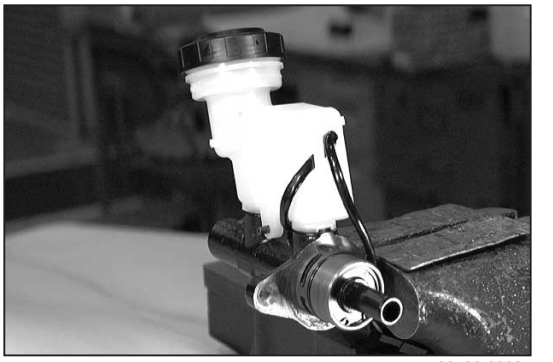
7. Secure the master cylinder in a vise.
8. Ensure that no brake fluid leakage exists around the piston guide section of the brake master cylinder.
   If any brake fluid leakage exists, replace the brake master cylinder pistons with piston cups(repair kit) with new ones. (Refer to the BR section.)
9. Clean the master cylinder attaching surface of the brake booster.
10. Replace the O-ring of the brake master cylinder with a new one.
    CAUTION:
    - Never make scratches on the O-ring during the installation.

11. Thinly apply brake rubber grease to the O-ring on the brake master cylinder.
12. Install the master cylinder to the brake booster with the attaching nuts. Then, tighten the attaching nuts evenly to the specified tightening torque.
    Tightening Torque: 12.7 ± 2.5 N·m (1.3 ± 0.26 kgf-m)

    WARNING:
    - Be sure to perform the adjustment of the brake booster push rod height if any inner part of the master cylinder has been replaced. (Refer to the BR section.)
      Failure to observe this warning may lead to damage or malfunction of the brake system.

13. Connect the brake pipes to the master cylinder and tighten the flare nuts to the specified tightening torque.
    Tightening Torque: 13 - 18 N·m (1.3 - 1.8 kgf-m)

14. Connect the brake fluid level switch connector.
15. Perform the air bleeding of the brake system.
    (Refer to the “Brake fluid change” section.)
16. Perform the brake performance test with a brake tester.

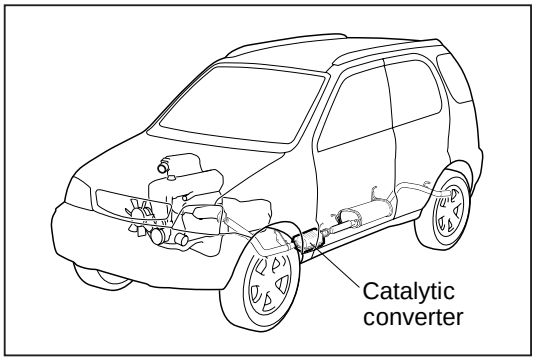


JMA00102-00081

JMA00103-00082

MUFFLER AND EXHAUST PIPE

DAMAGE & TIGHTNESS



JMA00104-00083

1. Visually check that the exhaust pipes and mufflers for damage and exhaust gas leakage. Also ensure that there is no possibility of interference with any other parts.
   WARNING
   - Never perform this check when the exhaust system is hot.

   If any damage or gas leakage exists, repair or replace the parts as necessary.
2. Check that the muffler support of the exhaust pipe and muffler as well as their connecting section for looseness, using a suitable wrench or rock them by hand.
   WARNING:
   - Never perform this check when the exhaust system is hot.
   - Be careful not to burn yourself during inspection.

   If any damage or looseness is found, repair or replace parts as necessary.

JMA00105-00000

AUTOMATIC TRANSMISSION

FLUID CHANGE

JMA00106-00084

1. Place a suitable container under the drain plug.
2. Drain the transmission fluid by removing the drain plug.
3. Install the drain plug with a new gasket interposed and tighten the drain plug with the specified tightening torque.
   Tightening Torque: 19.6 - 29.4 N·m (2.0 - 3.0 kgf-m)

   CAUTION:
   - Never reuse the used gasket.

