

# MAINTENANCE

## SECTION MA

MA

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## MAINTENANCE SCHEDULE

The following tables list the periodic maintenance servicing required to ensure good emission control performance, good engine performance and good mechanical condition in DATSUN.

The first 1,600 km (1,000 miles) service is one of the most important services required to ensure the maximum emission control performance and optimum engine condition.

Periodic maintenance beyond the last period shown in the tables requires similar maintenance.

MAINTENANCE OPERATION		MAINTENANCE INTERVAL							Reference page
		1.6	12	24	36	48	60	72	
Periodic maintenance should be performed at number of kilometers, miles of months, whichever comes first.	Kilometers x 1,000								
	(Miles x 1,000)	(1)	(7.5)	(15)	(22.5)	(30)	(37.5)	45	
	Months	–	6	12	18	24	30	36	

### EMISSION CONTROL MAINTENANCE

Drive belts						I			MA-6
Air cleaner filter	See NOTE: (2)					R			MA-6
*Vapor lines						I			MA-6
*Fuel lines (hoses, piping, connections, etc.)						I			MA-7
*Fuel filter	See NOTE: (3)								MA-8
Engine coolant						R			MA-8
Engine oil (model not equipped with turbocharger)	See NOTE: (1)		R	R	R	R	R	R	MA-9
(model equipped with turbocharger)	See NOTE: (1)	R: every 6,000 km (3,750 miles)							MA-9
Engine oil filter			R	R	R	R	R	R	MA-9
Spark plugs						R			MA-10
*Ignition wires						I			MA-10
Intake & Exhaust valve clearance		A		A		A		A	MA-10
Idle rpm (model not equipped with turbocharger)		I		I*		I*		I*	MA-12
Exhaust gas sensor						I			MA-13

- NOTE: (1)** If vehicle is operated under severe conditions: short distance driving, extensive idling or driving in dusty conditions, change engine oil every 5,000 km (3,000 miles) or 3 months, whichever comes first.
- (2)** More frequent maintenance is required under dusty driving conditions.
- (3)** 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.
- (4)** Maintenance items and intervals with "\*" are recommended by NISSAN MOTOR CO., LTD. Other maintenance items and intervals are required.

Abbreviations: A = Adjust      R = Replace  
 I = Inspect, correct, replace if necessary.

MAINTENANCE OPERATION	Kilometers x 1,000 (Miles x 1,000)	MAINTENANCE INTERVAL							Reference page
		1.6	12	24	36	48	60	72	
		(1)	(7.5)	(15)	(22.5)	(30)	(37.5)	(45)	
Periodic maintenance should be performed at number of kilometers, miles or months, whichever comes first.	Months	–	6	12	18	24	30	36	

**UNDERHOOD MAINTENANCE**

Brake, clutch & automatic transmission fluid or oil level & leaks			I		I		I	MA-22, 23, 28
Brake fluid			R		R		R	MA-28
Brake booster vacuum hoses, connections & check valve					I			MA-29
Air conditioning system hoses, connections & refrigerant leaks					I			MA-38
Power steering fluid & lines			I		I		I	MA-35

**UNDER VEHICLE MAINTENANCE**

Brake, clutch, fuel & exhaust systems for proper attachment, leaks, cracks, chafing, abrasion, deterioration, etc.			I		I		I	MA-22, 29
Manual transmission & differential gear oil	<b>See NOTE: (5)</b>		I		I		I	MA-23, 24
Steering gear & linkage, suspension parts & propeller shaft for damaged, loose & missing parts	<b>See NOTE: (6)</b>	I	I		I		I	MA-24, 27, 35
Rear axle drive shaft joints (Except tripod drive shaft)					L			MA-28
Underbody (flush and clean every 12 months)			I		I		I	–

**OUTSIDE AND INSIDE MAINTENANCE**

Rotate wheel position & inspect wheel balance & wheel alignment			I		I		I	MA-25, 31, 34
Disc brake pads & other brake components for wear, deterioration & leaks	<b>See NOTE: (7)</b>		I		I		I	MA-29
Front wheel bearing grease					I			MA-26
Locks, hinges & hood latch	<b>See NOTE: (7)</b>		L		L		L	MA-36
Seat belts, buckles, retractors, anchors & adjuster			I		I		I	MA-36
Front brake, parking brake & clutch for stroke, free play & operation			I		I		I	MA-22, 29, 30

