

# MAINTENANCE

## SECTION **MA**

**MA**

### CONTENTS

|                                                  |       |
|--------------------------------------------------|-------|
| PERIODIC MAINTENANCE .. . . .                    | MA- 2 |
| GENERAL MAINTENANCE .. . . .                     | MA- 4 |
| LUBRICATION CHART . . . . .                      | MA- 7 |
| ENGINE MAINTENANCE . . . . .                     | MA- 8 |
| CHASSIS AND BODY MAINTENANCE .. .                | MA-23 |
| SERVICE DATA AND SPECIFICATIONS (S.D S) .. . . . | MA-42 |
| SPECIAL SERVICE TOOLS .. . . .                   | MA-44 |

# PERIODIC MAINTENANCE

The following charts show the normal maintenance schedule. Under severe driving conditions, additional or more frequent maintenance will be required. Refer to "Maintenance under severe driving conditions".

The periodic maintenance schedule is repeated beyond the last mileage and period shown by returning to the first 15,000 miles (24,000 km) or 12 months.

## EMISSION CONTROL SYSTEM MAINTENANCE

| MAINTENANCE OPERATION                                                                                    |                            | MAINTENANCE INTERVAL |     |      |      |                                                        |      | Reference page |
|----------------------------------------------------------------------------------------------------------|----------------------------|----------------------|-----|------|------|--------------------------------------------------------|------|----------------|
| Periodic maintenance should be performed at number of miles, kilometers or months, whichever comes first |                            | Miles x 1,000        | 5   | 7.5  | 15   | 30                                                     | 45   |                |
|                                                                                                          |                            | (Kilometers x 1,000) | (8) | (12) | (24) | (48)                                                   | (72) |                |
|                                                                                                          |                            | Months               | 6   | 6    | 12   | 24                                                     | 36   |                |
| Drive belts                                                                                              |                            |                      |     |      |      | I*                                                     | I*   | MA-8           |
| Air cleaner filter                                                                                       |                            |                      |     |      |      | Replace every 30,000 miles (48,000 km)                 |      | MA-8           |
| Vapor lines                                                                                              |                            |                      |     |      |      | I*                                                     | I*   | MA-8           |
| Fuel lines (hoses, piping, connections, etc.)                                                            |                            |                      |     |      |      | I*                                                     | I*   | MA-9           |
| Fuel filter                                                                                              |                            |                      |     |      |      | See NOTE (1)*                                          |      | MA-9           |
| Engine coolant                                                                                           |                            |                      |     |      |      | R                                                      | R    | MA-10          |
| Engine oil                                                                                               | Except turbocharged engine |                      |     | R    |      | Then replace every 7,500 miles (12,000 km) or 6 months |      | MA-12          |
|                                                                                                          | Turbocharged engine        |                      | R   |      |      | Then replace every 5,000 miles (8,000 km) or 6 months  |      | MA-12          |
| Engine oil filter (Use PREMIUM type)                                                                     | Except turbocharged engine |                      |     | R    |      | Then replace every second oil change                   |      | MA-12          |
|                                                                                                          | Turbocharged engine        |                      | R   |      |      |                                                        |      |                |
| Spark plugs                                                                                              |                            |                      |     |      |      | Replace every 30,000 miles (48,000 km)                 |      | MA-13          |
| Ignition wires                                                                                           |                            |                      |     |      |      | Inspect every 2 years*                                 |      | MA-14          |
| Idle rpm (Except turbocharged engine)                                                                    |                            |                      |     |      |      | I*                                                     | I*   | MA-15          |
| Exhaust gas sensor                                                                                       |                            |                      |     |      |      | Inspect every 30,000 miles (48,000 km)                 |      | MA-16          |
| Timing belt                                                                                              |                            |                      |     |      |      | Replace every 60,000 miles (96,000 km)                 |      | MA-18          |

## CHASSIS AND BODY MAINTENANCE

| MAINTENANCE OPERATION                                                                                    |  | MAINTENANCE INTERVAL |      |      |      |      |   | Reference page |
|----------------------------------------------------------------------------------------------------------|--|----------------------|------|------|------|------|---|----------------|
| Periodic maintenance should be performed at number of miles, kilometers or months, whichever comes first |  | Miles x 1,000        | 15   | 30   | 45   | 60   |   |                |
|                                                                                                          |  | (Kilometers x 1,000) | (24) | (48) | (72) | (96) |   |                |
|                                                                                                          |  | Months               | 12   | 24   | 36   | 48   |   |                |
| Brake lines & hoses                                                                                      |  |                      | I    | I    | I    | I    |   | MA-32          |
| Brake pads & discs                                                                                       |  |                      |      |      |      |      |   | MA-33          |
| Manual and automatic transmission & differential gear oil                                                |  |                      |      |      |      |      |   | MA-24 25 26    |
| Power steering lines & hoses                                                                             |  |                      | I    | I    | I    | I    |   | MA-40          |
| Steering gear & linkage, and axle & suspension parts                                                     |  |                      | I    | I    | I    | I    |   | MA-27 28 40    |
| Steering linkage ball joints & front suspension ball joints                                              |  |                      |      |      |      |      | I | MA-27          |
| Locks, hinges & hood latch                                                                               |  |                      | L    | L    | L    | L    |   | MA-41          |
| Front wheel bearing grease                                                                               |  |                      |      |      |      |      | I | MA-28          |
| Exhaust system                                                                                           |  |                      | I    | I    | I    | I    |   | MA-23          |
| Seat belts, buckles, retractors, anchors & adjuster                                                      |  |                      | I    | I    | I    | I    |   | MA-41          |

- NOTE (1)** If vehicle is operated under extremely adverse weather conditions or in areas where ambient temperatures are either extremely low or extremely high, the filters might become clogged. In such an event, replace them immediately.
- (2)** Maintenance items and intervals with "\*" are recommended by NISSAN for reliable vehicle operation. The owner need not perform such maintenance in order to maintain the emission warranty or manufacturer recall liability. Other maintenance items and intervals are required.

Abbreviations: A = Adjust      L = Lubricate  
R = Replace      I = Inspect    Correct or replace if necessary

# PERIODIC MAINTENANCE

## MAINTENANCE UNDER SEVERE DRIVING CONDITIONS

The maintenance intervals shown on the preceding pages are for normal operating conditions. If the vehicle is mainly operated under severe driving conditions as shown below, more frequent maintenance is required to be performed on the following items as shown in the table.

### Severe driving conditions

- A — Repeated short distance driving
- B — Extensive idling
- C — Driving in dusty conditions
- D — Driving in extremely low or high ambient temperatures
- E — Towing a trailer
- F — Driving in areas using road salt or other corrosive materials
- G — Driving on rough and/or muddy roads

| Driving condition                                                                               | Maintenance item                                            | Maintenance operation | Maintenance interval                        | Reference page |
|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------|-----------------------|---------------------------------------------|----------------|
| C                                                                                               | Air cleaner filter                                          | R                     | More frequently                             | MA-8           |
| A B C E                                                                                         | Engine oil & oil filter                                     | R                     | Every 3,000 miles (5,000 km) or 3 months    | MA-12          |
| A C E F G                                                                                       | Brake pads & discs                                          | I                     | Every 7,500 miles (12,000 km)               | MA-33          |
| E G                                                                                             | Manual and automatic transmission & differential gear oil   | R                     | Every 30,000 miles (48,000 km) or 24 months | MA-24, 25, 26  |
| G                                                                                               | Steering gear & linkage, and axle & suspension parts        | I                     | Every 7,500 miles (12,000 km) or 6 months   | MA-27, 28, 40  |
| C D F G                                                                                         | Steering linkage ball joints & front suspension ball joints | I                     | Every 7,500 miles (12,000 km) or 6 months   | MA-27          |
| F                                                                                               | Locks, hinges & hood latch                                  | L                     | Every 7,500 miles (12,000 km) or 6 months   | MA-41          |
| A E F G                                                                                         | Exhaust system                                              | I                     | Every 7,500 miles (12,000 km) or 6 months   | MA-23          |
| Maintenance operations I = Inspect Correct or replace if necessary R = Replace<br>L = Lubricate |                                                             |                       |                                             |                |

# GENERAL MAINTENANCE

General maintenance includes those items which should be checked during the normal day-to-day operation of the vehicle. They are essential if the vehicle is to continue operating properly. The owners can perform the checks and inspections themselves or they can have their NISSAN/DATSUN dealers do them for a nominal charge.

| Item                                                                                                                                                                                                                                                                                                             | Reference item in MA section                                                                                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>OUTSIDE THE VEHICLE</b>                                                                                                                                                                                                                                                                                       |                                                                                                                                                                    |
| <b>Tires</b> Check the pressure with a gauge periodically when at a service station, including the spare, and adjust to the specified pressure if necessary. Check carefully for damage, cuts or excessive wear.                                                                                                 | <ul style="list-style-type: none"> <li>• CHECKING TIRE CONDITION</li> </ul>                                                                                        |
| <b>Wheel nuts</b> When checking the tires, make sure no nuts are missing, and check for any loose nuts. Tighten if necessary.                                                                                                                                                                                    | <ul style="list-style-type: none"> <li>• TIRE REPLACEMENT<br/>Wheel nut.</li> </ul>                                                                                |
| <b>Tire rotation</b> Tires should be rotated every 12,000 km (7,500 miles).                                                                                                                                                                                                                                      | <ul style="list-style-type: none"> <li>• TIRE ROTATION</li> </ul>                                                                                                  |
| <b>Wheel alignment and balance</b> If the vehicle should pull to either side while driving on a straight and level road, or if you detect uneven or abnormal tire wear, there may be a need for wheel alignment. If the steering wheel or seat vibrates at normal highway speeds, wheel balancing may be needed. | <ul style="list-style-type: none"> <li>• CHECKING TIRE CONDITION<br/>Abnormal tire wear</li> <li>• CHECKING WHEEL ALIGNMENT</li> <li>• WHEEL INSPECTION</li> </ul> |
| <b>Windshield glass</b> Check for abrasions or scratches.                                                                                                                                                                                                                                                        | —                                                                                                                                                                  |
| <b>Windshield wiper blades</b> Check for cracks or wear if they do not wipe properly.                                                                                                                                                                                                                            | —                                                                                                                                                                  |
| <b>Doors and engine hood</b> Check that all doors and the engine hood operate smoothly as well as the trunk lid and back hatch. Also, ensure that all latches lock securely. Lubricate if necessary. Make sure that the secondary latch keeps the hood from opening when the primary latch is released.          | <ul style="list-style-type: none"> <li>• LUBRICATING LOCKS, HINGES AND HOOD LATCH</li> </ul>                                                                       |
| <b>INSIDE THE VEHICLE</b>                                                                                                                                                                                                                                                                                        |                                                                                                                                                                    |
| The maintenance items listed here should be checked on a regular basis, such as when performing periodic maintenance, cleaning the vehicle, etc.                                                                                                                                                                 |                                                                                                                                                                    |
| <b>Lights</b> Make sure that the headlights, stop lights, tail lights, turn signal lights, and other lights are all operating properly and installed securely. Also check headlight aim.                                                                                                                         | —                                                                                                                                                                  |
| <b>Warning lights and buzzers/chimes</b> Make sure that all warning lights and buzzers/chimes are operating properly.                                                                                                                                                                                            | —                                                                                                                                                                  |
| <b>Horn</b> Make sure it operates properly.                                                                                                                                                                                                                                                                      | —                                                                                                                                                                  |
| <b>Windshield wiper and washer</b> Check that the wipers and washer operate properly and that the wipers do not streak.                                                                                                                                                                                          | —                                                                                                                                                                  |

# GENERAL MAINTENANCE

| Item                                                                                                                                                                                                                                                                                                                                                                                   | Reference item in MA section                                                                                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| <b>Windshield defroster</b> Check that the air comes out of the defroster outlets properly and in sufficient quantity when operating the heater or air conditioner.                                                                                                                                                                                                                    | —                                                                                                                                    |
| <b>Rear view mirror</b> Make sure that it is secure                                                                                                                                                                                                                                                                                                                                    | —                                                                                                                                    |
| <b>Sun visors</b> Make sure that they can be moved freely and are secure                                                                                                                                                                                                                                                                                                               | —                                                                                                                                    |
| <b>Steering wheel</b> Check that it has the specified free play Be sure to check for changes in the steering condition, such as excessive free play, hard steering or strange noises                                                                                                                                                                                                   | <b>Specification</b><br><b>Free play</b> Less than 35 mm (1 3/8 in)                                                                  |
| <b>Seats</b> Check seat position controls such as seat adjusters, seatback recliner, etc to ensure they operate smoothly and that all latches lock securely in every position Check that the head restraints move up and down smoothly and that the locks (if so equipped) hold securely in all latched positions Check that the latches lock securely for folding-down rear seatbacks | —                                                                                                                                    |
| <b>Seat belts</b> Check that all parts of the seat belt system e.g buckles, anchors and retractors operate properly and smoothly Check the belt webbing for cuts, fraying, wear or damage                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>• INSPECTING SEAT BELTS, BUCKLES, ANCHORS, RETRACTORS AND ADJUSTERS</li> </ul>                |
| <b>Accelerator pedal</b> Check the pedal for smooth operation and make sure the pedal does not catch or require uneven effort                                                                                                                                                                                                                                                          | —                                                                                                                                    |
| <b>Clutch pedal</b> Make sure the pedal operates smoothly and check that it has the proper free travel                                                                                                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>• ADJUSTING CLUTCH PEDAL HEIGHT AND FREE PLAY</li> </ul>                                      |
| <b>Brakes</b> Check that the brake does not pull the vehicle to one side when applied                                                                                                                                                                                                                                                                                                  | —                                                                                                                                    |
| <b>Brake pedal</b> Check the pedal for smooth operation and make sure it has the proper distance under it when depressed fully Check the brake booster function                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>• CHECKING BRAKE PEDAL DEPRESSED HEIGHT</li> <li>• CHECKING BRAKE BOOSTER FUNCTION</li> </ul> |
| <b>Parking brake</b> Check that the lever has the proper travel and confirm that your vehicle is held securely on a fairly steep hill with only the parking brake applied.                                                                                                                                                                                                             | <ul style="list-style-type: none"> <li>• CHECKING PARKING BRAKE</li> </ul>                                                           |
| <b>Automatic transmission "Park" mechanism</b> Check that the lock release button on the selector lever operates properly and smoothly On a fairly steep hill check that your vehicle is held securely with the selector lever in the "P" position without applying any brakes.                                                                                                        | —                                                                                                                                    |

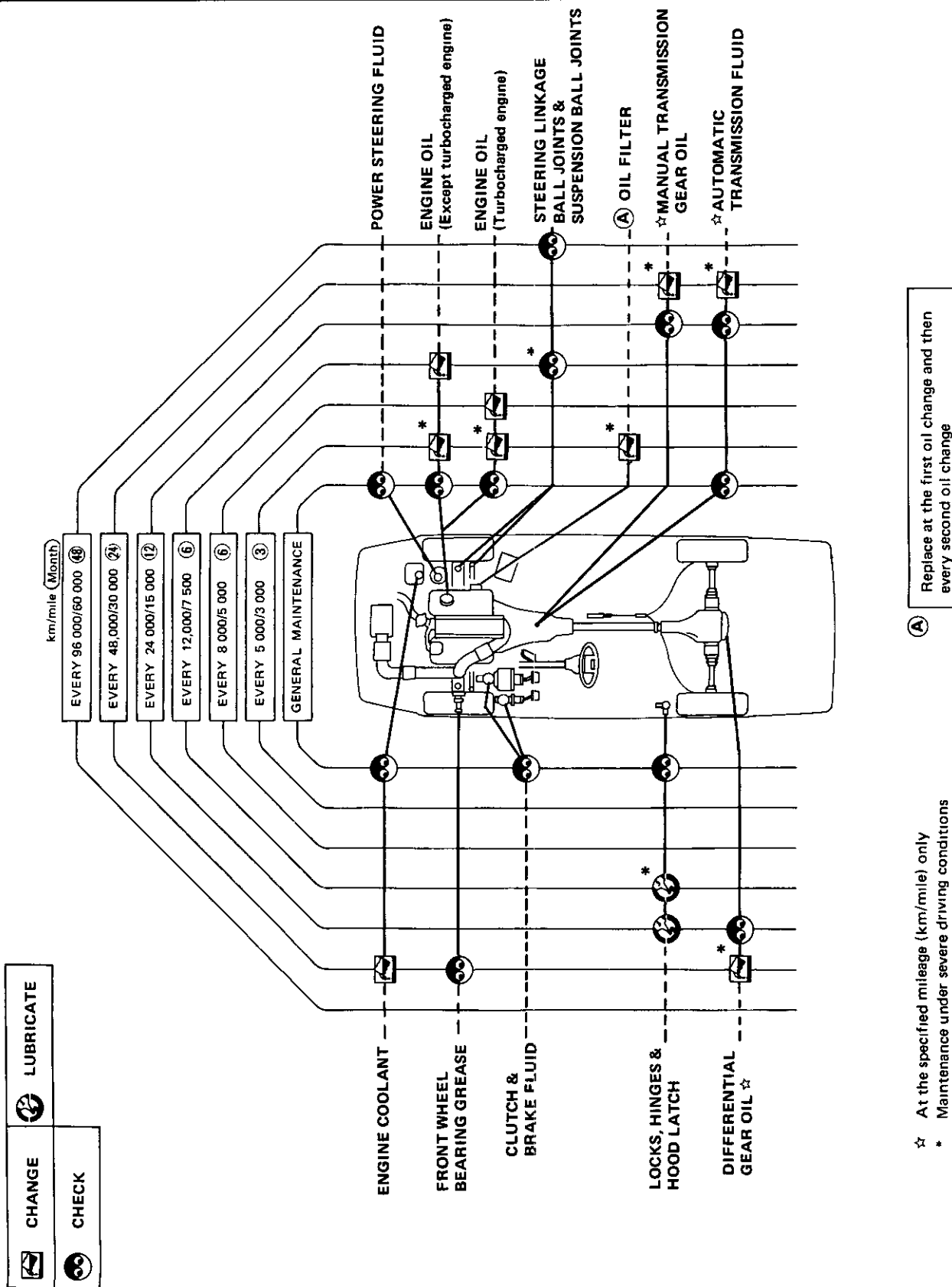
## UNDER THE HOOD AND VEHICLE

The maintenance items listed here should be checked periodically e.g. each time you check the engine oil or refuel