4. Fill the specified automatic transmission fluid to the automatic transmission.
   Specified Automatic Transmission Fluid:
   DEXRON® Ⅱ or Ⅲ
   Capacity: 1.7 liters (Drain and refill)

5. Check the fluid level.
   CAUTION:
   - Inspection should be performed when the fluid temperature is between 70 - 80°C.
     Be very careful not to scald yourself with hot transmission fluid or other parts in the engine compartment.

   (1) Park the vehicle on a level surface and apply the parking brake fully.
   (2) With the engine idling, move the shift lever from the P range to the L range, and return it to the P range.
   (3) Pull out the dipstick and wipe it clean. Then insert the dipstick and pull it out again. Ensure that the fluid level is between the upper and lower levels in the hot range of the oil level gauge.
   If the fluid level is less than the lower level, add the specified automatic transmission fluid to the upper level of the dipstick. Then, recheck the fluid leakage.

JMA00107-00000

CHECK OF OIL COOLER HOSE

Inspect the following points. If any problem is found, repair them, as required.

1. Hoses and tubes for scratches or cracks.
2. Hoses for aging such as deformation and swelling.
3. Tubes for corrosion or rusting.
4. Tube clamps and related parts for tightness, rattle or damage.
5. Connection for fluid leakage.
6. Hoses for extreme bending, twisting or pulling.

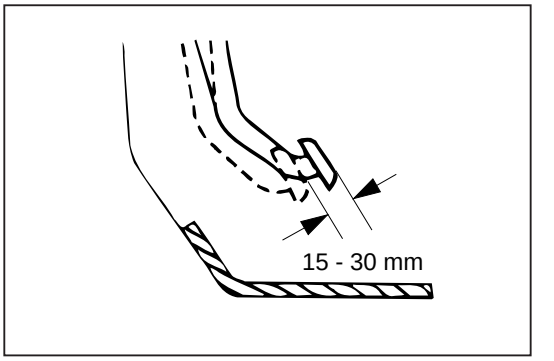
CLUTCH

FREE PLAY

1. Lightly depress the clutch pedal by hand,until you feel resistance. Then, measure the free play.
   Specified Clutch Pedal Free Play: 15 - 30 mm

   If the clutch pedal free play fails to meet with the specification, adjust the clutch pedal free play to the specified value.
   (Refer to the CL section.)

JMA00108-00000

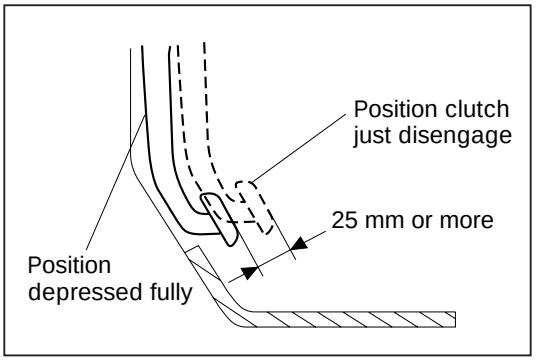


JMA00109-00086

RESERVE TRAVEL

1. Start the engine.
2. Ensure that the difference of clutch pedal upper surface height at clutch pedal depressed fully and clutch pedal positioned at point where the clutch just disengage is conforms to the specified value.
   Specified Reserve Travel: 25 mm or more

   If the reserve travel fails to conform to the specification, adjust the reserve travel by adjusting the free play or replace the clutch disc, clutch cover and related damaged parts, as required.
   (Refer to the CL section.)