Abbreviations: R = Replace L = Lubricate  
I = Inspect, correct, replace if necessary

- NOTE:**
- (5) When towing a trailer, change oil in differential gear every 48,000 km (30,000 miles) or 24 months, whichever comes first.
  - (6) Steering linkage & front suspension ball joint inspection should be performed every 96,000 km (60,000 miles) or 4 years, whichever comes first.
  - (7) If vehicle is operated in areas using road salt or other corrosive materials, inspect every 5,000 km (3,000 miles) or 3 months, whichever comes first.

The above charts show the normal maintenance schedule. Depending upon weather and atmospheric conditions, varying road surfaces, individual driving habits and car usage, additional or more frequent maintenance may be required.

# LUBRICATION CHART

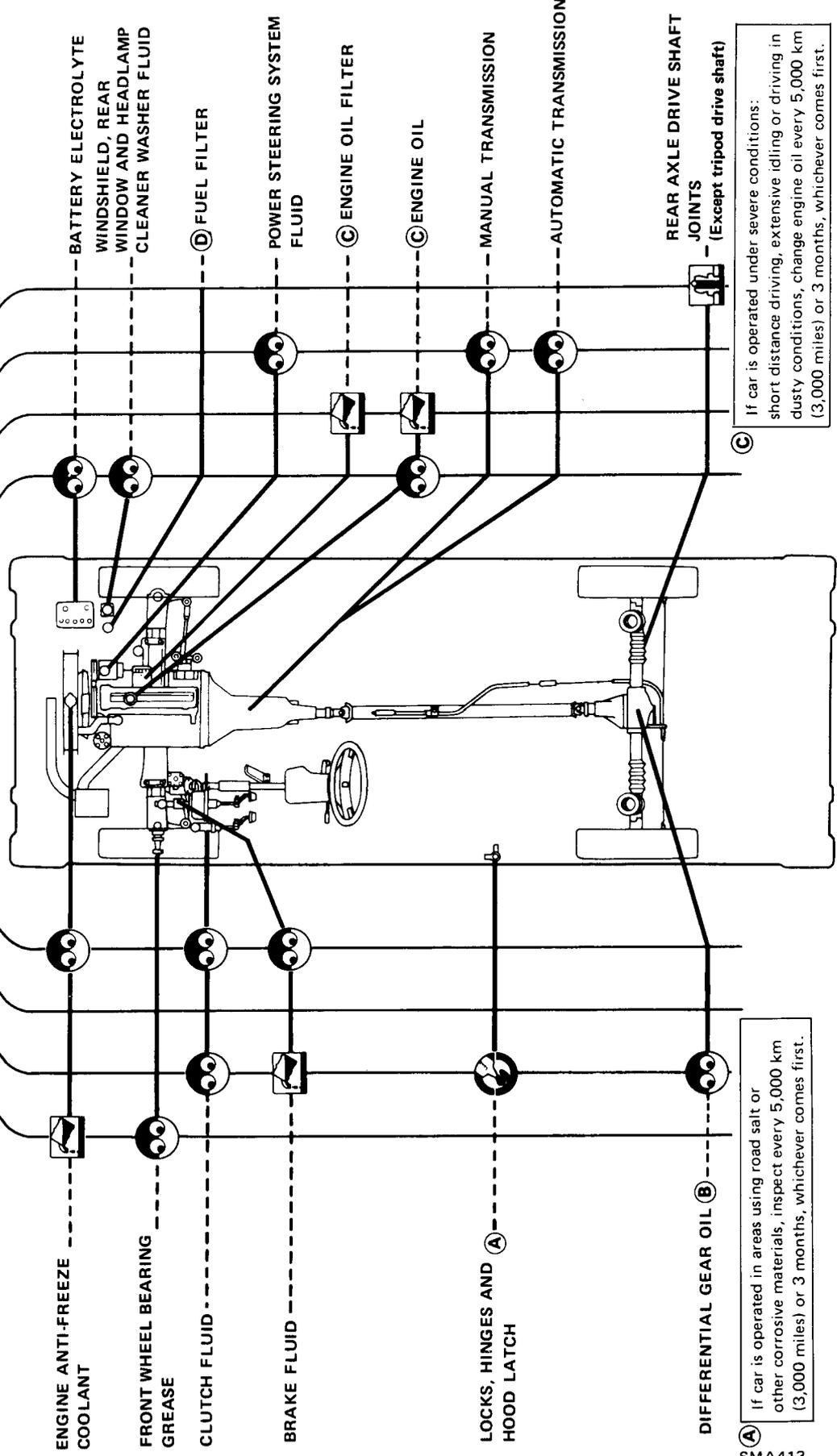
	CHANGE		LUBRICATE
	CHECK		GREASE-UP

km/mile Month

- EVERY 48,000/30,000 24
- EVERY 24,000/15,000 12
- EVERY 12,000/7,500 6
- ROUTINE SERVICE

**D** If car is operated under extreme adverse weather conditions or in areas where ambient temperatures are either extremely low or extremely high, the filter might become clogged. In such an event, replace the filter immediately.

**B** When towing a trailer, change oil in differential gear every 48,000 km (30,000 miles) or 24 months, whichever comes first.



**A** If car is operated in areas using road salt or other corrosive materials, inspect every 5,000 km (3,000 miles) or 3 months, whichever comes first.

**C** If car is operated under severe conditions: short distance driving, extensive idling or driving in dusty conditions, change engine oil every 5,000 km (3,000 miles) or 3 months, whichever comes first.

## RECOMMENDED FUEL AND LUBRICANTS

### FUEL

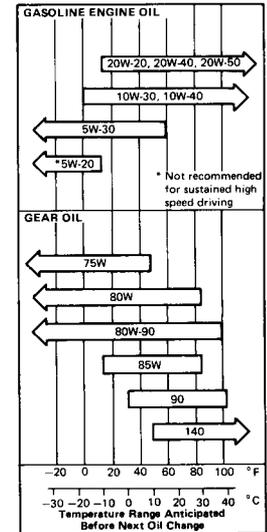