# GENERAL MAINTENANCE

| Item                                                                                                                                                                                                                                                                                                                                                                                                                                         | Reference item in MA section                                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Windshield washer fluid</b> Check that there is adequate fluid in the tank                                                                                                                                                                                                                                                                                                                                                                | —                                                                                                                                                                                                                                                                                                                              |
| <b>Engine coolant level</b> Check the coolant level when the engine is cold                                                                                                                                                                                                                                                                                                                                                                  | —                                                                                                                                                                                                                                                                                                                              |
| <b>Radiator and hoses</b> Check the front of the radiator and clean off any dirt, insects, leaves, etc., that may have accumulated. Make sure the hoses have no cracks, deformation, rot or loose connections.                                                                                                                                                                                                                               | —                                                                                                                                                                                                                                                                                                                              |
| <b>Brake and clutch fluid levels</b> Make sure that the brake and clutch fluid levels are between the "MAX" and "MIN" lines on the reservoir                                                                                                                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>• CHECKING CLUTCH FLUID LEVEL</li> <li>• CHECKING BRAKE FLUID LEVEL AND LEAKS</li> </ul>                                                                                                                                                                                                |
| <b>Engine drive belts</b> Make sure that no belt is frayed, worn, cracked or oily                                                                                                                                                                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>• CHECKING DRIVE BELT</li> </ul>                                                                                                                                                                                                                                                        |
| <b>Engine oil level</b> Check the level on the dipstick after parking the vehicle on a level spot and turning off the engine                                                                                                                                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>• CHANGING ENGINE OIL AND OIL FILTER</li> </ul>                                                                                                                                                                                                                                         |
| <b>Power steering fluid level</b> Check the level when the fluid is cold and the engine is turned off                                                                                                                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>• CHECKING POWER STEERING FLUID LEVEL</li> </ul>                                                                                                                                                                                                                                        |
| <b>Automatic transmission fluid level</b> Check the level on the dipstick after putting the selector level in "P" with the engine idling                                                                                                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>• CHECKING AUTOMATIC TRANSMISSION FLUID LEVEL</li> </ul>                                                                                                                                                                                                                                |
| <b>Exhaust system</b> Make sure there are no loose supports, cracks or holes. If the sound of the exhaust seems unusual or there is a smell of exhaust fumes, immediately locate the trouble and correct it                                                                                                                                                                                                                                  | <ul style="list-style-type: none"> <li>• INSPECTING EXHAUST SYSTEM</li> </ul>                                                                                                                                                                                                                                                  |
| <b>Underbody</b> The underbody is frequently exposed to corrosive substances such as those used on icy roads or to control dust. It is very important to remove these substances, otherwise rust will form on the floor pan, frame, fuel lines and around the exhaust system. At the end of winter, the underbody should be thoroughly flushed with plain water, being careful to clean those areas where mud and dirt can easily accumulate | —                                                                                                                                                                                                                                                                                                                              |
| <b>Fluid leaks</b> Check under the vehicle for fuel, oil, water or other fluid leaks after the vehicle has been parked for a while. Water dripping from the air conditioner after use is normal. If you should notice any leaks or gasoline fumes are evident, check for the cause and correct it immediately                                                                                                                                | <ul style="list-style-type: none"> <li>• CHECKING CLUTCH FLUID LEAKS</li> <li>• INSPECTING MANUAL TRANSMISSION OIL</li> <li>• INSPECTING AUTOMATIC TRANSMISSION FLUID</li> <li>• INSPECTING DIFFERENTIAL GEAR OIL</li> <li>• INSPECTING BRAKE LINES &amp; HOSES</li> <li>• CHECKING POWER STEERING LINE &amp; HOSES</li> </ul> |

# LUBRICATION CHART



# ENGINE MAINTENANCE

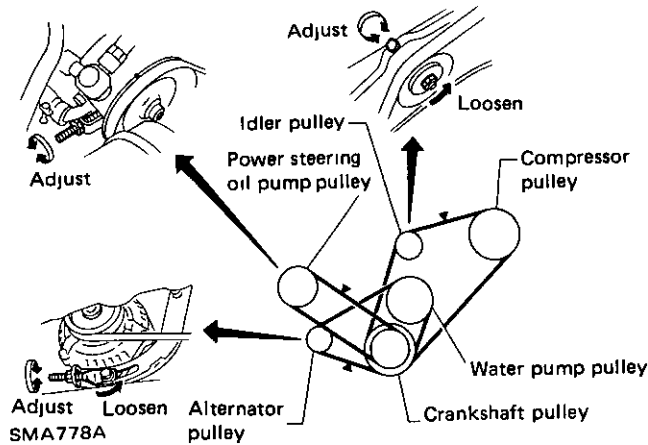
## Checking Drive Belts

- 1 Inspect for cracks, fraying, wear or oil adhesion. Replace if necessary.

The belts should not touch the bottom of the pulley groove.

2. Check drive belt deflections by pushing on the belt middle between pulleys

Adjust if belt deflections exceed the limit.

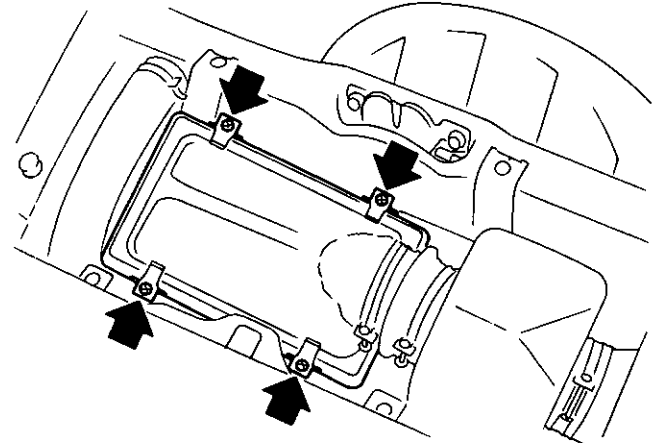


Unit mm (in)

|                            | Used belt deflection |                            | Set deflection of new belt |
|----------------------------|----------------------|----------------------------|----------------------------|
|                            | Limit                | Adjusted deflection        |                            |
| Alternator                 | 12<br>(0.47)         | 7.5 - 8.5<br>(0.30 - 0.33) | 6.5 - 7.5<br>(0.26 - 0.30) |
| Air conditioner compressor | 11<br>(0.43)         | 9 - 10<br>(0.35 - 0.39)    | 8 - 9<br>(0.31 - 0.35)     |
| Power steering oil pump    | 21<br>(0.83)         | 14 - 16<br>(0.55 - 0.63)   | 12 - 14<br>(0.47 - 0.55)   |
| Applied pushing force      | 98 N (10 kg, 22 lb)  |                            |                            |

## Replacing Air Cleaner Filter

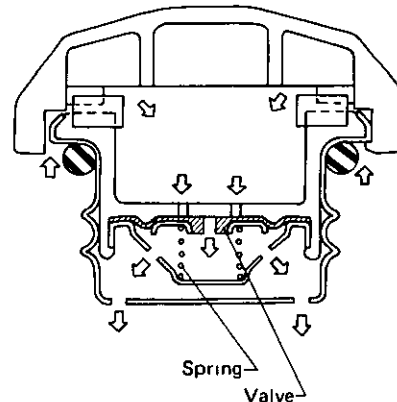
The viscous paper type air cleaner filter does not require any cleaning operation between renewals.



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## Checking Vapor Lines

- 1 Visually inspect vapor lines for proper attachment, cracks, damage, loose connections, chafing and deterioration
- 2 Check fuel tank vacuum relief valve for clogging, sticking, etc

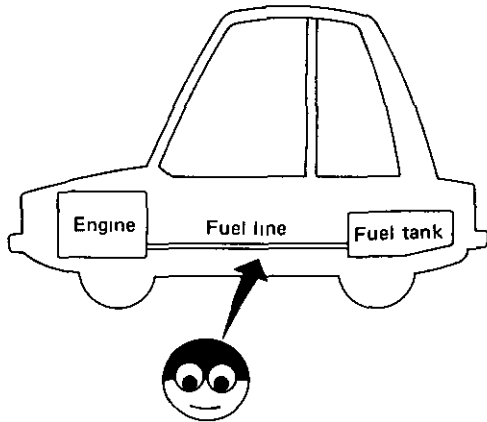


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# ENGINE MAINTENANCE

## Checking Fuel Lines

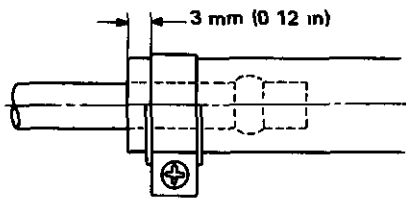
Check fuel lines and tank for proper attachment, leaks, cracks, damage, loose connections, chafing and deterioration.



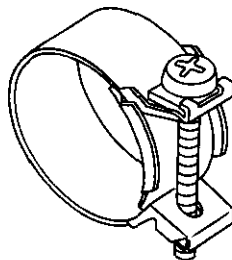
SMA803A

### CAUTION:

- Do not reuse fuel hose clamp after loosening.
- Tighten high pressure rubber hose clamp so that clamp end is 3 mm (0.12 in) from hose end or screw position (wider than other portions of clamp) is flush with hose end.
- When tightening hose clamp, ensure that screw does not come into contact with adjacent parts.



 Fuel hose clamps  
10 - 15 N m  
(0 10 - 0 15 kg-m,  
0 7 - 1 1 ft-lb)

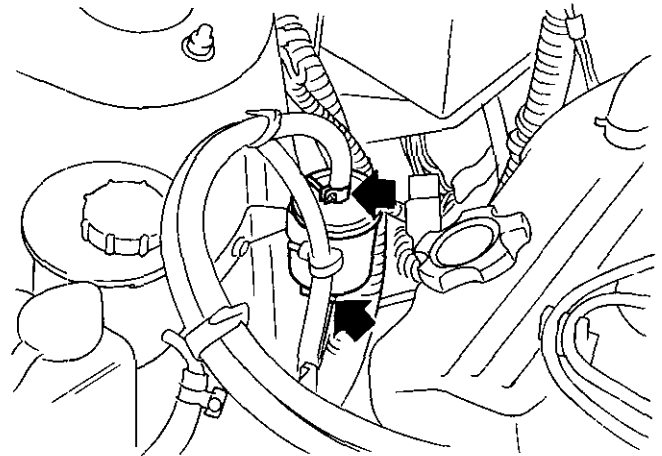


SMA804A

## Replacing Fuel Filter

Before removing fuel filter, release fuel pressure from fuel line to eliminate danger.

- Start engine.
- Remove fuse for fuel pump with engine running.
- After engine stalls, crank engine two or three times to make sure that pressure is released.
- Turn ignition switch off and connect fuel pump fuse
- Loosen fuel hose clamps



SMA780A

- Replace fuel filter.
  - Do not reuse fuel hose clamps.
  - Be careful not to spill fuel over engine compartment. Place a rag to absorb fuel.
  - Use high pressure type fuel filter. Do not use a synthetic resinous fuel filter.

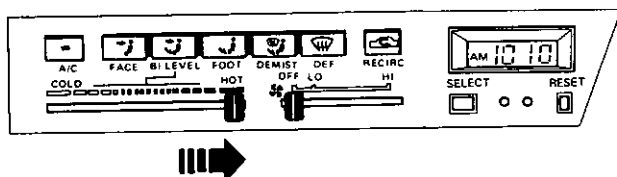
# ENGINE MAINTENANCE

## Changing Engine Coolant

### WARNING:

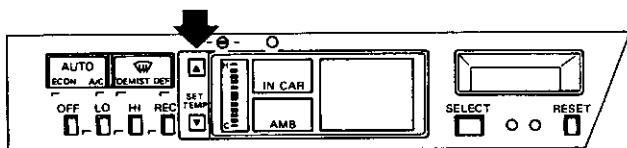
To avoid the danger of being scalded, never attempt to change the coolant when the engine is hot.

1. Before draining engine coolant
  - 1) Except auto air conditioner equipped models  
Slide temperature control lever to "HOT" position.



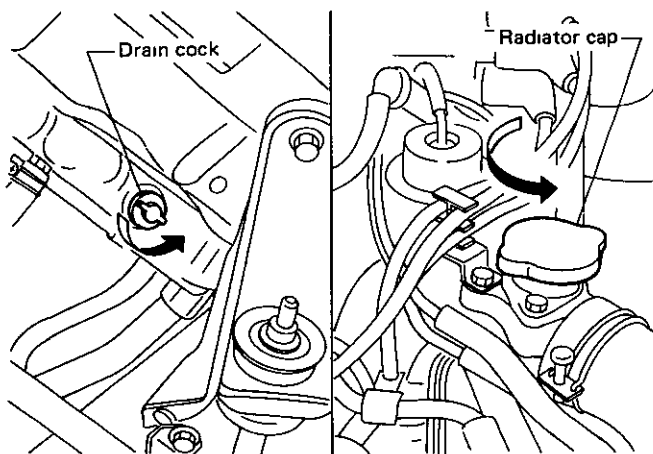
SMA781A

- 2) Auto air conditioner equipped models  
Turn ignition switch "ON" and set temperature at maximum.  
Then turn ignition switch "OFF"



SMA782A

- 2 Open radiator cap and drain cock to drain engine coolant



SMA783A

3. Open drain plugs on the left side of cylinder block to drain coolant from cylinder block



### Drain plug

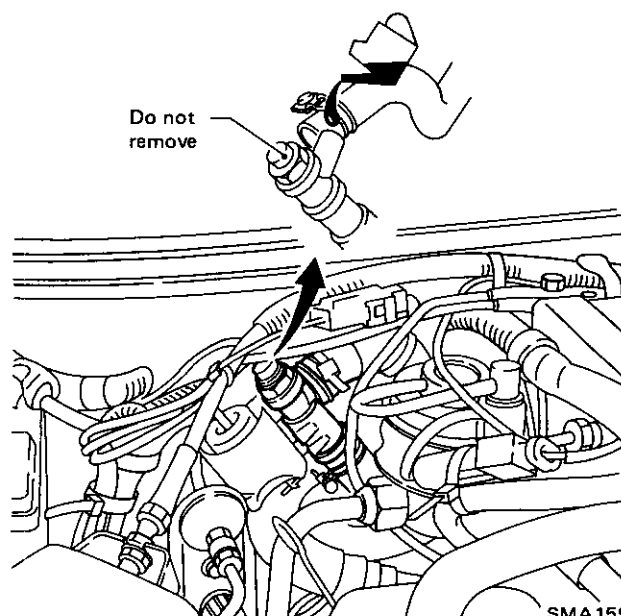
22 - 27 N·m

(2.2 - 2.8 kg-m, 16 - 20 ft-lb)

- 4 Close drain plugs and drain cock securely  
Then, fill radiator with water and warm up engine
5. Stop engine and wait until it cools down.
- 6 Repeat procedure from step 2 through step 5 two or three times.
- 7 Drain water and fill radiator and engine with new coolant up to filler opening Follow instructions attached to anti-freeze container for mixing ratio of anti-freeze to water

- Slowly pour coolant through coolant filler neck to allow air in system to escape.
- If the hoses connecting engine and heater have been disconnected to dismount heater core unit and engine, always perform the following work before filling with engine coolant.

- (1) Set the heater temperature lever or button to "Full Hot" position.
- (2) Disconnect the upper hose from water cock, and fill the heater core unit with 500 ml (16.9 US fl oz, 17.6 Imp fl oz) or more of coolant



SMA159B

# ENGINE MAINTENANCE

## Changing Engine Coolant (Cont'd)

- (3) Connect the hoses
- 8. Fill reservoir tank up to "MAX" level. Then close radiator cap.
- 9. Run the engine at approximately 2,000 rpm for about one minute.
- 10. Stop the engine and after it cools down, refill the radiator and engine with coolant up to the filler opening. Fill the reservoir tank with coolant up to "MAX" level.