JMA00110-00087

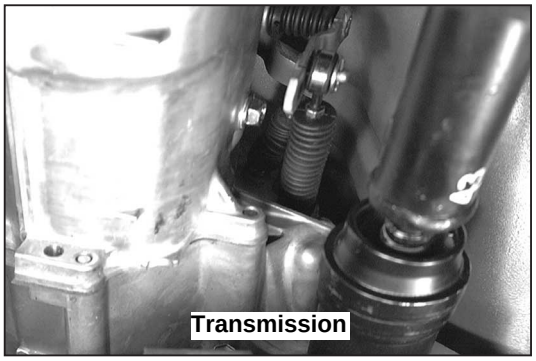
MANUAL TRANSMISSION, TRANSFER, FRONT AND REAR DIFFERENTIAL

OIL CHANGE

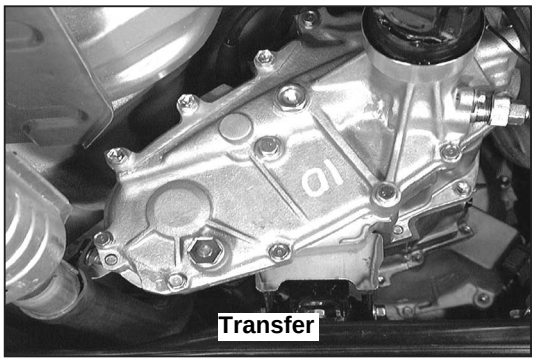
1. Place a suitable container under the drain plug.
2. Drain the oil by removing the drain plug.
3. Remove the filler plug.
4. Reinstall the drain plug with a new gasket interposed and tighten it to the specified tightening torque.
   - Tightening Torque
     - Manual Transmission:
       - 30 - 49 N·m (3.0 - 5.0 kgf-m)
     - Transfer:
       - 30 - 49 N·m (3.0 - 5.0 kgf-m)
     - Front Differential:
       - 49 ± 9.8 N·m (5.0 ± 1.0 kgf-m)
     - Rear Differential:
       - 53.9 - 68 N·m (5.5 - 7.0 kgf-m)

5. Fill the specified oil, until the oil begins to overflow from the oil filler hole.
   - Specified Oil:
     - Manual Transmission
       - Grade: API GL-3 or GL-4
       - Viscosity: SAE 75W-85 or 75W-90
       - Capacity: 2.2 liters (With transfer)
     - Transfer (For automatic transmission)
       - Grade: API GL-3 or GL-4
       - Viscosity: SAE 75W-85 or 75W-90
       - Capacity: 1.6 liters
     - Front Differential
       - Grade: API GL-5
       - Viscosity: SAE 80W-90
       - Capacity: 0.7 liter
     - Rear Differential (Conventional)
       - Grade: API GL-5
       - Viscosity: SAE 80W-90
       - Capacity: 1.55 liters
     - Rear Differential (LSD)
       - Grade: API GL-5
       - Viscosity: SAE 80W-90 LSD
       - Capacity: 1.55 liters

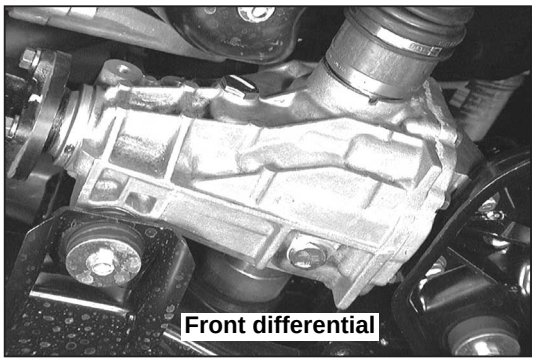
6. Install the filler plug with a new gasket interposed and tighten it to the specified tightening torque.
   - Tightening Torque
     - Manual Transmission:
       - 30 - 49 N·m (3.0 - 5.0 kgf-m)
     - Transfer:
       - 30 - 49 N·m (3.0 - 5.0 kgf-m)
     - Front Differential:
       - 49 ± 9.8 N·m (5.0 ± 1.0 kgf-m)
     - Rear Differential:
       - 53.9 - 68 N·m (5.5 - 7.0 kgf-m)



JMA00111-00088



JMA00000-00089



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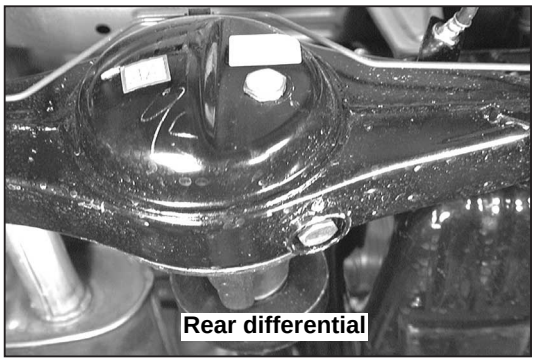