Use an unleaded gasoline only of at least 91 research octane number (Anti-knock index 87).

Under no circumstances should a leaded fuel be used since this will damage the catalytic converter.

### LUBRICANTS

Lubricant		Specifications	Remarks
Gasoline engine oil		API SE	Further details, refer to recommended SAE viscosity chart.
Gear oil	Transmission	API GL-4	
	Differential	API GL-5	
Automatic T/M and power steering fluid		Type DEXRON	—
Multi-purpose grease		NLGI No. 2	Lithium soap base
Brake and clutch fluid		DOT 3	US FMVSS No. 116
Anti-freeze		—	Ethylene glycol base

### SAE VISCOSITY NUMBER



## APPROXIMATE REFILL CAPACITIES

		Liter	US measure	Imp measure
Fuel tank		80	21-1/8 gal	17-5/8 gal
Coolant	With reservoir	10.5	11-1/8 qt	9-1/4 qt
	Without reservoir	9.7	10-1/4 qt	8-1/2 qt
Engine	With oil filter	4.5	4-3/4 qt	4 qt
	Without oil filter	4.0	4-1/4 qt	3-1/2 qt
Transmission	M/T	2.0	4-1/4 pt	3-1/2 pt
	A/T	5.5	5-7/8 qt	4-7/8 qt
Differential carrier	R200	1.3	2-3/4 pt	2-1/4 pt
	R180	1.0	2-1/8 pt	1-3/4 pt
Power steering system		1.1	1-1/8 qt	1 qt
Windshield washer tank		3.0	3-1/8 qt	2-5/8 qt
Headlight cleaner tank		2.0	2-1/8 qt	1-3/4 qt
Air conditioning system	Compressor oil	150 ml	5.1 fl oz	5.3 fl oz
	Refrigerant	0.8 - 1.0 kg	1.8 - 2.2 lb	1.8 - 2.2 lb

# ENGINE MAINTENANCE

## BEFORE ENGINE START

### CHECKING AND ADJUSTING DRIVE BELTS

1. Visually inspect for cracks or damage.

- The belts should not touch the bottom of the pulley groove.
2. Check belt tension by pushing. The belts should deflect by the specified amount.