**Coolant capacity: (Without reservoir tank)**

**VG30E engine**

**10.5 ℓ (11-1/8 US qt, 9-1/4 Imp qt)**

**VG30ET engine**

**11.0 ℓ (11-5/8 US qt, 9-5/8 Imp qt)**

**Reservoir tank:**

**0.8 ℓ (7/8 US qt, 3/4 Imp qt)**

# ENGINE MAINTENANCE

## Changing Engine Oil and Oil Filter

- 1 Warm up engine, and check for oil leakage from engine components
- 2 Change engine oil and oil filter

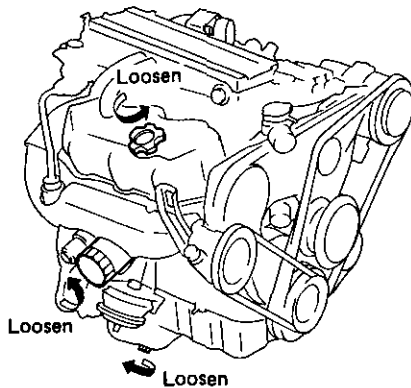
### Oil capacity (Refill)

With oil filter

4.0 ℓ (4-1/4 US qt, 3-1/2 Imp qt)

Without oil filter

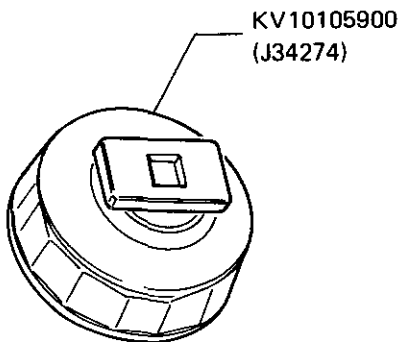
3.6 ℓ (3-7/8 US qt, 3-1/8 Imp qt)



29 - 39 N m  
(3.0 - 4.0 kg-m, 22 - 29 ft-lb)

SMA7B5A

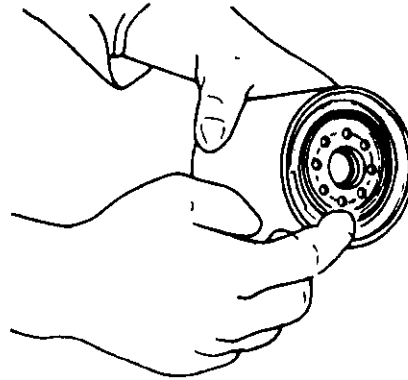
- a. When removing and installing oil filter, use a tool.



SMA167B

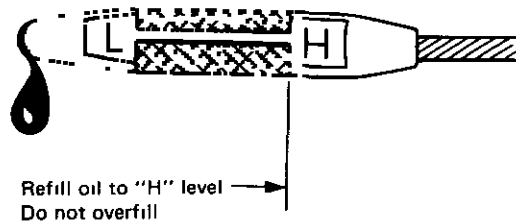
- a. Be careful not to burn yourself as engine oil is hot.
- b. Be sure to clean drain plug and install with washer.

- d. Before installing new oil filter, wipe oil filter mounting surface on cylinder block, and smear a little engine oil on rubber seal of oil filter



SMA010

- e. When installing oil filter, screw it in until a slight resistance is felt, then tighten it additionally more than 2/3 turn.
  - f. Use recommended engine oil.
3. Start engine. Check area around drain plug and oil filter for any sign of oil leakage. Run engine for a few minutes, then turn it off. After several minutes, check oil level.

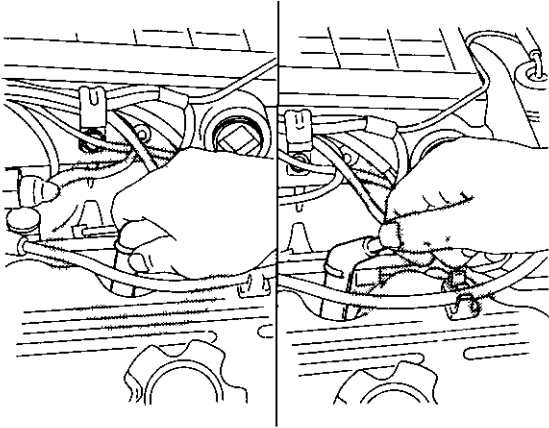


SMA632B

# ENGINE MAINTENANCE

## Checking and Replacing Spark Plugs

- 1 Disconnect ignition wires from spark plugs by pulling on the boot. Do not pull on the wires.



SMA633B

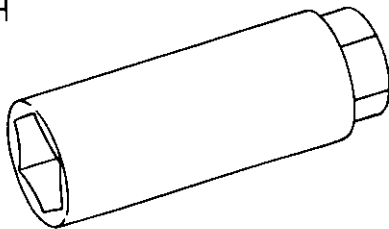
2. Remove spark plugs with a suitable plug wrench as shown below

### CAUTION:

Before removing spark plug, be careful that there is no foreign substance in the hollow place around spark plug.



Wrench with a magnet to hold spark plug

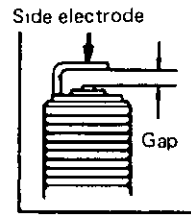
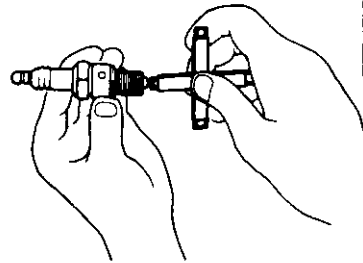


SEM294A

- 3 Inspect insulator for cracks or chips, gasket for damage or deterioration

4. Check spark plug gap

Gap  
1.0 - 1.1 mm (0.039 - 0.043 in)



SMA476

|               | VG30E      | VG30ET    |
|---------------|------------|-----------|
| Standard type | BCPR6ES-11 | BCPR6E-11 |
| Hot type      | BCPR5ES-11 | BCPR5E-11 |
| Cold type     | BCPR7ES-11 | BCPR7E-11 |

- 5 Install spark plugs. Reconnect ignition wires according to Nos. indicated on them.

 : Spark plug

20 - 29 N·m

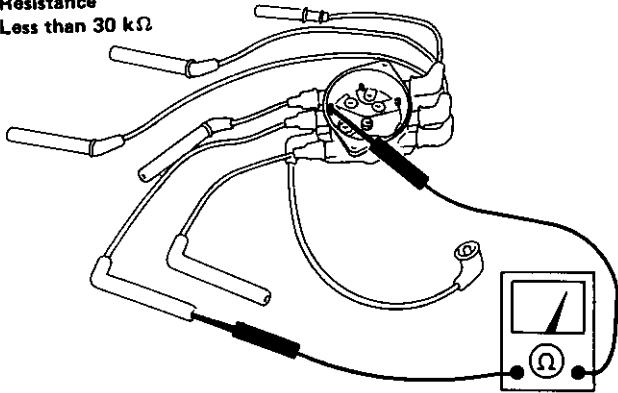
(2.0 - 3.0 kg-m, 14 - 22 ft-lb)

# ENGINE MAINTENANCE

## Checking Ignition Wires

- 1 Check the high tension wires for cracks, damage, burned terminals and proper fit
- 2 Measure the resistance of the high tension wires, by shaking it and checking for intermittent breaks.

Resistance  
Less than 30 k $\Omega$



SMA789A

# ENGINE MAINTENANCE

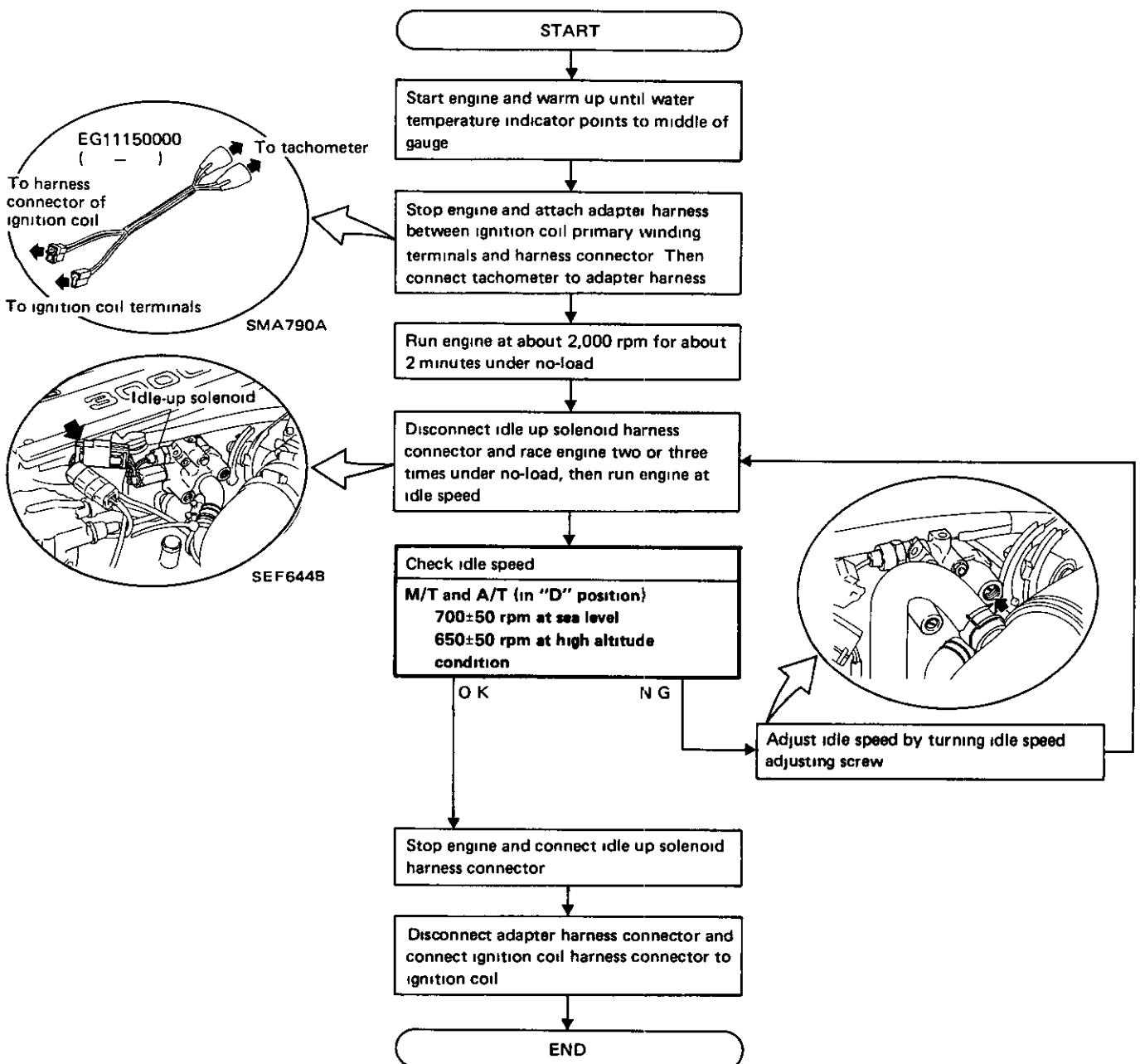
## Checking Idle Speed (VG30E engine)

### Preparation

- Engage parking brake and lock both front and rear wheels with wheel chocks.
- Turn off air conditioner and headlamps.
- Keep front wheels straight ahead.

### WARNING:

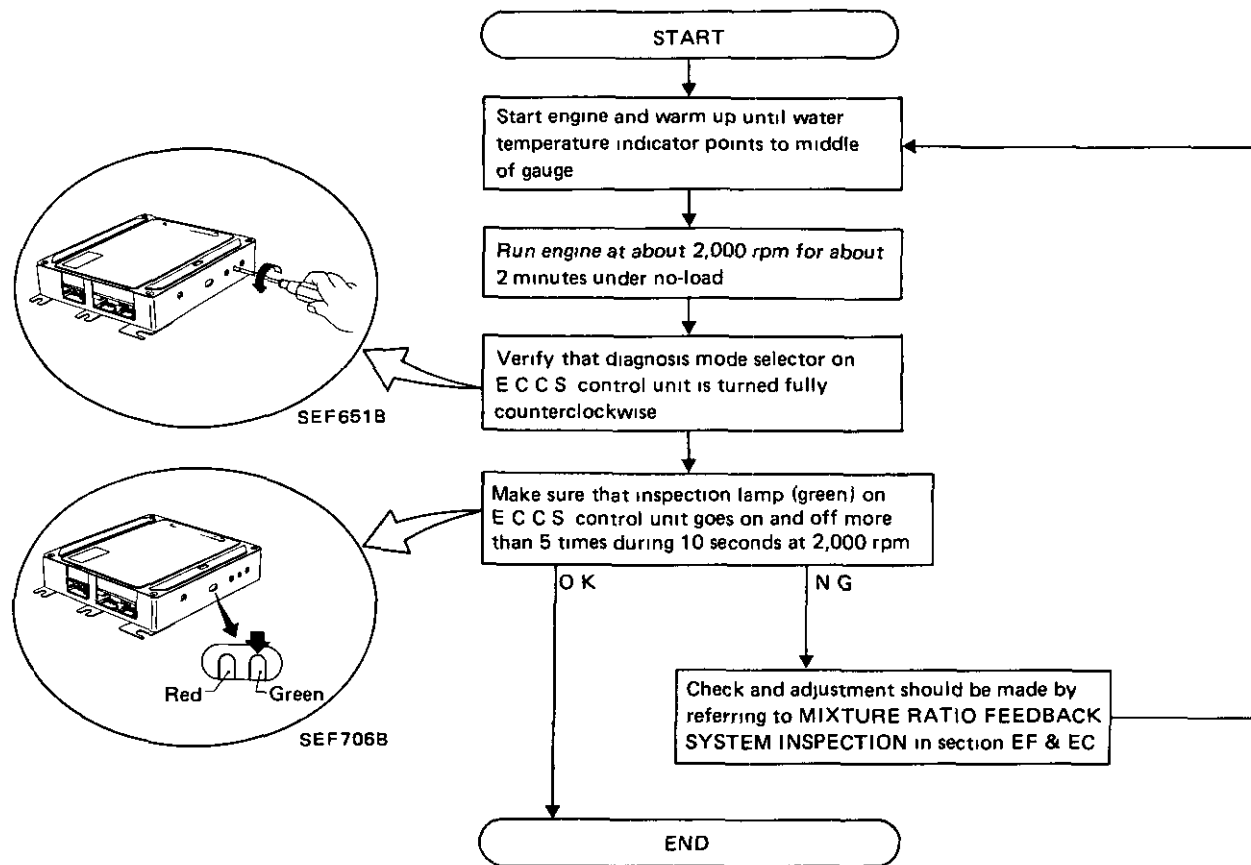
- Depress brake pedal while accelerating the engine to prevent forward surge of vehicle.
- Inspection should be carried out while shift lever is in "D" position on automatic transmission equipped models.



# ENGINE MAINTENANCE

## Checking Exhaust Gas Sensor

### Checking procedure



# ENGINE MAINTENANCE

## Checking Exhaust Gas Sensor

### FOR U.S.A. MODELS

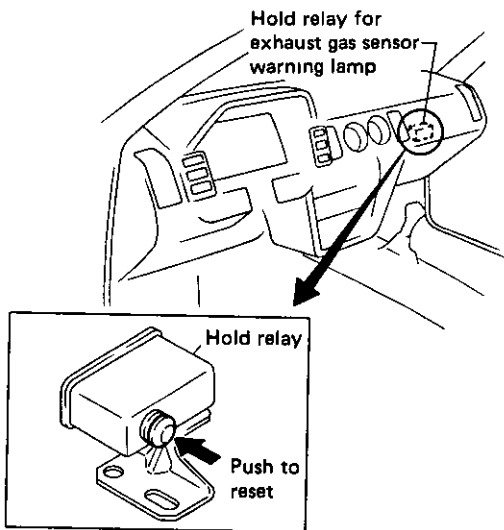
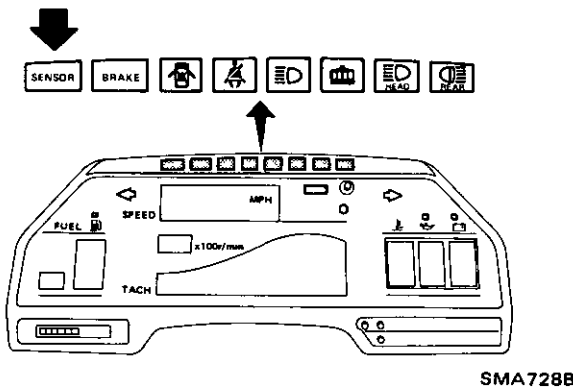
Every 30,000 miles (48,000 km) service

#### Digital type meter

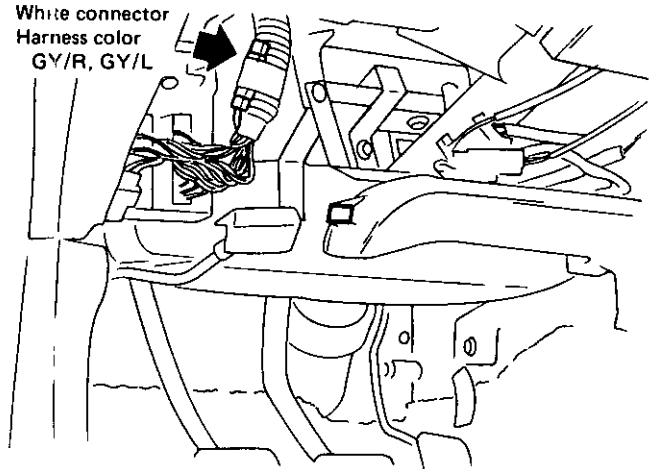
Exhaust gas sensor should be checked after every 30,000 miles (48,000 km) of operation.