JMA00000-00091

PROPELLER SHAFT

CHECK OF PROPELLER SHAFT

1. Ensure that no looseness exists on the attaching bolts of the universal joint flange yokes which were connected to the front, rear differential and propeller shaft, using a torque wrench.
   Tightening Torque: 51.0 - 69.6 N·m (5.2 - 7.1 kgf-m)

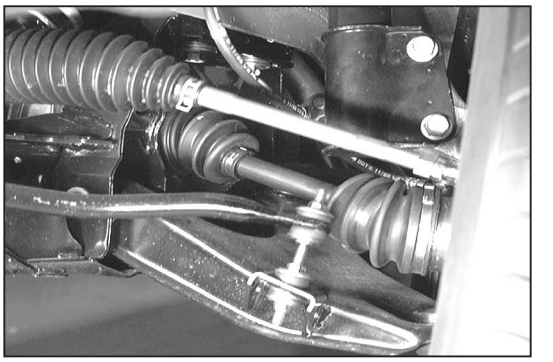
   If any looseness exists, retighten the attaching bolts as required.
   (Refer to the PR section.)
2. Ensure that no excessive play exists on the universal joints.
   If any excessive play exists, repair the universal joint by replacing the spider kit or replace the propeller shaft with a new one.
   (Refer to the PR section.)
3. Ensure that no excessive play exists between the propeller shaft and the transfer output shaft.
   If excessive play is found, replace the front propeller shaft and/or transfer output shaft as required.
   (Refer to the PR section.)


JMA00112-00092

DRIVE SHAFT

CHECK OF DUST BOOT

1. Inspect that the dust boot is free from damage or cracks.
   If any damage exists, replace the boot with a new one.
   (Refer to the FS section.)
2. Inspect that the dust boot bands are securely installed in position properly.
   If not, replace the boot bands with new ones.
   (Refer to the FS section.)


JMA00113-00093

WHEEL HUB NUT

Inspect the wheel hub nuts for looseness, using a wheel hub nut wrench.
Tightening Torque: 90 - 120 N·m (9.0 - 12.0 kgf-m)


JMA00114-00094

WHEEL BEARING

RATTLE

1. Ensure that the wheel bearings exhibit no excessive play by rocking the tire in and out, up and down or forward and backward while holding the tire by hands.
   If excessive play is found, replace the wheel bearing with a new one.
2. Ensure that no abnormal sound is emitted when the wheel is rotated by hand.
   If abnormal sound is emitted, perform a repair so that no abnormal sound may be emitted.

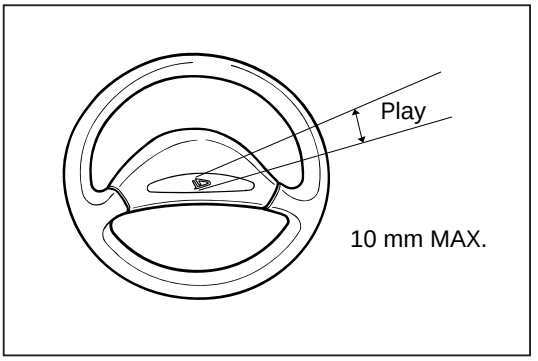

JMA00115-00095

STEERING SYSTEM

STEERING WHEEL FREE PLAY

1. Set the vehicle in a straight-ahead condition.
2. Inspect the steering wheel free play by turning it lightly with your fingers.
   Specified Value: 10 mm MAX.

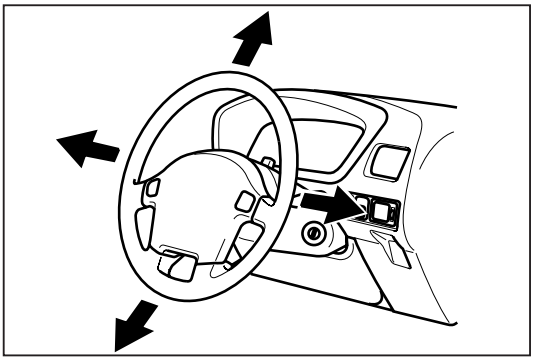
   If the free play fails to meet with the specification, adjust the free play to the specified value.
   (Refer to the SR section.)