	Adjust deflection of used belt	Set deflection of new belt
Drive belt deflection mm (in)		
Cooling fan	7 - 10 (0.28 - 0.39)	6 - 9 (0.24 - 0.35)
Air conditioner compressor	5 - 7 (0.20 - 0.28)	4 - 6 (0.16 - 0.24)
Power steering oil pump	11 - 14 (0.43 - 0.55)	9 - 12 (0.35 - 0.47)
Applied pushing force N (kg, lb)	98 (10, 22)	

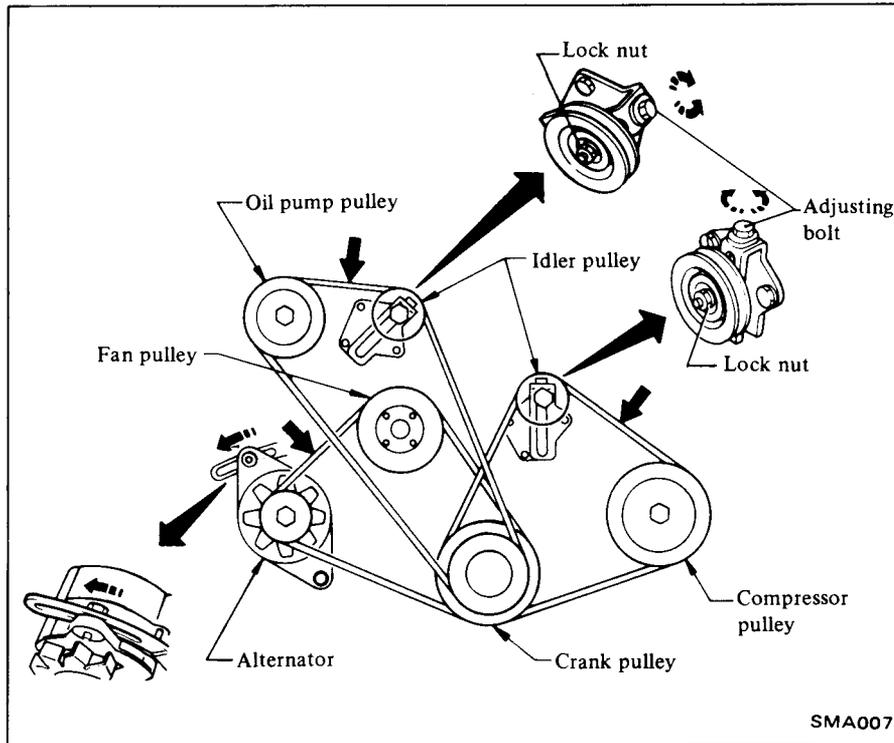
3. Adjust belt tension as follows:

#### Fan and alternator belt

1. Loosen the upper and lower alternator securing bolts until the alternator can be moved slightly.
2. Move the alternator with a prying bar until the belt tension is the specified amount. Then tighten the bolts securely.

#### Air conditioner compressor and power steering oil pump belts

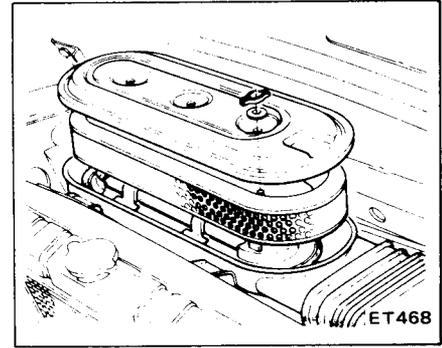
1. Loosen the idler pulley lock nut.
2. Adjust the adjusting bolt until the belt tension is the specified amount.
3. Tighten the idler pulley lock nut securely.



## REPLACING AIR CLEANER FILTER

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

Remove air cleaner cover and remove air cleaner filter.