After vehicle has been operated for 30,000 miles (48,000 km), exhaust gas sensor warning lamp will come on to indicate that sensor should be inspected

After inspection, reset warning lamp hold relay so that warning lamp will come on after the next 30,000 miles (48,000 km)



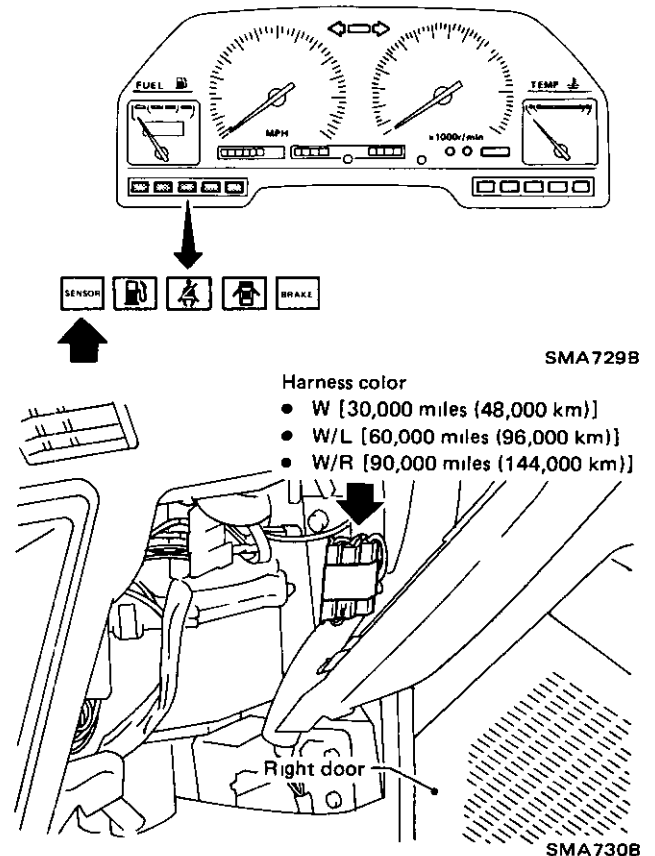
If sensor should be checked at 90,000 miles (144,000 km) of operation (After the third inspection), disconnect warning lamp harness connector



#### Needle type meter

Follow the same service operation as that for digital type meter except the way of turning off exhaust gas sensor warning lamp

In order to switch off the lamp, after every inspection, disconnect one of three connectors located behind glove box



# ENGINE MAINTENANCE

## - Checking Exhaust Gas Sensor (Cont'd)

### FOR CANADA MODELS

#### 48,000 km (30,000 miles) service

Exhaust gas sensor should be checked after 48,000 km (30,000 miles) of operation.

The exhaust gas sensor warning lamp will come on at 48,000 km (30,000 miles) to indicate that sensor should be inspected

After the inspection, disconnect warning lamp harness connector

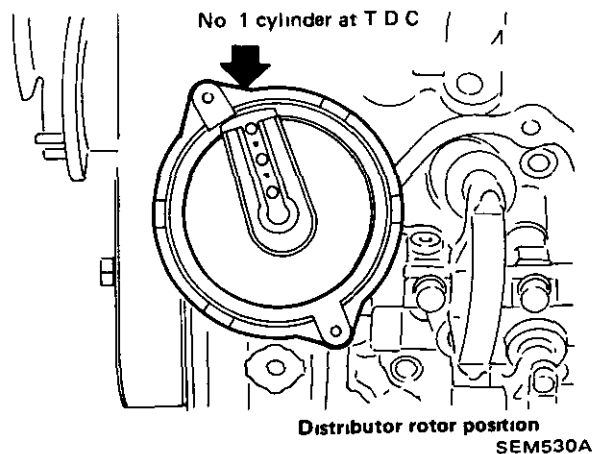
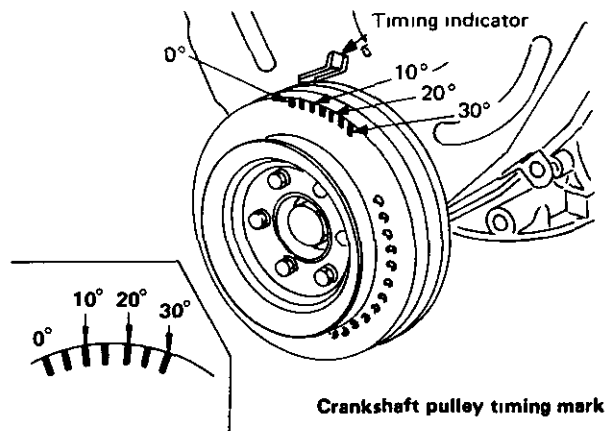
## Replacing Timing Belt

After removing timing belt, do not rotate crankshaft and camshaft separately, because valves hit piston heads.

- 1 Remove engine undercover and drain engine coolant from radiator

**Be careful not to allow coolant to contact drive belts.**

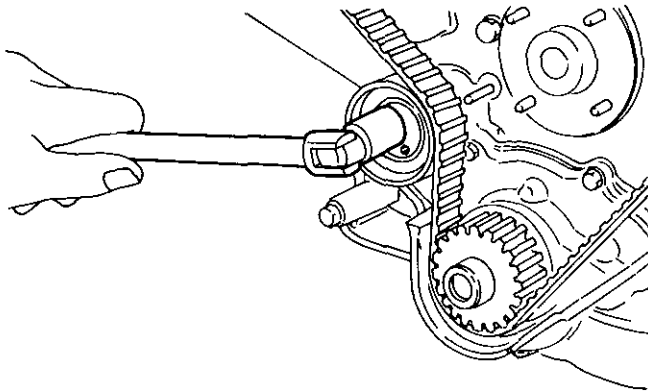
2. Remove radiator shroud and fan
- 3 Remove the following belts
  - Power steering drive belt
  - Compressor drive belt
  - Alternator drive belt
4. Remove upper and lower radiator hoses
5. Set No. 1 cylinder at T.D.C. on its compression stroke.



# ENGINE MAINTENANCE

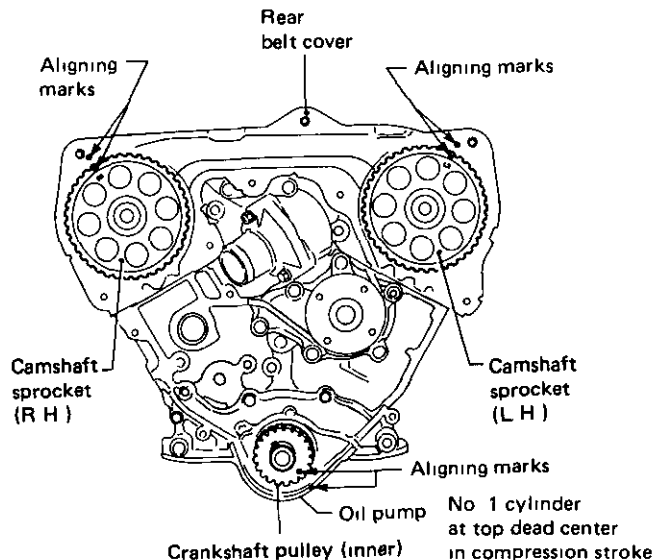
## Replacing Timing Belt (Cont'd)

- 6 Remove idler bracket of the compressor drive belt and crankshaft pulley
- 7 Remove front upper and lower belt covers.
8. Replace timing belt by loosening timing belt tensioner and return spring.



SEM240A

- 9 Visually check the condition of the timing belt. Refer to EM section.
- 10 Confirm that No. 1 cylinder is set at T D C on its compression stroke.



SEM241A

- 11 Disconnect all hoses, connectors and wires attached to intake collector and rocker covers

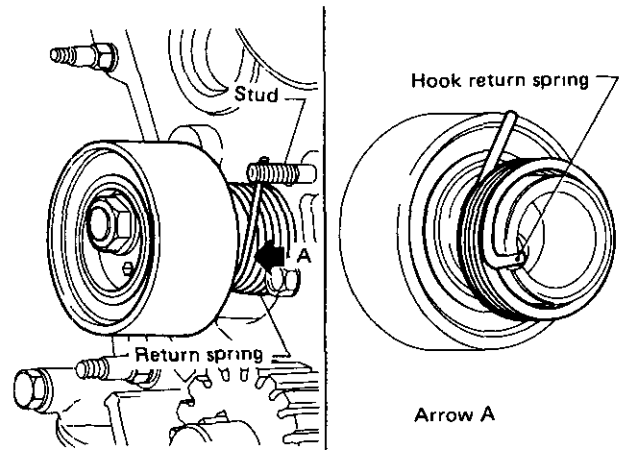
- 12 Remove compressor from compressor bracket and secure with a suitable wire or rag to the body.
13. Remove collector cover and intake collector
14. Remove both rocker covers and loosen all rocker shaft securing bolts

Loosen all rocker shaft securing bolts thoroughly so that timing belt tension can be adjusted correctly. Otherwise, proper belt tension cannot be obtained

15. Install tensioner and return spring.

If coarse stud is once removed, apply locking sealer to threads of stud before installing.

16. Turn tensioner clockwise with hexagon wrench and temporarily tighten tension lock nut

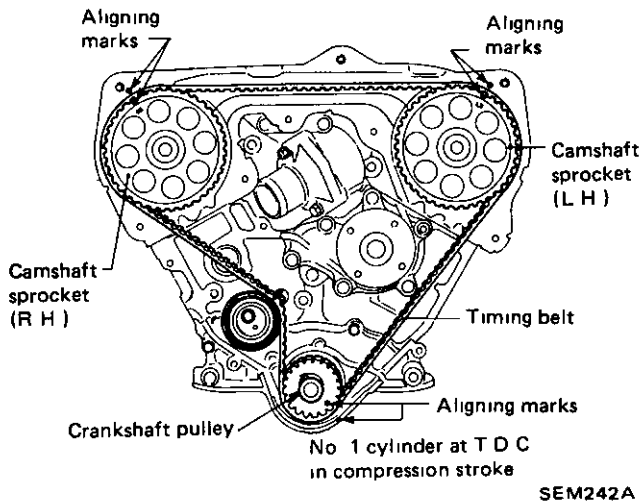


SEM243A

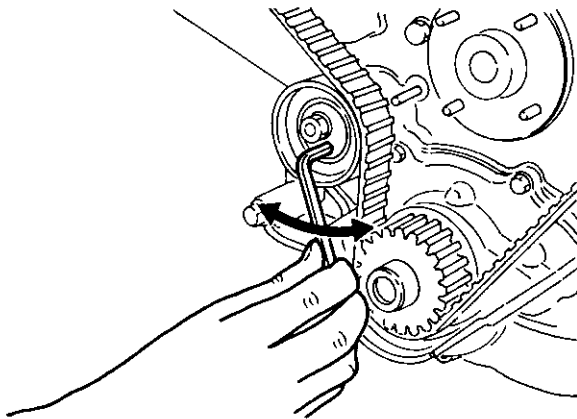
17. Set timing belt.
  - a. Ensure timing belt is clean and free from oil or water. Do not bend it
  - b. Align white lines on timing belt with punch mark on camshaft sprockets and crankshaft pulley.
  - c. Have arrow on timing belt pointing toward front belt covers.

# ENGINE MAINTENANCE

## Replacing Timing Belt (Cont'd)



- 18 Loosen tensioner lock nut
- 19 Slowly turn tensioner with hexagon wrench clockwise and counterclockwise two or three times



20. Tighten tensioner lock nut

 : 43 - 58 N·m  
(4.4 - 5.9 kg-m, 32 - 43 ft-lb)

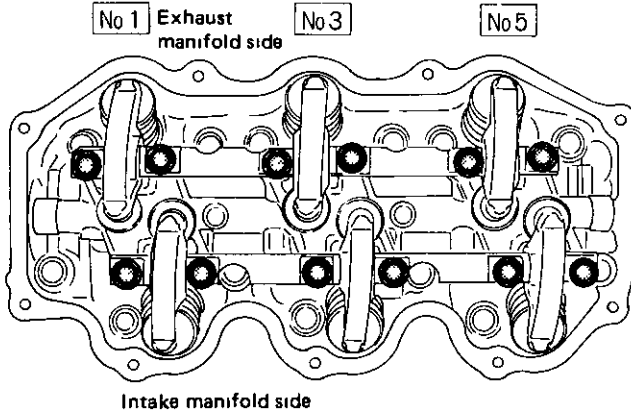
# ENGINE MAINTENANCE

## Replacing Timing Belt (Cont'd)

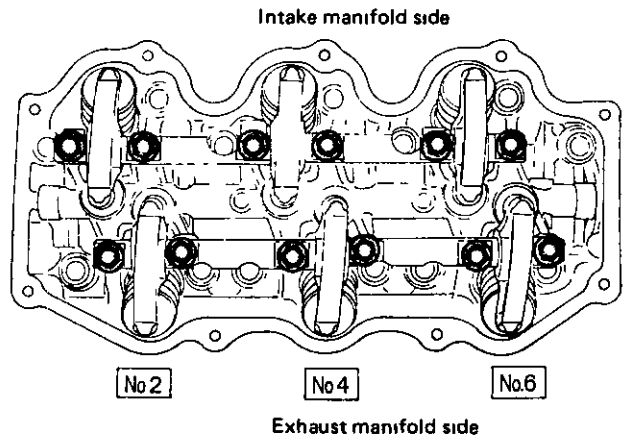
21. Tighten rocker shaft securing bolts in two or three stages

 **18 - 22 N·m**  
(1.8 - 2.2 kg-m, 13 - 16 ft-lb)

R H rocker shafts



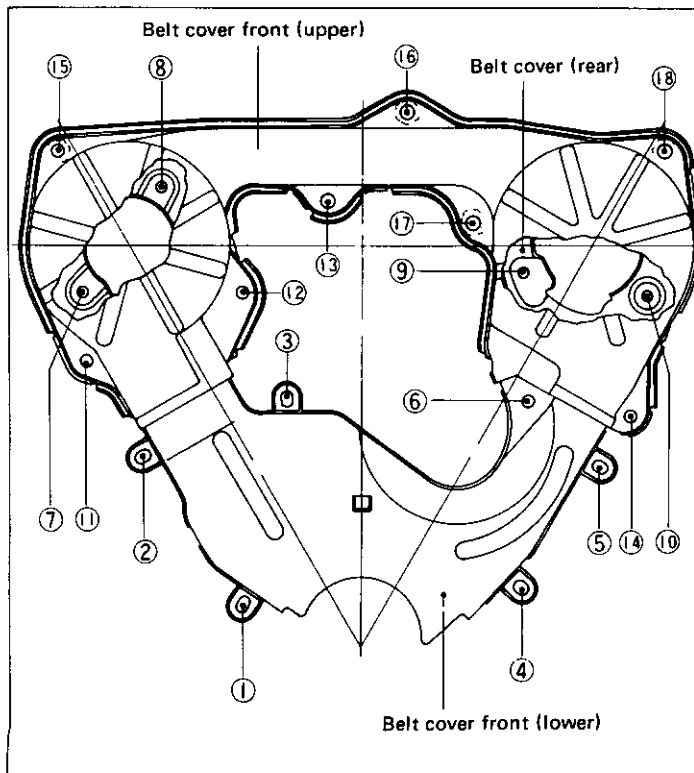
L H rocker shafts

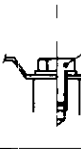


SEM245A

Before tightening, be sure to set camshaft lobe at the position where lobe is not lifted.

22. Install lower and upper belt covers



| Tightened parts                                                                                                                                                                               | Section                          | Parts tightened with bolts                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|----------------------------------------------------------------------|
| <br>Bolt A (6 pcs)<br>Rubber washer<br>Belt cover front (lower)                                            | ①, ②, ③, ④<br>⑤, ⑭               | ①, ②, ③, ④<br>Cylinder block<br>⑤, ⑭<br>Compressor bracket           |
| <br>Bolt B (1 pc)<br>Rubber washer<br>Belt cover front (lower)<br>Water pump mounting bolt                 | ⑥                                | Water pump mounting bolt                                             |
| <br>Bolt C (4 pcs)<br>Belt cover (rear)                                                                    | ⑦, ⑧, ⑨, ⑩                       | Cylinder head                                                        |
| <br>Bolt A (7 pcs)<br>Rubber washer<br>Belt cover front (upper)<br>Belt cover (rear)<br>Welded nut (4 pcs) | ⑪, ⑫, ⑬, ⑭<br>⑮, ⑯, ⑰, ⑱<br>⑲, ⑳ | ⑪, ⑫, ⑬, ⑭<br>Welded nuts<br>⑮, ⑯<br>Cylinder head<br>⑰ Water outlet |

SEM248A

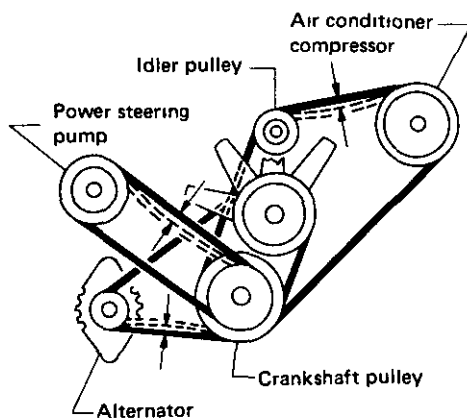
# ENGINE MAINTENANCE

## Replacing Timing Belt (Cont'd)

- 23 Install rocker covers, intake collector and intake manifold
24. Connect hoses, connectors and wires
25. Install compressor to the engine.
26. Install crankshaft pulley and idler bracket of the compressor drive belt

 : Crankshaft pulley bolt  
 123 - 132 N m  
 (12.5 - 13.5 kg-m, 90 - 98 ft-lb)

27. Install lower and upper radiator hoses
28. Install the drive belts



SMA707B

Unit mm (in)

|                            | Used belt deflection |                            | Set deflection of new belt |
|----------------------------|----------------------|----------------------------|----------------------------|
|                            | Limit                | Adjusted deflection        |                            |
| Alternator                 | 12<br>(0.47)         | 7.5 - 8.5<br>(0.30 - 0.33) | 6.5 - 7.5<br>(0.26 - 0.30) |
| Air conditioner compressor | 11<br>(0.43)         | 9 - 10<br>(0.35 - 0.39)    | 8 - 9<br>(0.31 - 0.35)     |
| Power steering oil pump    | 21<br>(0.83)         | 14 - 16<br>(0.55 - 0.63)   | 12 - 14<br>(0.47 - 0.55)   |
| Applied pushing force      | 98 N (10 kg, 22 lb)  |                            |                            |

Inspect drive belt deflections when engine is cold. If engine is hot, check deflections after waiting 30 minutes or more.