JMA00116-00096

STEERING WHEEL RATTLE

Hold the steering wheel by your hands. Ensure that the steering wheel exhibits no excessive looseness or play by moving it in an up-&-down direction, a right-&-left direction as well as in a fore-&-aft direction.
If excessive play is found, repair the steering system.
(Refer to the SR section.)



JMA00117-00097

TIGHTNESS OF STEERING LINKAGE

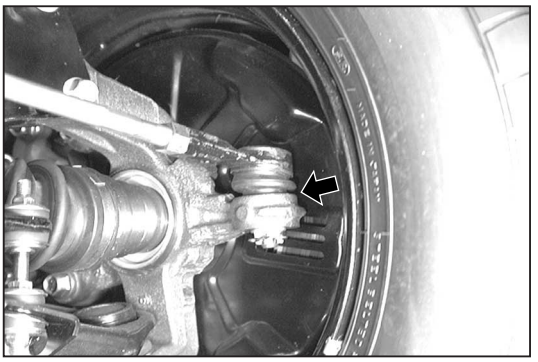
Inspect the attaching sections for tightness or damage.

Tightening Torque:
- Steering Wheel/Steering Main Shaft:
  28 - 41 N·m (2.8 - 4.2 kgf-m)
- Steering Main Shaft/Universal Joint:
  25 - 34 N·m (2.5 - 3.5 kgf-m)
- Universal Joint/Steering Pinion:
  25 - 34 N·m (2.5 - 3.5 kgf-m)

JMA00118-00000

DAMAGE OF STEERING LINKAGE BALL JOINT DUST BOOT

Inspect the dust boot of the tie rod end ball joint for cracks or damage.
If any cracks or damage exists, replace the dust boot as necessary.
(Refer to the SR section.)



JMA00119-00099

FLUID LEAKAGE OF STEERING GEAR BOX

1. Inspect the power steering device for fluid leakage.
2. Inspect the tightness of the power steering device.

TIGHTNESS OF STEERING GEAR BOX

Inspect the bolts of the gear box for looseness.

Tightening Torque: 53.9 - 81.4 N·m (5.5 - 8.3 kgf-m)

JMA00120-00000

POWER STEERING FLUID HOSE

Inspect the power steering fluid hose for aging, deformation, cracks, scratches, cut, twist and swelling.
If any problem is found, replace the fluid hose with a new one. (Refer to the SR section.)

CAUTION:

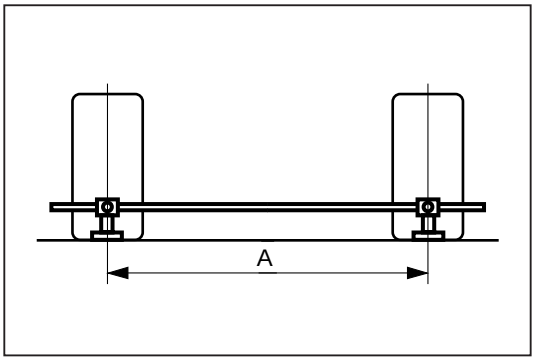
- Never reuse the removed hose bands.

JMA00121-00101

WHEEL ALIGNMENT

TOE-IN CHECK

1. Ensure that the tires have been inflated with the specified pressure.
   (Refer to the Owner's manual.)
2. Place the vehicle on a flat floor and place the steering wheel to a straight ahead direction.
3. Attach a toe-in gauge to the rear side at the center point of each front tire at a height of tire center and put a mark on each tire.