## CHECKING VAPOR LINES

1. Check all hoses and fuel tank filler cap.
2. Disconnect vapor vent line connecting carbon canister to check valve.
3. Connect a 3-way connector, a manometer and a cock (or an equivalent 3-way charge cock) to the end of the vent line.
4. Supply fresh air into the vapor vent line through the cock little by little until pressure becomes 3.923 kPa (400 mmH<sub>2</sub>O, 15.75 inH<sub>2</sub>O).
5. Shut the cock completely and leave it unattended.
6. After 2.5 minutes, measure the height of the liquid in the manometer.

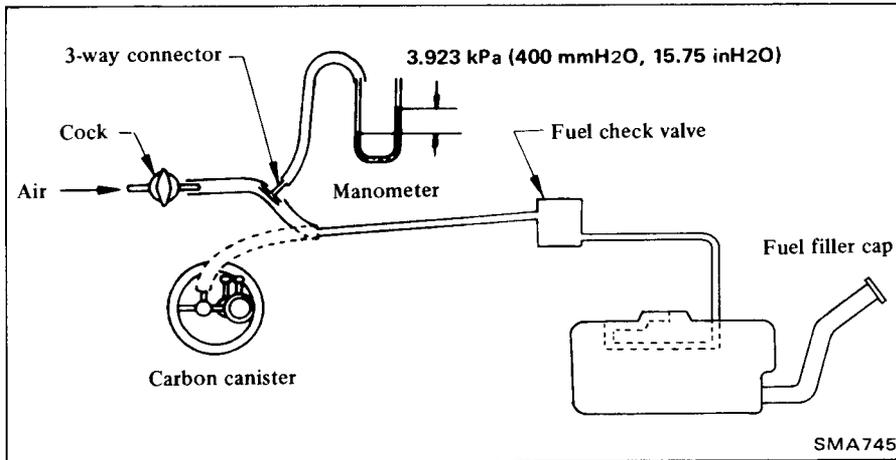
#### Pressure variation:

Less than 0.245 kPa  
(25 mmH<sub>2</sub>O, 0.98 inH<sub>2</sub>O)

- (1) When filler cap does not close completely, the height should drop to zero in a short time.
- (2) If the height does not drop to zero in a short time when filler cap is removed, it is the cause of a stuffy hose.

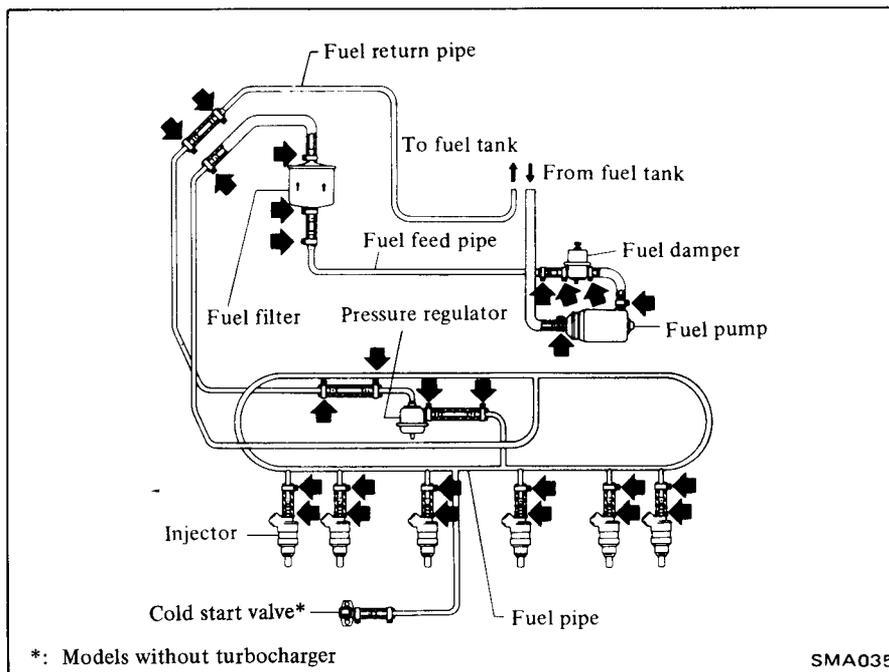
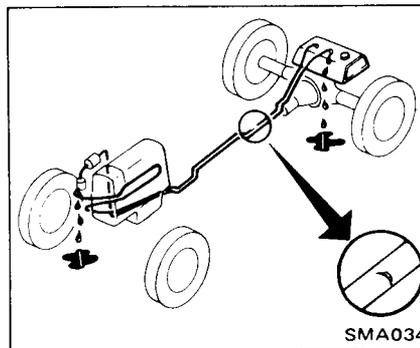
In case the vent line is stuffy, the breathing in fuel tank is not thoroughly made, thus causing insufficient de-