- 29 Install fan and radiator shroud
30. Fill radiator with engine coolant up to filler opening

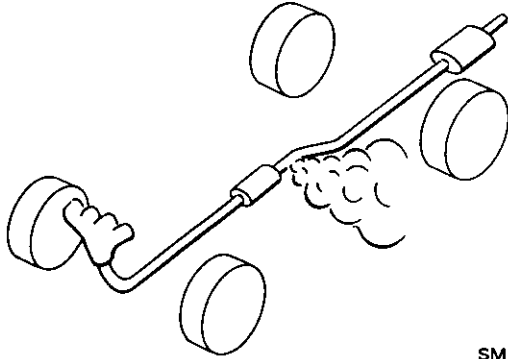
Slowly pour coolant through coolant filler neck to allow air in system to escape.

- 31 Fill reservoir tank up to "MAX" level Then close radiator cap
32. Run the engine at approximately 2,000 rpm until it warms up.
33. Check area around radiator drain plug and radiator hoses for any sign of water leakage
34. Stop the engine and after it cools down, refill the radiator and engine with coolant up to the filler opening Fill the reservoir tank with coolant up to "MAX" level

# CHASSIS AND BODY MAINTENANCE

## Checking Exhaust System

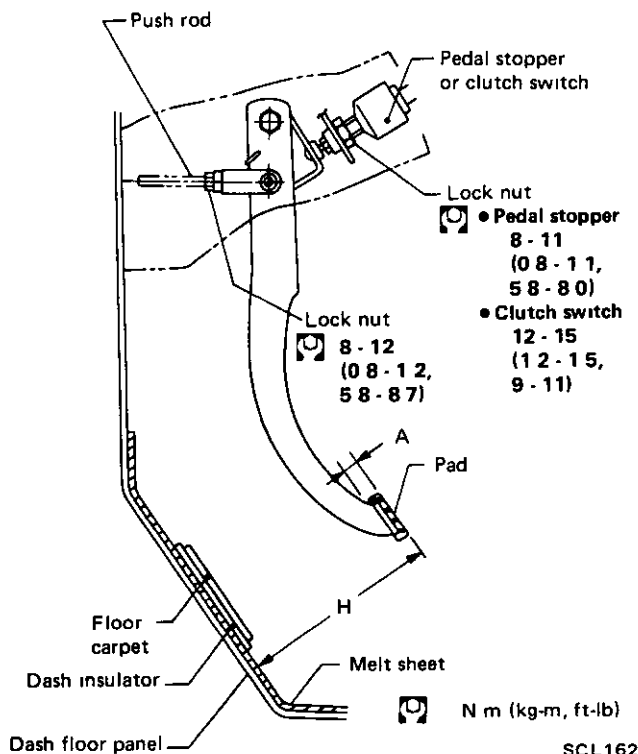
Check exhaust pipes, muffler and mounting for proper attachment, leaks, cracks, damage, loose connections, chafing or deterioration.



SMA211A

## Checking Clutch Operation

Check clutch pedal height, free travel and smooth operation



**Pedal free height "H":**

195 - 205 mm (7.68 - 8.07 in)

**Pedal free travel "A":**

1 - 3 mm (0.04 - 0.12 in)

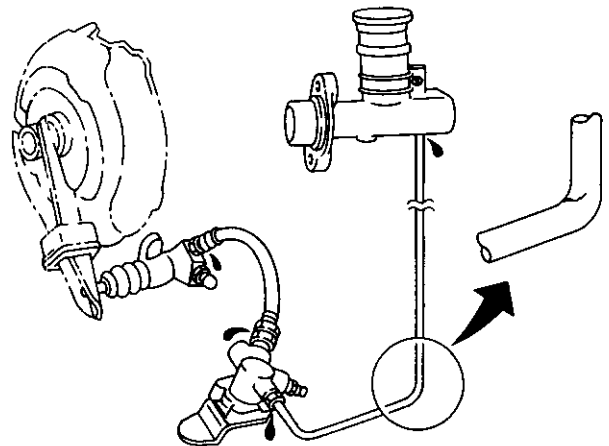
Adjust clutch pedal free height and pedal free travel if necessary. Refer to section CL.

## Checking Clutch Fluid Level

If fluid level is extremely low, check clutch system for leaks.

## Checking Clutch System

Check clutch fluid lines for proper attachment, leaks, chafing, deterioration, etc.

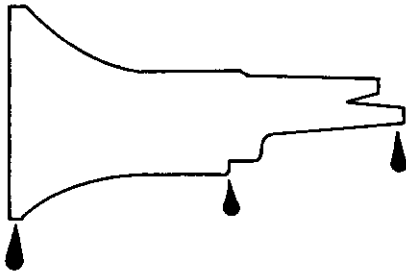


SMA741A

# CHASSIS AND BODY MAINTENANCE

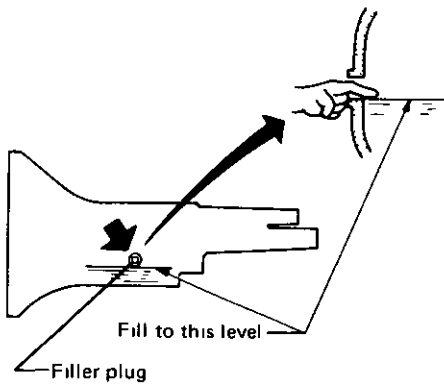
## Checking M/T Oil

- 1 Check manual transmission for oil leakage.



SMA429A

2. Check oil level



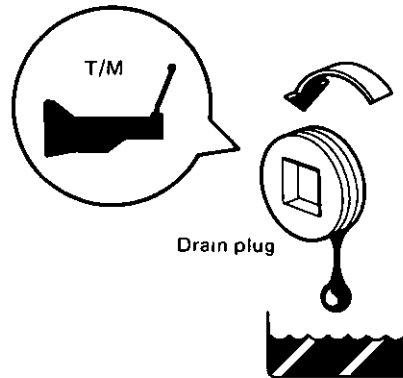
SMA103

-  : Filler plug  
25 - 34 N·m  
(2.5 - 3.5 kg-m, 18 - 25 ft-lb)

### CAUTION:

Never start engine while checking oil level.

## Changing M/T Oil



SMA255A

### Oil capacity:

FS5W71C

2.0 liters (4-1/4 US pt, 3-1/2 Imp pt)

FS5R90A

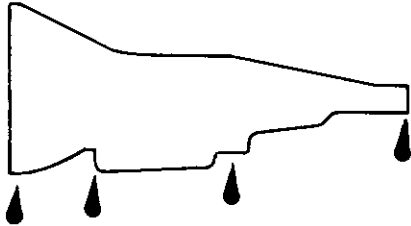
2.4 liters (5-1/8 US pt, 4 1/4 Imp pt)

-  : Drain plug  
25 - 34 N·m  
(2.5 - 3.5 kg-m, 18 - 25 ft-lb)

# CHASSIS AND BODY MAINTENANCE

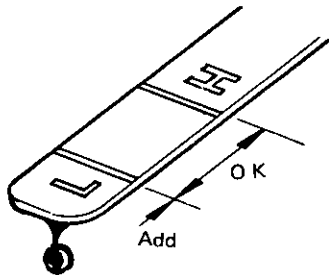
## Checking A/T Fluid

- 1 Check automatic transmission for oil leakage.



SMA430A

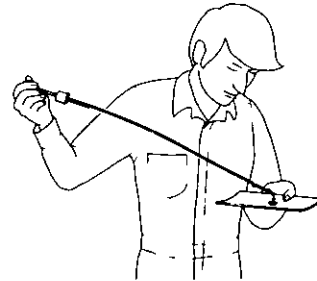
- 2 Check under following conditions
  - (1) Place selector lever in "P" (PARK) position and idle engine
  - (2) Maintain fluid temperature at 50 to 80°C (122 to 176°F)
  - (3) Add oil, if necessaryUse only A/T fluid having "DEXRON"



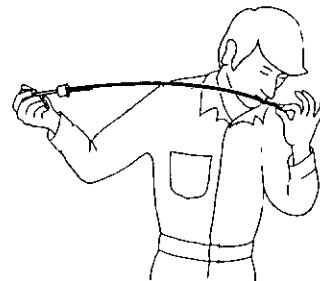
SMA559A

3. Check automatic fluid condition

Check fluid for contamination of automatic transmission. If fluid is very dark or smells burned, the frictional material (clutches, band, etc.) may need replacement.



Check fluid for contamination



Check fluid for smell

SMA107

# CHASSIS AND BODY MAINTENANCE

## Changing A/T Fluid

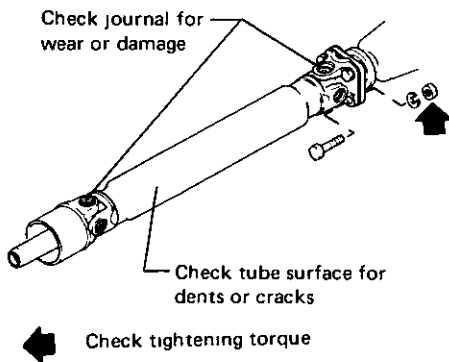
- 1 Drain fluid by removing oil pan
- 2 Replace gasket with new one
- 3 Refill with fluid and then check fluid level.

Oil capacity:

7.0 liters (7-3/8 US qt, 6-1/8 Imp qt)

## Checking Propeller Shaft

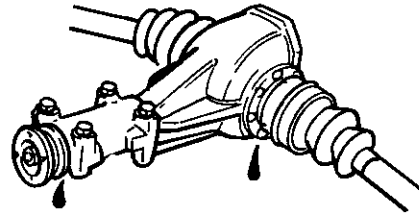
Check propeller shaft for damage, looseness or grease leakage



SMA269

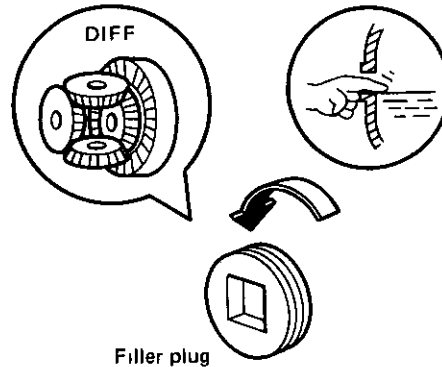
## Checking Differential Gear Oil

- 1 Check differential carrier for oil leakage



SMA432A

- 2 Check oil level



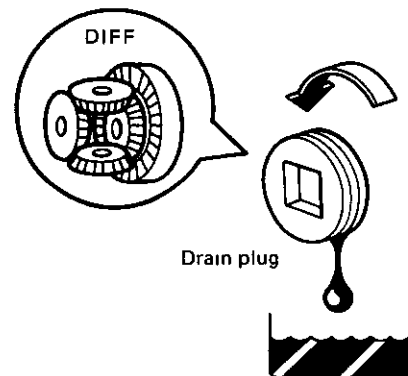
SMA257A



: Filler plug

59 - 98 N·m (6 - 10 kg-m, 43 - 72 ft-lb)

## Changing Differential Gear Oil



SMA363A

Oil capacity:

1.3 Liters (2-3/4 US pt, 2-1/4 Imp pt)



: Drain plug

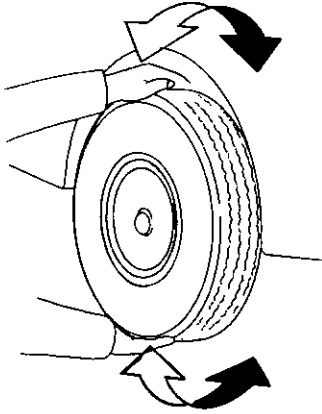
59 - 98 N·m (6 - 10 kg-m, 43 - 72 ft-lb)

# CHASSIS AND BODY MAINTENANCE

## Checking Front Axle and Front Suspension Parts

- Check axle and suspension parts for looseness, wear or damage

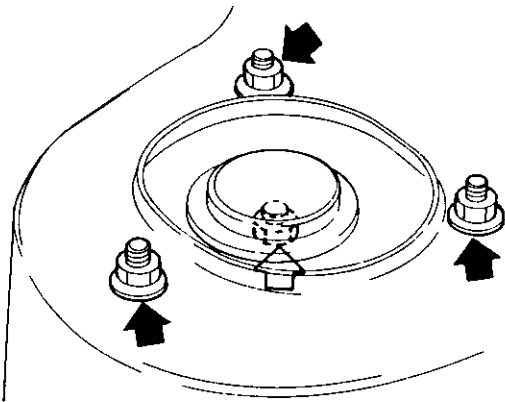
(1) Shake each front wheel



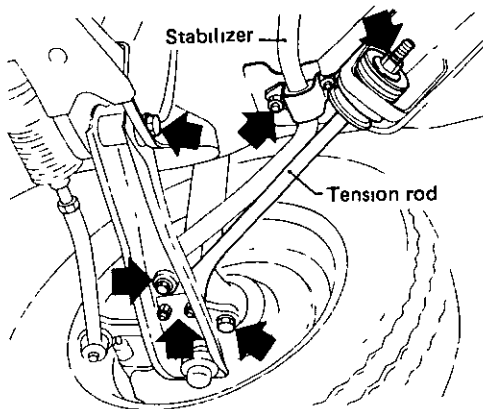
SMA525A

(2) Retighten all nuts and bolts to the specified torque.

Refer to section FA for tightening torque



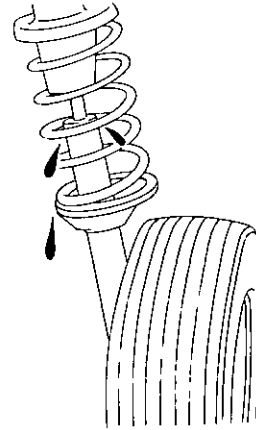
SMA614



SMA615

(3) Check axle and suspension parts for wear, cracks or damage

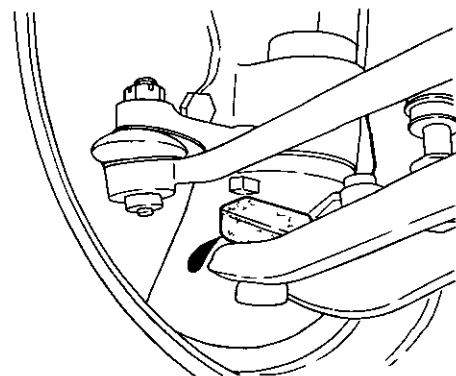
- Check strut (Shock absorber) for oil leakage or damage



SMA113

## Checking Steering Linkage Ball Joint & Suspension Ball Joint

- Check ball joint for grease leakage or other damage

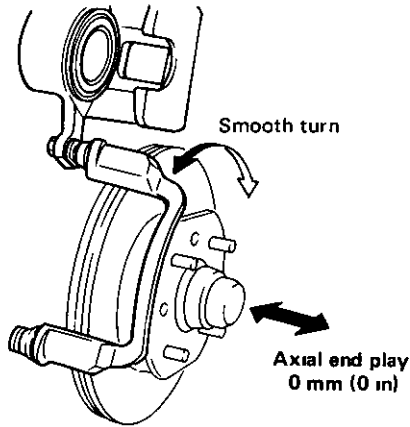


SMA723A

# CHASSIS AND BODY MAINTENANCE

## Checking Front Wheel Bearing Grease

- Check that wheel bearings operate smoothly, as well as axial end play and grease leakage

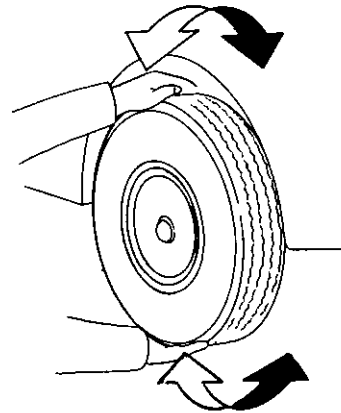


If necessary, adjust wheel bearing preload Refer to section FA.