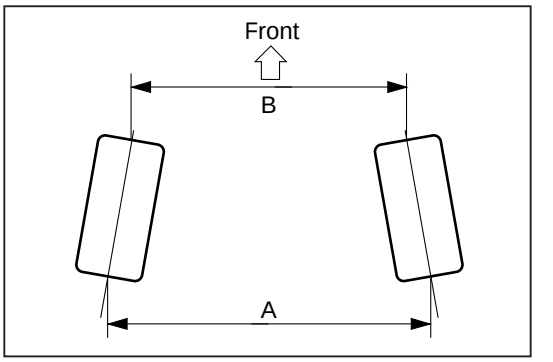


JMA00122-00102

4. Move the vehicle forward in a straight ahead direction gradually until the marks put on the tires come to the front side.
5. Attach the toe-in gauge to the front side, at the center point of each front tire. Determine the difference in the mark-to-mark distance between the first measurement and the second measurement. This difference constitutes the toe-in.
6. Ensure that the measured difference is within the specified value.

   Specified Value: 0 ± 1.5 mm

   If the measured difference(toe-in) fails to meet with the specification, adjust the toe-in to the specified value.
   (Refer to the FS section.)

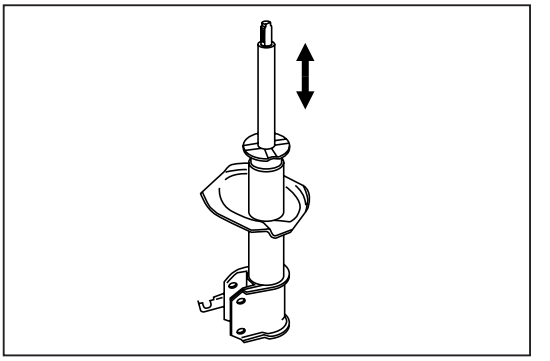


JMA00123-00103

SHOCK ABSORBER

DAMAGE AND OIL LEAKAGE

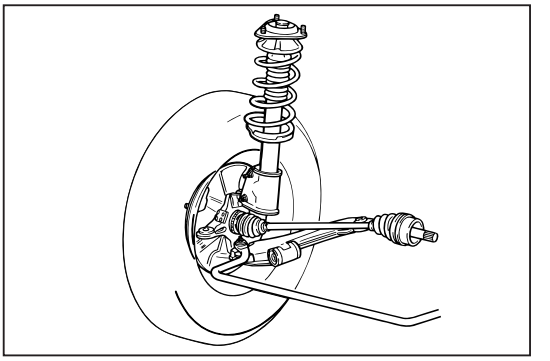
Visually inspect each shock absorber for damage and oil leakage.
If damage or oil leakage exists, replace the damaged part with a new one.
(Refer to FS or RS section.)



JMA00124-00104

FUNCTION

Rock the vehicle in an up-&-down direction. Ensure that the vehicle emits no abnormal noise and the shake will finish within a few times.
If not, replace the shock absorber with a new one.
(Refer to FS or RS section.)

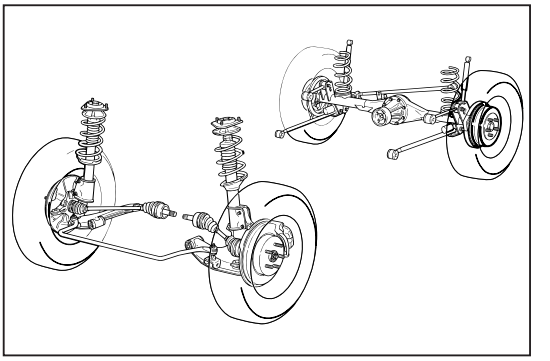


JMA00125-00105

SUSPENSION ARM, CONTROL ARM & DUST COVER

DAMAGE OF SUSPENSION ARMS AND DUST COVER

Visually inspect the suspension arms and dust cover for damage.
If damage exists, replace the damaged part with a new one.
(Refer to the FS section.)



JMA00126-00106

TIGHTNESS OF SUSPENSION ARMS

Check the suspension arm connecting bolts and nuts for tightness.
If any looseness exists, tighten the attaching bolts and nuts to the specified tightening torque.
(Refer to the FS section.)

DAMAGE AND TIGHTNESS OF CONTROL ARMS

1. Visually inspect the control arms for damage.
   If damage exists, replace them with new ones.
   (Refer to the RS section.)
2. Inspect the attaching bolts and nuts for tightness.
   If any looseness exists, tighten the attaching bolts and nuts to the specified tightening torque.
   (Refer to the RS section.)