livery of fuel to engine or vapor lock. It must, therefore, be repaired or replaced.



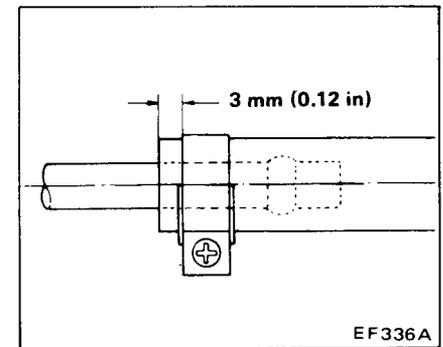
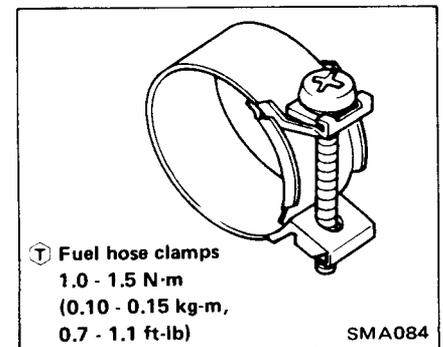
### CHECKING FUEL LINES (Hoses, piping, connections, etc.)

1. Check fuel line for leaks, particularly around connection of fuel pipe and fuel hose.
2. Retighten loose connections and replace any damaged or deformed parts.



### CAUTION:

- a. Do not reuse fuel hose clamp after loosening.
- b. 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. Tightening torque specifications are the same for all rubber hose clamps. When tightening hose clamp, ensure that screw does not come into contact with adjacent parts.



### REPLACING FUEL FILTER

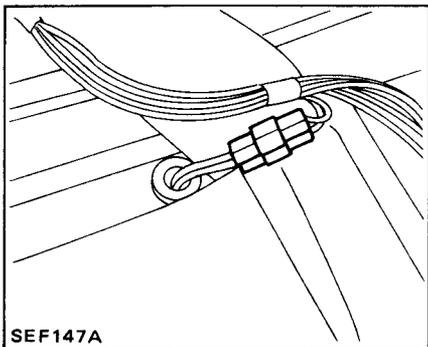
The fuel filter is designed especially for use with the EFI system. It should be replaced as an assembly.

1. Follow the procedure below to reduce fuel pressure to zero.

### CAUTION:

Before disconnecting fuel hose, release fuel pressure from fuel line to eliminate danger.

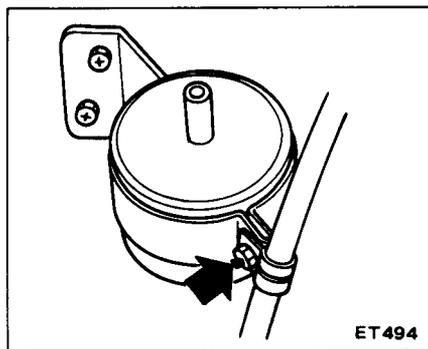
- (1) Start the engine.
- (2) Remove fuel pump connector with engine running.



- (3) After engine stall, crank the engine twice or three times.
  - (4) Turn ignition switch off and connect fuel pump connector.
2. Unfasten clamps securing fuel hoses to the outlet and inlet sides of fuel filter, and disconnect fuel hoses.