## Checking Rear Axle and Rear Suspension Parts

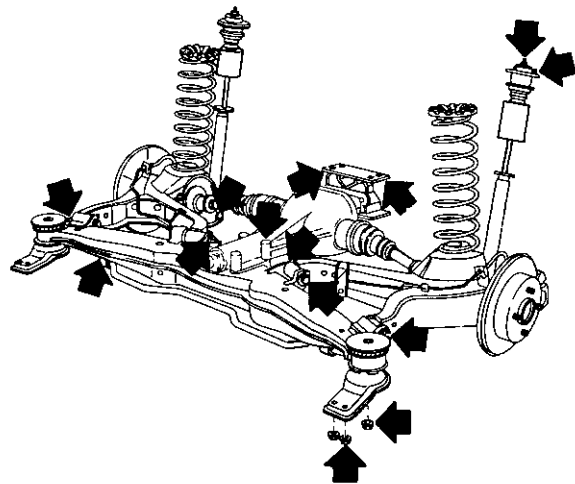
- Check axle and suspension parts for looseness, wear or damage.

(1) Shake each rear wheel



(2) Retighten all nuts and bolts to the specified torque

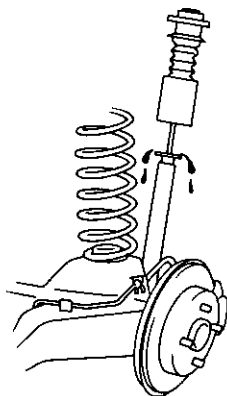
Refer to section RA for tightening torque



# CHASSIS AND BODY MAINTENANCE

## Checking Rear Axle and Rear Suspension Parts (Cont'd)

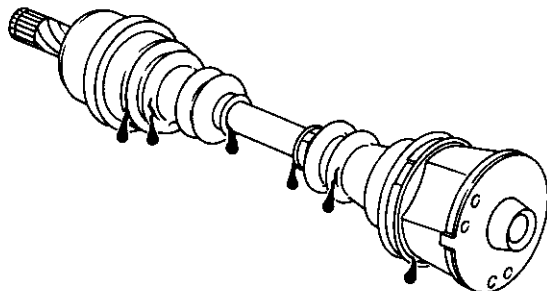
- (3) Check axle and suspension parts for wear, cracks or damage
- Check shock absorber for oil leakage or damage



SMA726A

## Checking Drive Shaft

Check boot and drive shaft for cracks, wear, damage or grease leakage.



SMA743A

## Checking Front Wheel Alignment

### PRELIMINARY INSPECTION

- Tire pressure
- Wheel bearing axial play
- Suspension ball joint
- Steering gear housing looseness at frame
- Steering linkage and connections
- Shock absorber operation
- Tighten front axle and suspension parts.
- Measure vehicle height (Unladen).  
The vehicle needs to be on a level surface
- Repair or replace the damaged portion or parts.

"Unladen"

Fuel tank, radiator and engine oil pan are filled up.  
Spare tire, jack, hand tools, mats are in position

### CAMBER, CASTER AND KINGPIN INCLINATION

Camber, caster and kingpin inclination are preset at factory and cannot be adjusted

**Camber:**

—35' to 55'

**Caster:**

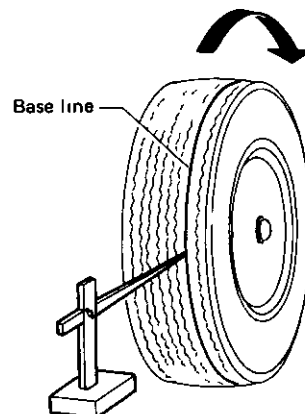
5° 50' - 7° 20'

**Kingpin inclination:**

12° 55' - 14° 25'

### TOE-IN

1. Mark a base line across the tread



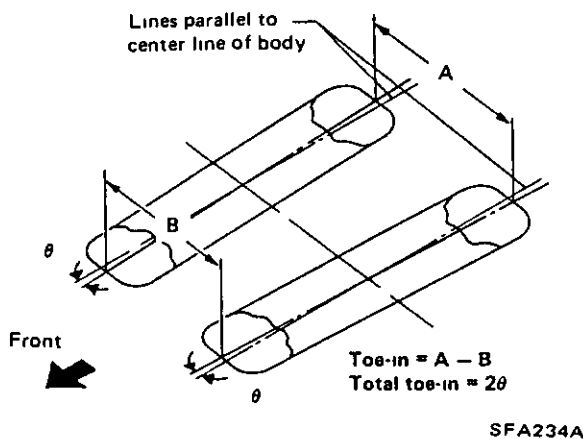
SMA123

After lowering front of vehicle, move it up and down to eliminate friction.

# CHASSIS AND BODY MAINTENANCE

## Checking Front Wheel Alignment (Cont'd)

### 2. Measure toe-in

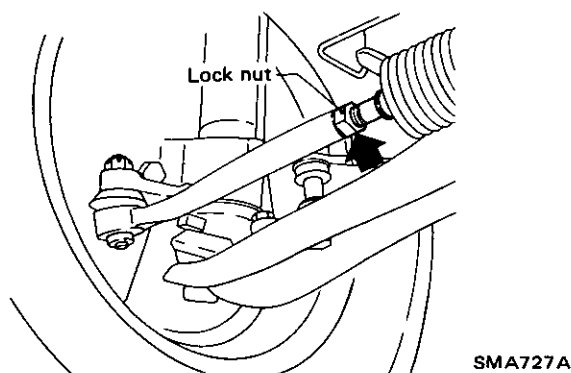


#### Toe-in:

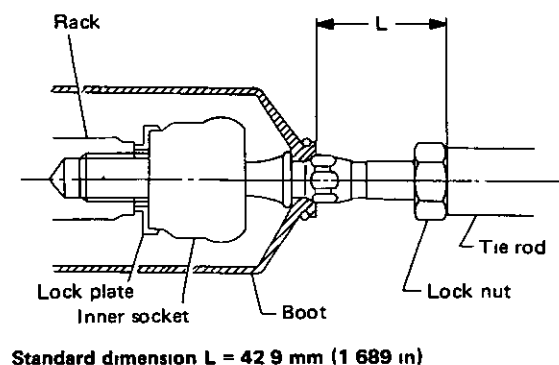
1 - 3 mm (0.04 - 0.12 in)

6' - 17' (Total toe-in)

### 3 Toe-in can be adjusted by varying the length of steering tie rods.

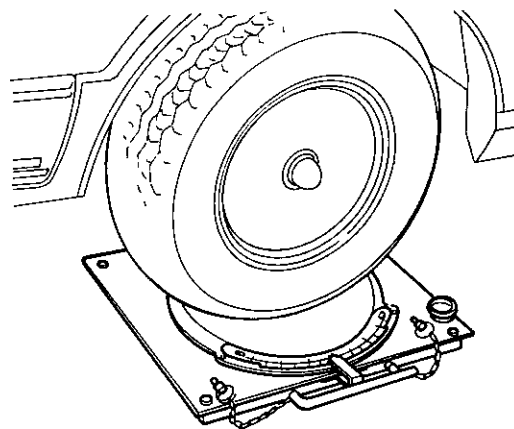


 : Tie rod lock nut  
78 - 98 N m (8 - 10 kg-m, 58 - 72 ft-lb)



### FRONT WHEEL TURNING ANGLE

- Rotate steering wheel all the way right and left, measure turning angle on inner wheel



#### Turning angle.

##### Full turns

##### Inside

35° - 39°

##### Outside

27° - 31°

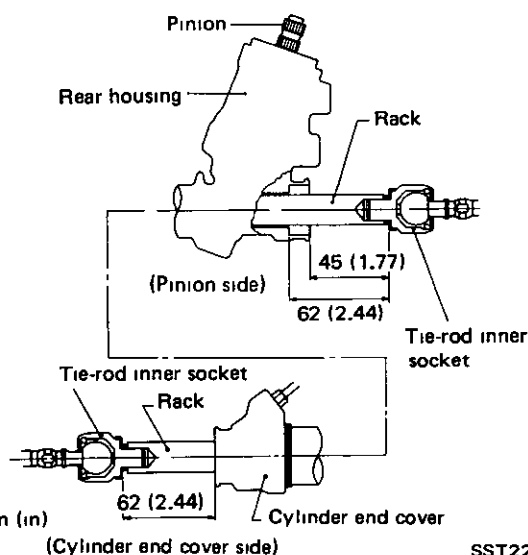
##### Toe-out turn (Inside/Outside):

22°30'/20°

- If it is not within specification, check rack stroke

Refer to section ST.

#### Rack stroke



# CHASSIS AND BODY MAINTENANCE

## Checking Rear Wheel Alignment

### PRELIMINARY INSPECTION

- Tire pressure
- Wheel bearing axial play
- Shock absorber operation.
- Tighten rear axle and suspension parts.
- Measure vehicle height (Unladen)  
The vehicle requires to be on a level surface
- Repair or replace the damaged portion or parts.

"Unladen"

Fuel tank, radiator and engine oil pan are filled up  
Spare tire, jack, hand tools, mats are in position

### CAMBER

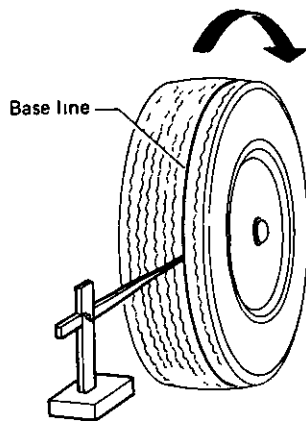
Camber is preset at factory and cannot be adjusted.

Camber:

$-1^{\circ}55'$  to  $-25'$

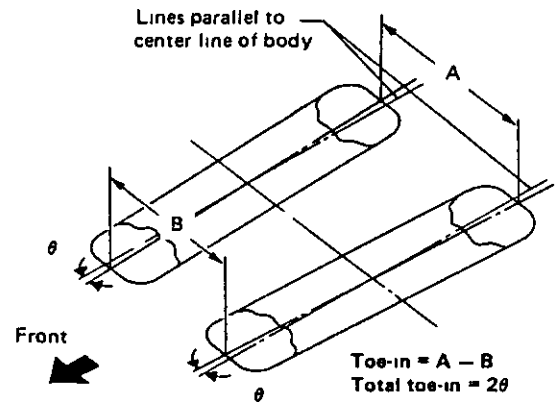
### TOE-IN

1. Mark a base line across the tread



SMA123

- 2 Measure toe-in



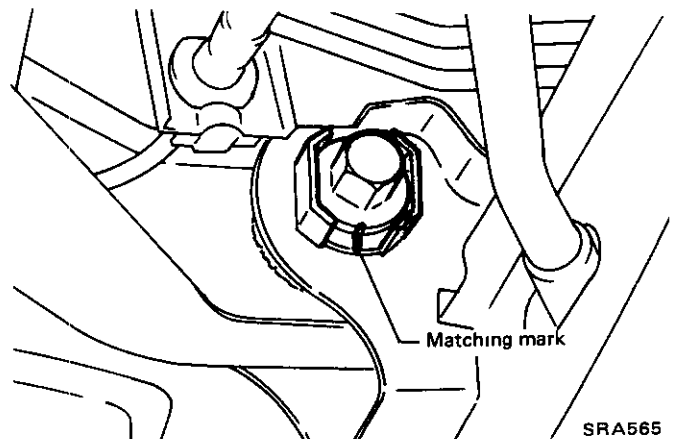
SFA234A

Toe-in:

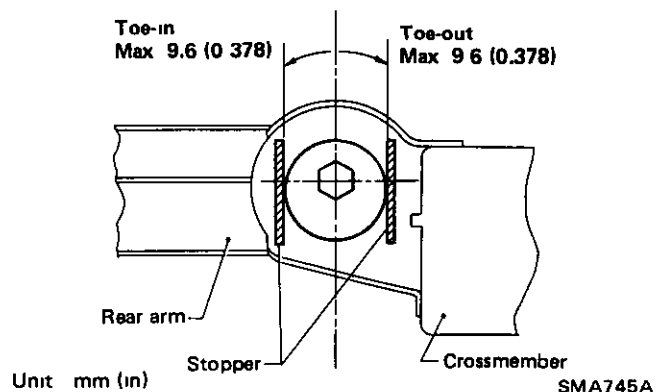
$-1.5$  to  $2.5$  mm ( $-0.059$  to  $0.098$  in)

$-8'$  to  $14'$  (Total toe-in)

- 3 Toe-in can be adjusted by inside of rear arm bushing pins



SRA565

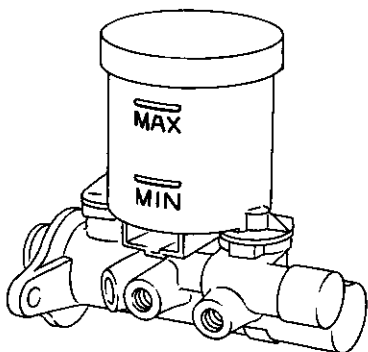


SMA745A

# CHASSIS AND BODY MAINTENANCE

## Checking Brake Fluid Level and Leaks

If fluid level is extremely low, check brake system for leaks.

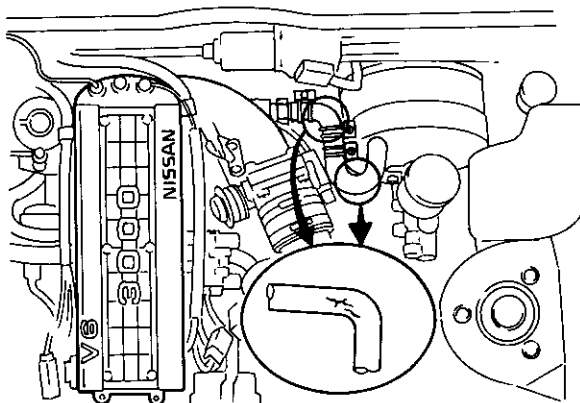


SMA730A

## Checking Brake Lines & Hoses

### BRAKE BOOSTER

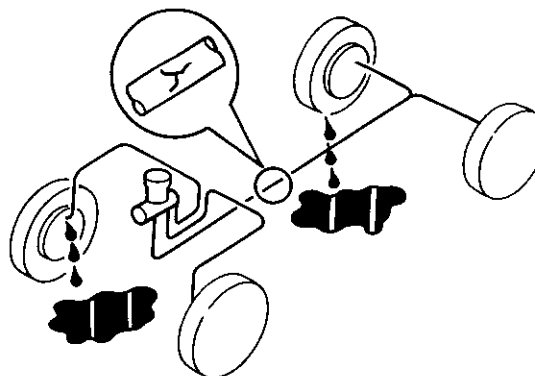
Check vacuum lines connections and check valve for proper attachment, air tightness, chafing or deterioration



SBR986

### BRAKE LINE

Check brake fluid lines and parking brake cables for proper attachment, leaks, chafing, abrasion or deterioration



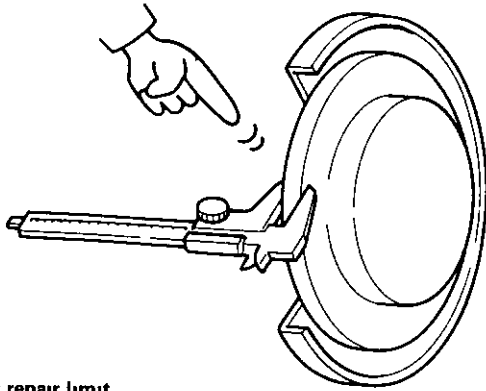
SMA732A

# CHASSIS AND BODY MAINTENANCE

## Checking Disc Brake

Check condition of disc brake components

Rotor

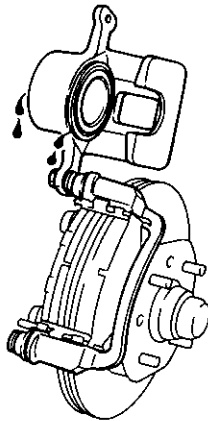


Rotor repair limit

|             |         |                 |
|-------------|---------|-----------------|
| Front brake | CL28VB  | 20 mm (0.79 in) |
|             | CL28VE  | 24 mm (0.94 in) |
| Rear brake  | CL14HVB | 18 mm (0.71 in) |

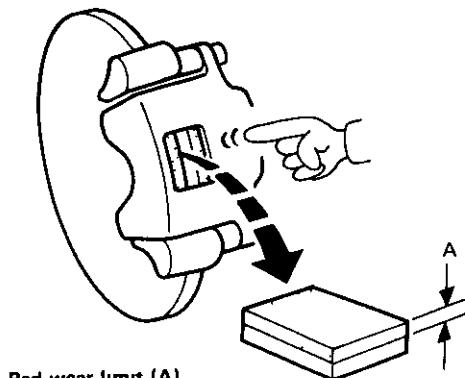
SMA733A

Caliper Oil leakage



SMA734A

Pad Wear or damage



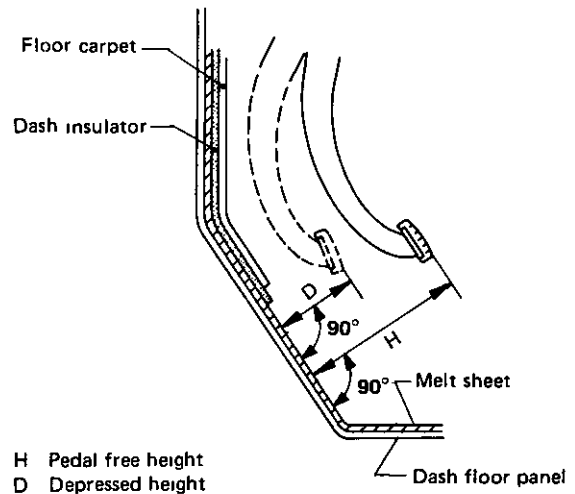
Pad wear limit (A)  
2.0 mm (0.079 in)

SMA364A

## Checking Foot Brake

### Pedal Operation

- Check brake pedal free height, depressed height and for smooth operation



H Pedal free height  
D Depressed height

SMA171B

Pedal free height "H":

M/T model 182 - 192 mm (7.17 - 7.56 in)

A/T model 184 - 194 mm (7.24 - 7.64 in)

Depressed height "D"

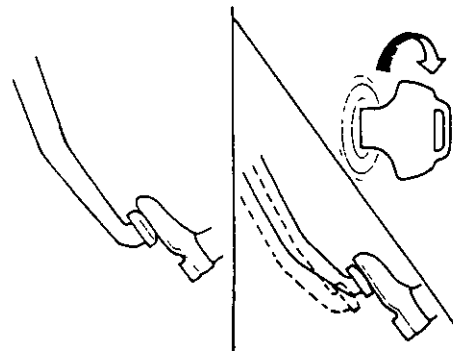
90 mm (3.54 in) or more

Adjust pedal height if necessary.