**Be careful not to spill fuel over engine compartment. Place a rag to absorb fuel.**

3. Remove fuel filter.



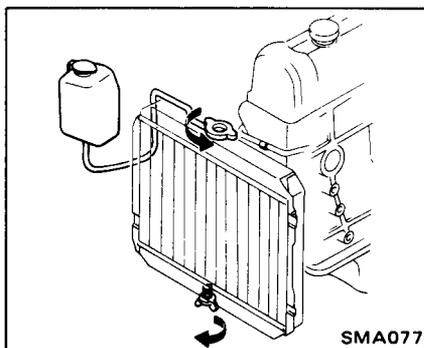
4. To install fuel filter, reverse the order of removal.

## CHANGING ENGINE COOLANT

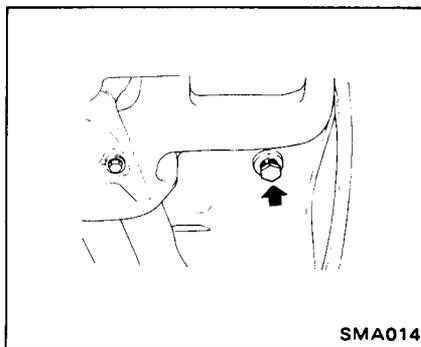
**WARNING:**  
To avoid the danger of being scalded, never attempt to change the coolant when the engine is hot.

When changing engine coolant, set heater "TEMP" control lever at fully "HOT" position.

1. Open drain cock at bottom of radiator, and remove radiator cap.



2. Remove cylinder block drain plug located at left rear of cylinder block.



3. Drain coolant completely. Then flush cooling system.
4. Close drain cock and plug.
5. Fill radiator with coolant, observing instructions attached to anti-freeze container for mixing ratio of anti-freeze to water.

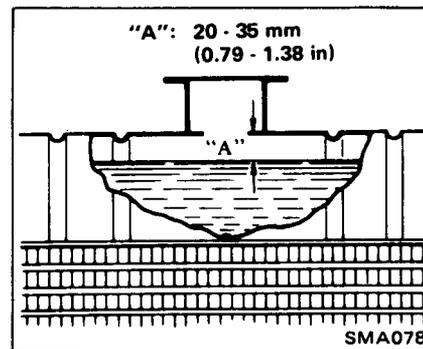
## Cooling water capacity:

Unit: liter (US qt, Imp qt)

With coolant reservoir	10.5 (11-1/8, 9-1/4)
Without coolant reservoir	9.7 (10-1/4, 8-1/2)

## Without coolant reservoir

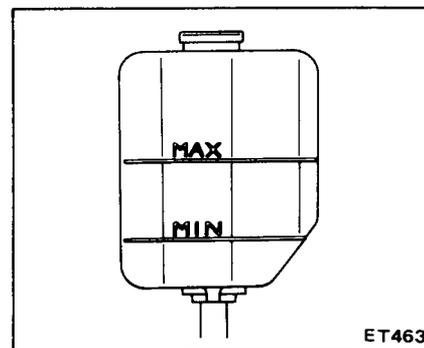
- (1) Fill radiator with coolant at "A" mm (in) below the bottom of the radiator filler neck.



- (2) Run engine for a few minutes. If necessary, add coolant.

## With coolant reservoir

- (1) Fill radiator with coolant up to filler opening.
- (2) Run engine for a few minutes. If necessary, add coolant.
- (3) Fill reservoir tank with coolant up to "MAX" level.



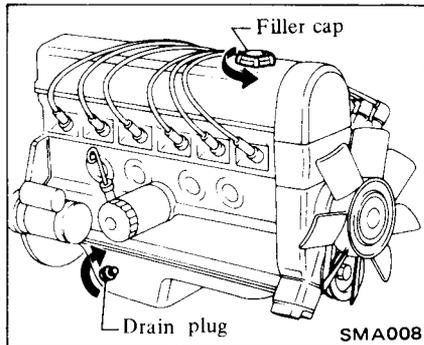
6. Install radiator cap.  
Check drain cock and plug for any sign of leakage.

### CHANGING ENGINE OIL AND OIL FILTER

1. Start engine and warm up engine until water temperature indicator points to the middle of gauge, then stop engine.
2. Remove oil filler cap and oil pan drain plug, and allow oil to drain.