Refer to section BR

## Checking Brake Booster Function

- Make sure that there is not change in pedal stroke while depressing brake pedal several times with engine off.
- Depress brake pedal, then start engine. If pedal goes down slightly, operation is normal

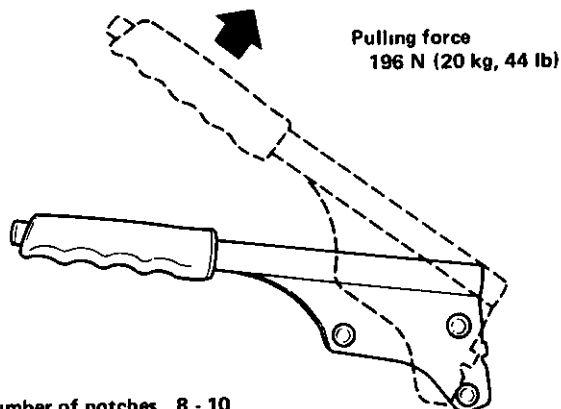


SBR002A

# CHASSIS AND BODY MAINTENANCE

## Checking Parking Brake

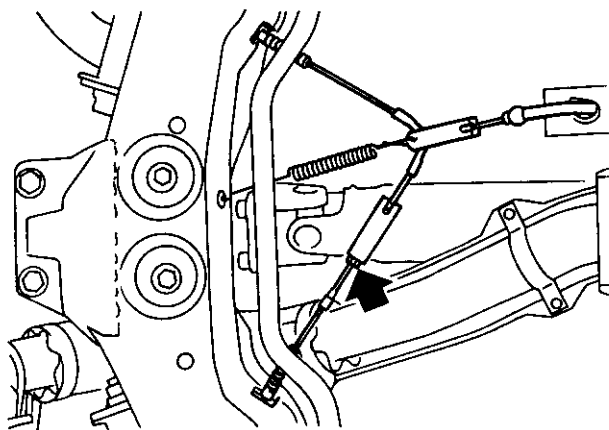
- Pull lever with specified amount of force  
Check lever stroke for smooth operation.



Number of notches 8 - 10

SMA436

- Use adjuster to adjust lever stroke.



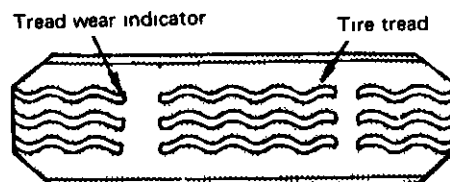
SMA735A

- Bend parking brake warning lamp switch plate down so that brake warning light comes on when ratchet at parking brake lever is pulled one notch and goes out when fully released

## Checking Tire Condition

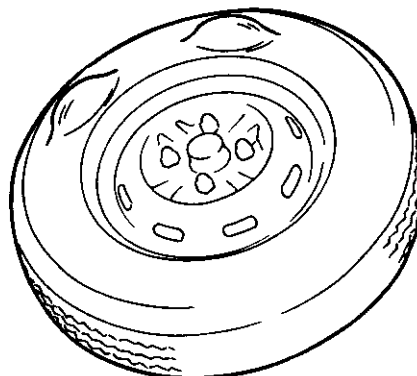
### TIRE CONDITION

- When tread wear indicators appear, replace them with new ones



WH024

- Check tread and side walls for cracks, holes, separation or damage



SMA539A

- Check tire valves for air leakage

### TIRE INFLATION

Tire pressure needs to be measured when tire is cold.

Tire pressure needs to be set to the specifications on the tire placard affixed to the driver's side center pillar.

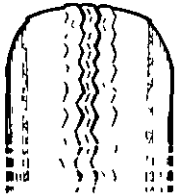
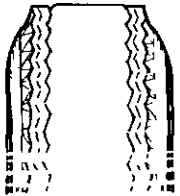
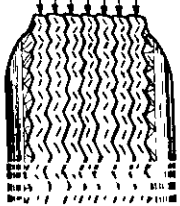
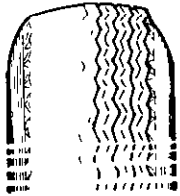
# CHASSIS AND BODY MAINTENANCE

## —Checking Tire Condition (Cont'd)—

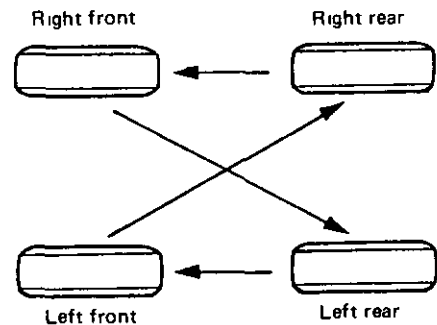
## Tire Rotation

### Abnormal tire wear

Correct abnormal tire wear according to the chart shown below

| Condition                                                                                                         | Probable cause                                                                                                                                                                                                                                        | Corrective action                                                                                                                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p>Shoulder wear</p>            | <ul style="list-style-type: none"> <li>• Underinflation (both sides wear)</li> <li>• Incorrect wheel camber (one side wear)</li> <li>• Hard cornering</li> <li>• Lack of rotation</li> </ul>                                                          | <ul style="list-style-type: none"> <li>• Measure and adjust pressure</li> <li>• Repair, or replace axle and suspension parts</li> <li>• Reduce speed</li> <li>• Rotate tires</li> </ul>                                                                                   |
|  <p>Center wear</p>             | <ul style="list-style-type: none"> <li>• Overinflation</li> <li>• Lack of rotation</li> </ul>                                                                                                                                                         | <ul style="list-style-type: none"> <li>• Measure and adjust pressure</li> <li>• Rotate tires</li> </ul>                                                                                                                                                                   |
|  <p>Toe-in or toe out wear</p> | <ul style="list-style-type: none"> <li>• Incorrect toe</li> </ul>                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>• Adjust toe-in</li> </ul>                                                                                                                                                                                                         |
|  <p>Uneven wear</p>            | <ul style="list-style-type: none"> <li>• Incorrect camber or caster</li> <li>• Malfunctioning suspension</li> <li>• Unbalanced wheel</li> <li>• Out-of-round brake drum</li> <li>• Other mechanical conditions</li> <li>• Lack of rotation</li> </ul> | <ul style="list-style-type: none"> <li>• Repair, or replace axle and suspension parts</li> <li>• Repair, replace or, if necessary, reinstall</li> <li>• Balance or replace</li> <li>• Correct or replace</li> <li>• Correct or replace</li> <li>• Rotate tires</li> </ul> |

SMA068



4 WHEELS

SMA649B

Do not include the Space Saver Spare tire when rotating the tires.

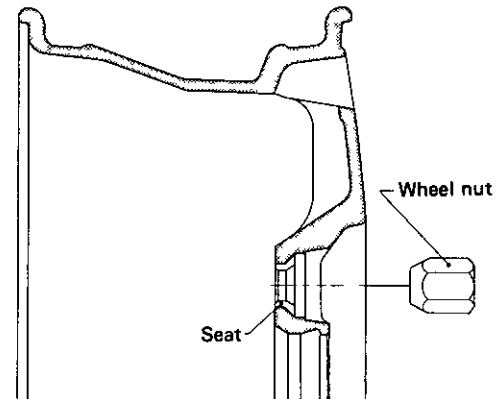
# CHASSIS AND BODY MAINTENANCE

## Tire Replacement

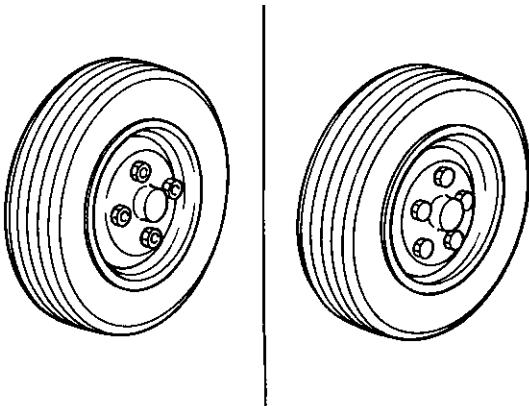
### CAUTION:

- Do not mix different types of tires, such as bias, bias belted and radial tires under any circumstances.
- When replacing a tire, use a tire of the same size and type (Bias, Belted or Radial).
- Use recommended tires and wheels
- Do not mix tires of different brands, tread patterns or type
- When replacing standard tires with those of different diameter, the speedometer requires to be recalibrated
- Tighten wheel nuts in criss-cross fashion

- Use tapered wheel nuts for aluminum wheels

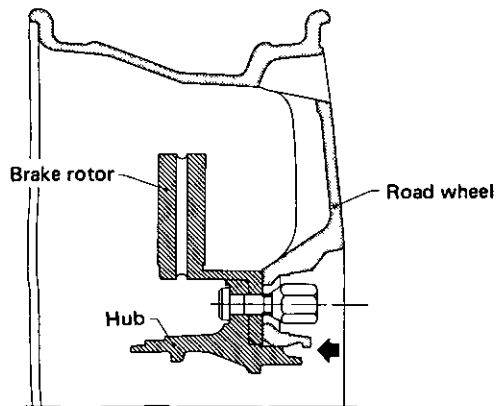


SMA725B



SMA737A

- Install road wheel using the wheel hub boss.



SMA724B

# CHASSIS AND BODY MAINTENANCE

## Wheel Nut

### CAUTION:

Be careful not to smear threaded portion of bolt and nut as well as seat of nut with oil or grease.



SMA726B

## Tire Repair

### CAUTION.

When replacing tire, be careful not to damage tire bead, rim-flange and bead seat.

When installing tire, note the following items:

- Install valve core and inflate to proper pressure. Make sure the locating rings of the tire are around the rim flanges on both sides.
- Check valves for leakage after inflating tires.
- Tighten valve caps firmly by hand.

### WARNING:

To avoid serious personal injury, never stand over tire when inflating it. Never inflate to a pressure greater than 40 psi (275 kPa). If beads fail to seat at that pressure, deflate the tire, lubricate it again, and then reinflate it. If the tire is overinflated, the bead might break, possibly resulting in serious personal injury

## Wheel Inspection

- Check wheel rim (especially rim flange and bead seat) for rust, distortion, cracks or other damage
- Examine wheel rim for lateral and radial runout, using dial gauge

Lateral runout (A) and radial runout (B).

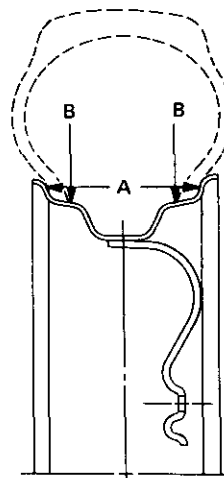
Steel wheel    Less than  
1 0 mm (0.039 in)

Aluminum wheel    Less than  
0 5 mm (0.020 in)

Difference between right and  
left lateral runout.

Steel wheel    Less than  
0.5 mm (0.020 in)

Aluminum wheel .. Less than  
0 2 mm (0.008 in)



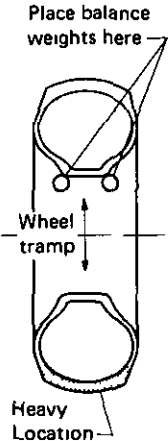
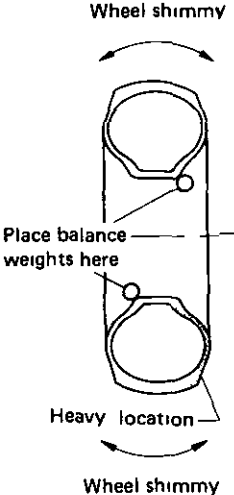
SMA140B

- Replace wheel when any of the following conditions occur
  - Bent, dented or heavily rusted wheel
  - Elongated bolt holes
  - Excessive lateral or radial runout
  - Air leaks through welds
  - Loose wheel nut

# CHASSIS AND BODY MAINTENANCE

## Balancing Wheels

## Spare Tire

| Cause                | Wheel static unbalance                                                                                  | Wheel dynamic unbalance                                                                                   |
|----------------------|---------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Symptom of unbalance | Wheel tramp<br>Wheel shimmy                                                                             | Wheel shimmy                                                                                              |
| Corrective action    | Balance statically<br> | Balance dynamically<br> |

SMA075

This model is equipped with the Space Saver Spare tire

The spare tire is designed for emergency use only. It is stored in a deflated condition.

An inflator (canister or air pump) has been provided to inflate the spare.

The spare tire can be used repeatedly for emergency situations. The canister needs replacement after each inflation.

Use the proper size canister for spare tire size.

### CAUTION:

The spare tire is restricted in driving speed up to a maximum of 80 km/h (50 MPH) for short distances and emergency use only.

### INFLATION WITH APPROVED INFLATOR

1. Before changing tire, carefully read the caution and directions affixed on both the inflator and the spare tire.
2. Remove the uninflated spare tire and the inflator from rear compartment.

### WARNING:

Do not inflate at this point.

3. Jack up front or rear of vehicle and remove the damaged tire. Then mount the uninflated spare tire to the axle. (Tighten wheel nuts slightly.)

Use spare wheel nuts in the tool bag on aluminum wheels equipped vehicles.

Do not use the wheel nuts for aluminum wheels on the spare tire wheel to avoid the wheel coming off the axle and causing personal injury.

4. Using Canister

- (1) With tire valve at 6 o'clock position, inflate the spare tire with the canister. Place tire canister on the tire inflation valve and push squarely until gas can be heard entering the tire. It may take 3 minutes.

### WARNING:

The metal parts of the canister become extremely cold during inflation and can cause frost bite. Therefore, avoid contact with the metal, use a glove or other protection.

# CHASSIS AND BODY MAINTENANCE

## Spare Tire (Cont'd)

- (2) To ensure complete emptying of the canister, hold the canister in position for one minute after sound stops
- a. If temperature is below  $-10^{\circ}\text{C}$  ( $14^{\circ}\text{F}$ ), the canister needs to be warmed on the windshield defroster for five to ten minutes to provide tire inflation.
- b. In cold weather, the tire may not look fully inflated. Therefore, drive slowly for the first mile, as the tire temperature rises the pressure will increase.

### Using Air Compressor

- (1) Remove the valve cap from the spare tire and securely connect the air pump hose in its place
- (2) Connect the power cord plug of the air pump to the cigarette lighter socket. The spare tire may be inflated to the recommended pressure 28 psi (200 kPa) in about 6 minutes. Adjust the tire pressure per the tire placard with tire pressure gauge

If the air pump works slowly, run the engine while the air pump is working. In this case, remove jack with the spare tire attached to the axle.

### WARNING.

- Do not run the engine in a closed space or with the vehicle jacked up.
- Do not touch the air pump with the bare hands while it is working.

- (3) Disconnect the power cord plug from socket. Check the tire for air leakage, and then securely install and tighten the valve cap

5 Lower car and fully tighten wheel nuts

**Do not install the wheel cover on the spare tire**

### DEFLATION

- 1 Deflate tire by depressing button on tire inflation valve or by removing valve core

### WARNING:

To avoid personal injury, do not inhale the gas which is vented while the tire is deflating.

- 2 Flatten tire. The spare tire becomes folded gradually while deflating
- 3 Store tire in rear compartment.

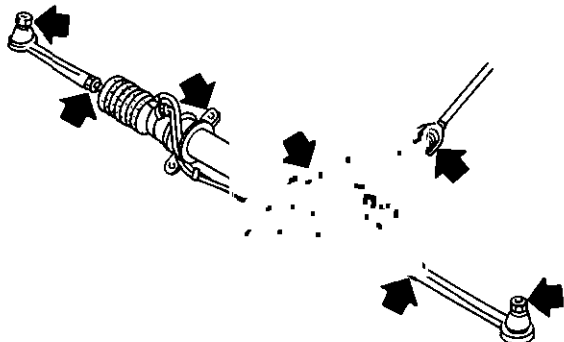
### REPAIR

Only qualified tire experts are authorized to dismount the spare tire from its rim or repair it in any way. Improper service can result in serious personal injury.

Contact agents of tire manufacturer, their dealers or NISSAN/DATSUN dealers if service is required.

# CHASSIS AND BODY MAINTENANCE

## Checking Steering Gear and Linkage

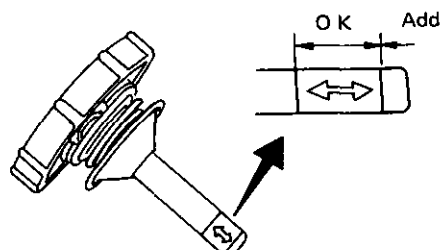


SMA738A

- Steering gear
  - (1) Check gear housing and boots for looseness, damage or grease leakage.
  - (2) Check connection with steering column for looseness.
- Steering linkage
  - (1) Check ball joint, dust cover and other component parts for looseness, wear, damage or grease leakage.
  - (2) Check for missing parts (cotter pins, washer, etc )

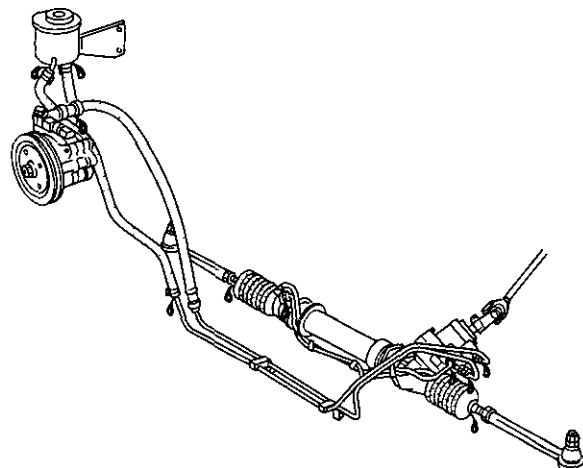
## Checking Power Steering System Fluid and Lines

- Check fluid level, when the fluid is cold



SMA750A

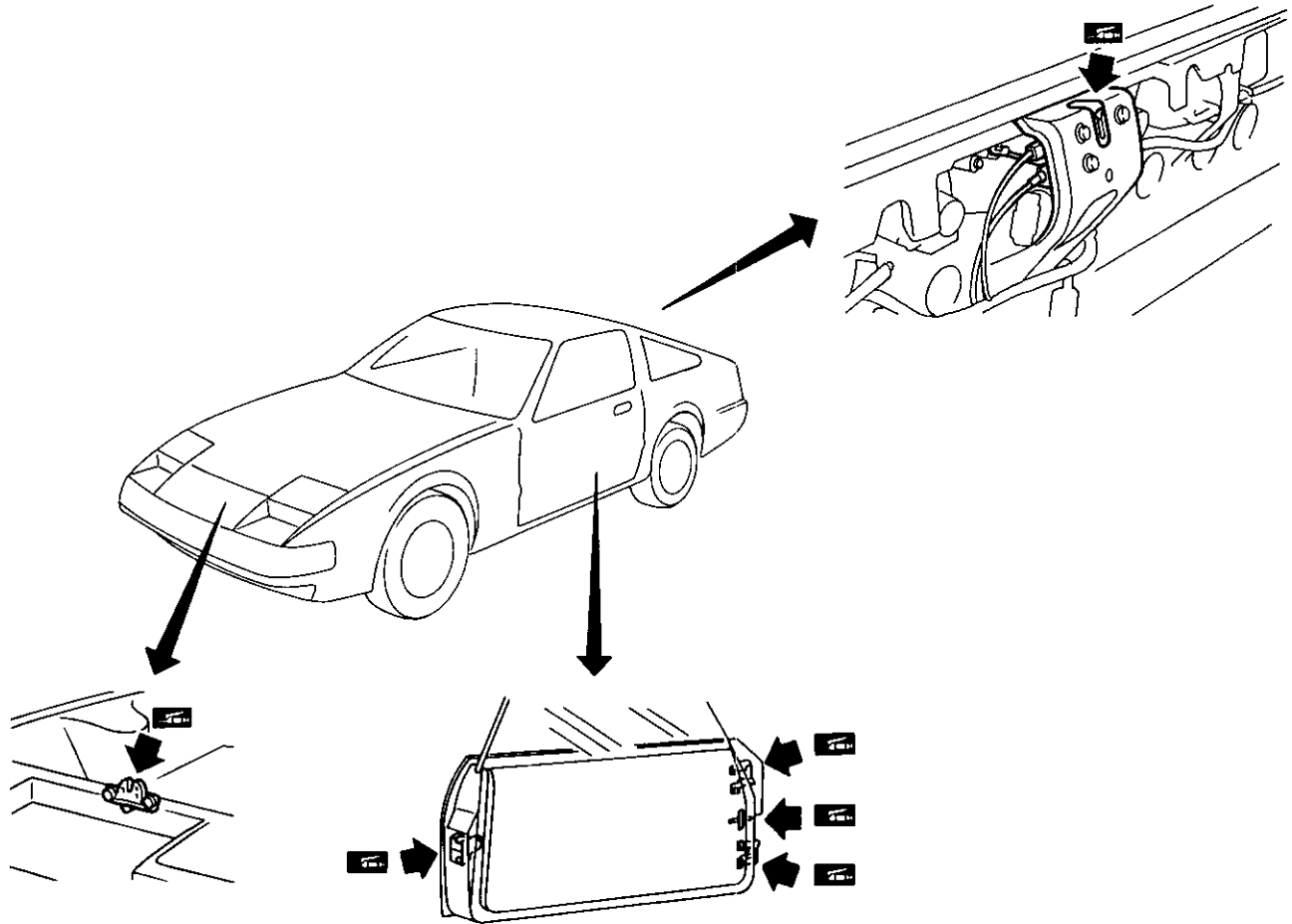
- Check lines for proper attachment, leaks, cracks, damage, loose connections, chafing and deterioration



SMA739A

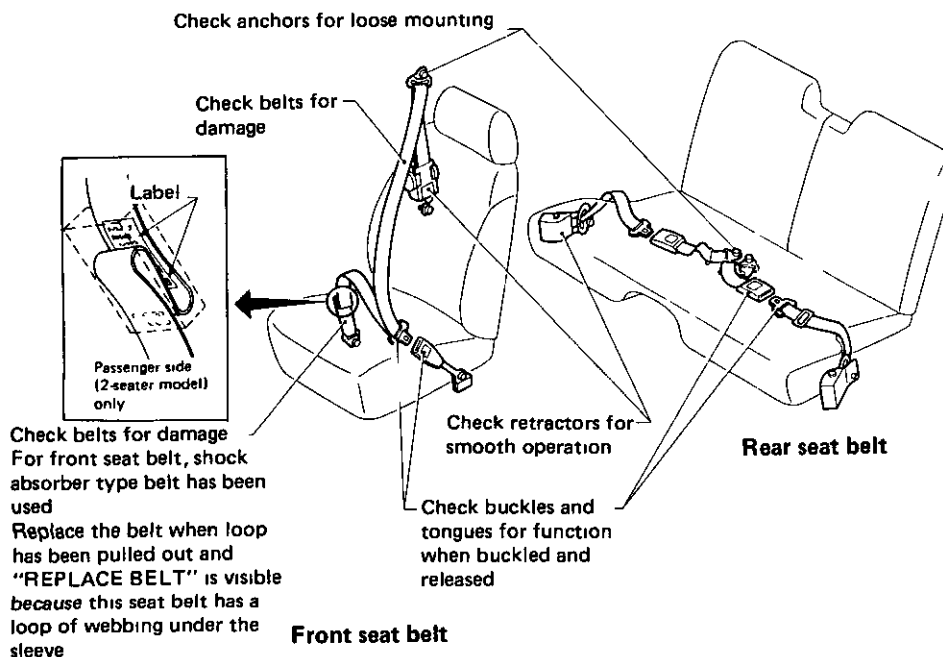
# CHASSIS AND BODY MAINTENANCE

## Lubricating Locks, Hinges and Hood Latches



SMA709B

## Checking Seat Belts, Buckles, Retractors, Anchors and Adjusters



### CAUTION

- 1 If the vehicle is collided or overturned, replace the entire belt assembly, regardless of nature of accident
- 2 If the condition of any component of a seat belt is questionable, do not have seat belt repaired, but replaced as a belt assembly
- 3 If webbing is cut, frayed, or damaged, replace belt assembly
- 4 Do not spill drinks, oil, etc on inner lap belt buckle. Never oil tongue and buckle
- 5 Use a NISSAN genuine seat belt assembly

 **Anchor bolt**  
35.8 - 45.6 N m  
(3.65 - 4.65 kg-m,  
26.4 - 33.6 ft-lb)

SMA710B

# SERVICE DATA AND SPECIFICATIONS (S.D.S.)

## Engine Maintenance

### INSPECTION AND ADJUSTMENT

#### Drive belt deflection

Unit mm (in)

|                            | Used belt deflection |                            | Set deflection of new belt |
|----------------------------|----------------------|----------------------------|----------------------------|
|                            | Limit                | Adjusted deflection        |                            |
| Alternator                 | 12<br>(0 47)         | 7 5 - 8 5<br>(0 30 - 0 33) | 6 5 - 7 5<br>(0 26 - 0 30) |
| Air conditioner compressor | 11<br>(0 43)         | 9 - 10<br>(0 35 - 0 39)    | 8 - 9<br>(0 31 - 0 35)     |
| Power steering oil pump    | 21<br>(0 83)         | 14 - 16<br>(0 55 - 0 63)   | 12 - 14<br>(0 47 - 0 55)   |
| Applied pushing force      | 98 N (10 kg, 22 lb)  |                            |                            |

#### Oil capacity (Refill)

Unit ℓ (US qt, Imp qt)

|                    |                    |
|--------------------|--------------------|
|                    | VG30E & VG30ET     |
| With oil filter    | 4 0 (4-1/4, 3-1/2) |
| Without oil filter | 3 6 (3-7/8, 3-1/8) |

#### Coolant capacity

Unit ℓ (US qt, Imp qt)

|                |                      |
|----------------|----------------------|
|                | Coolant capacity     |
| VG30E          | 10 5 (11-1/8, 9-1/4) |
| VG30ET         | 11 0 (11-5/8, 9-5/8) |
| Reservoir tank | 0 8 (7/8, 3/4)       |

#### Spark plug

|               | VG30E                           | VG30ET    |
|---------------|---------------------------------|-----------|
| Standard type | BCPR6ES-11                      | BCPR6E-11 |
| Hot type      | BCPR5ES-11                      | BCPR5E-11 |
| Cold type     | BCPR7ES-11                      | BCPR7E-11 |
| Plug gap      | 1 0 - 1 1 mm (0 039 - 0 043 in) |           |

#### Ignition timing and idle speed

Unit B T D C degree/rpm

|        |                            | M/T         | A/T<br>(in "D" position) |
|--------|----------------------------|-------------|--------------------------|
|        |                            |             |                          |
| VG30E  | At sea level               | 20±2/700±50 | 20±2/700±50              |
|        | At high altitude condition | 20±2/650±50 | 20±2/650±50              |
| VG30ET |                            | 15±2/700±50 | 15±2/650±50              |

### TIGHTENING TORQUE

| Unit               | N m       | kg-m        | ft-lb     |
|--------------------|-----------|-------------|-----------|
| Oil pan drain plug | 29 - 39   | 3 0 - 4 0   | 22 - 29   |
| Spark plug         | 20 - 29   | 2 0 - 3 0   | 14 - 22   |
| Fuel hose clamps   | 1 0 - 1 5 | 0 10 - 0 15 | 0 7 - 1 1 |

## Chassis and Body Maintenance

### INSPECTION AND ADJUSTMENT

#### Clutch

Unit mm (in)

|                     |                         |
|---------------------|-------------------------|
| Pedal height "H"    | 195 - 205 (7 68 - 8 07) |
| Pedal free play "A" | 1 - 3 (0 04 - 0 12)     |

#### Front axle and front suspension

|                                                          |              |                                           |
|----------------------------------------------------------|--------------|-------------------------------------------|
| Axial play                                               | mm (in)      | 0 (0)                                     |
| Wheel bearing preload<br>(As measured at wheel hub bolt) |              | 6 86 - 14 61<br>(0 7 - 1 49, 1 54 - 3 29) |
| With new parts                                           | N (kg, lb)   |                                           |
| With used parts                                          | N (kg, lb)   | 1 67 - 7 75<br>(0 17 - 0 79, 0 37 - 1 74) |
| Wheel alignment (Unladen)                                |              |                                           |
| Camber                                                   | degree       | -35' to 55'                               |
| Caster                                                   | degree       | 5° 50' - 7° 20'                           |
| Kingpin inclination                                      | degree       | 12° 55' - 14° 25'                         |
| Toe-in                                                   | mm (in)      | 1 - 3 (0 04 - 0 12)                       |
|                                                          | degree       | 6' - 17' (Total toe-in)                   |
| Side slip (Reference data)                               | mm/m (in/ft) | Out 3 - In 3<br>(Out 0 036 - In 0 036)    |
| Standard tie rod length "A"                              | mm (in)      | 37 5 (1 476)                              |
| Front wheel turning angle                                |              |                                           |
| Toe-out turns                                            |              |                                           |
| Inner wheel/Outer wheel                                  | degree       | 22° 30'/20°                               |
| Full turns                                               |              |                                           |
| Inner wheel                                              | degree       | 35° - 39°                                 |
| Outer wheel                                              | degree       | 27° - 31°                                 |

\* On power steering models, wheel turning force (at circumference of steering wheel) of 98 - 147 N (10 - 15 kg, 22 - 33 lb) with engine at idle

#### Rear axle and rear suspension

|        |         |                                  |
|--------|---------|----------------------------------|
| Camber | degree  | -1° 55' to -25'                  |
| Toe-in | mm (in) | -1 5 to 2 5<br>(-0 059 to 0 098) |
|        | degree  | -8' to 14' (Total toe-in)        |

# SERVICE DATA AND SPECIFICATIONS (S.D.S.)

## Chassis and Body Maintenance (Cont'd)

### Brake

|                                                                                         | Unit mm (in)            |
|-----------------------------------------------------------------------------------------|-------------------------|
| Pad wear limit                                                                          |                         |
| Front brake                                                                             | 2.0 (0.079)             |
| Rear brake                                                                              | 2.0 (0.079)             |
| Rotor repair limit                                                                      |                         |
| Front brake                                                                             |                         |
| CL28VB                                                                                  | 20 (0.79)               |
| CL28VE                                                                                  | 24 (0.94)               |
| Rear brake                                                                              |                         |
| CL14HVB                                                                                 | 18 (0.71)               |
| Pedal free height "h"                                                                   |                         |
| M/T model                                                                               | 182 - 192 (7.17 - 7.56) |
| A/T model                                                                               | 184 - 194 (7.24 - 7.64) |
| Pedal depressed height<br>[Under force of 490 N (50 kg,<br>110 lb) with engine running] | 90 (3.54) or more       |
| Parking brake<br>[at pulling force<br>196 N (20 kg, 44 lb)]                             |                         |
| Number of notches                                                                       | 8 - 10                  |

### TIGHTENING TORQUE

| Unit                                 | N·m      | kg-m        | ft-lb     |
|--------------------------------------|----------|-------------|-----------|
| Clutch                               |          |             |           |
| Pedal stopper lock nut               | 8 - 11   | 0.8 - 1.1   | 5.8 - 8.0 |
| Clutch switch lock nut               | 12 - 15  | 1.2 - 1.5   | 9 - 11    |
| Master cylinder push<br>rod lock nut | 8 - 12   | 0.8 - 1.2   | 5.8 - 8.7 |
| Manual transmission                  |          |             |           |
| Drain and filler plugs               | 25 - 34  | 2.5 - 3.5   | 18 - 25   |
| Differential carrier                 |          |             |           |
| Drain and filler plugs               | 59 - 98  | 6 - 10      | 43 - 72   |
| Front axle and front<br>suspension   |          |             |           |
| Tie rod lock nut                     | 78 - 98  | 8 - 10      | 58 - 72   |
| Brake                                |          |             |           |
| Air bleeder valve                    | 7 - 9    | 0.7 - 0.9   | 5.1 - 6.5 |
| Stop lamp switch<br>lock nut         | 12 - 15  | 1.2 - 1.5   | 9 - 11    |
| Brake booster input<br>rod lock nut  | 16 - 22  | 1.6 - 2.2   | 12 - 16   |
| Wheel and tire                       |          |             |           |
| Wheel nut                            | 98 - 118 | 10.0 - 12.0 | 72 - 87   |

### Wheel and tire

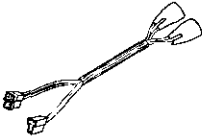
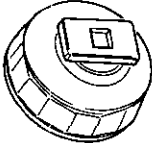
#### Tire inflation

Proper tire pressures are shown on the tire placard affixed to the driver's side center pillar of vehicle

|                                                                         |                                             |
|-------------------------------------------------------------------------|---------------------------------------------|
| Spare tire C78-14                                                       | Do not use in excess of<br>80 km/h (50 MPH) |
|                                                                         | 28 psi (200 kPa)                            |
| Tire pressure should be checked when tires are COLD                     |                                             |
| Wheel rim lateral and<br>radial runout mm (in)                          | Less than 1.0 (0.039)*1<br>0.5 (0.020)*2    |
| Difference between right<br>and left lateral runout mm (in)             | Less than 0.5 (0.020)*1<br>0.2 (0.008)*2    |
| Wheel balance<br>(Maximum allowable<br>unbalance at rim flange) gr (oz) | 10 (0.35)                                   |
| Tire balancing weight gr (oz)                                           | 5 - 60 (0.18 - 2.12)<br>Spacing 5 (0.18)    |

\*1 Steel wheel \*2 Aluminum wheel

## SPECIAL SERVICE TOOLS

| Tool number<br>(Kent-Moore No ) | Tool name                                                                                                          |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------|
| EG11150000<br>( - )             | Ignition coil adapter harness<br> |
| KV10105900<br>(J34274)          | Oil filter wrench<br>             |

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