**WARNING:**

Be careful not to burn yourself, as the engine oil may be hot.



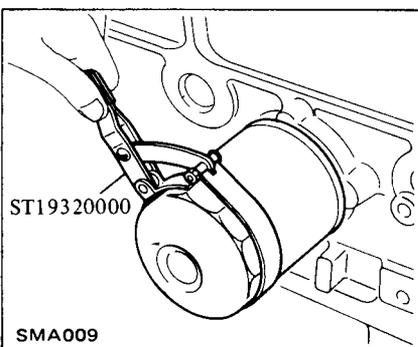
SMA008

- A milky oil indicates the presence of cooling water. Isolate the cause and take corrective measure.
- An oil with extremely low viscosity indicates dilution with gasoline.

3. Clean and install oil pan drain plug with washer.

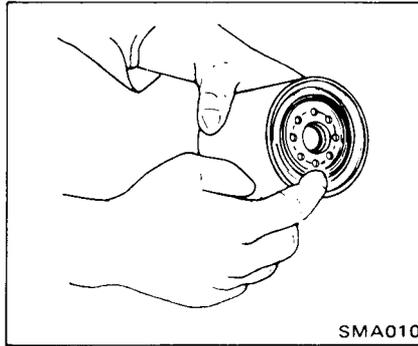
⊕ : Oil pan drain plug  
 20 - 29 N·m  
 (2.0 - 3.0 kg·m,  
 14 - 22 ft·lb)

4. Using Tool, remove oil filter.



SMA009

5. Wipe oil filter mounting surface with a clean rag.
6. Smear a little engine oil on rubber gasket of new oil filter.



SMA010

7. Install new oil filter. Hand-tighten ONLY. DO NOT use a wrench to tighten the filter.

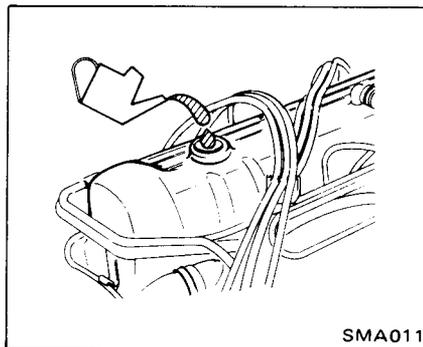
8. Refill engine with new engine oil, referring to RECOMMENDED LUBRICANTS.

Check oil level with dipstick.

**Oil capacity:**

Unit: liters (US qt, Imp qt)

	Models with turbocharger	Models without turbocharger
With oil filter	5.2 (5-1/2, 4-5/8)	4.5 (4-3/4, 4)
Without oil filter	4.7 (5, 4-1/8)	4.0 (4-1/4, 3-1/2)



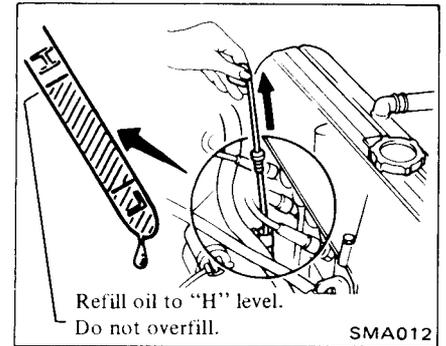
SMA011

9. Start engine. Check area around drain plug and oil filter for any sign of oil leakage.

If any leakage is evident, these parts have not been properly installed.

10. Run engine until water temperature indicator points to the middle of gauge. Then stop engine and wait several minutes. Check oil level with dipstick. If necessary, add engine oil.

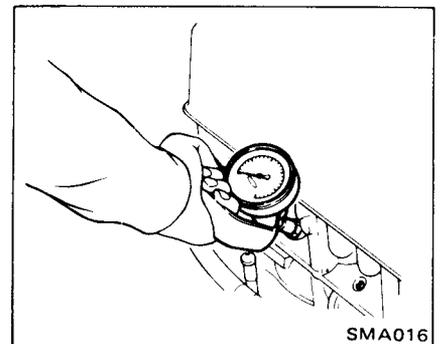
When checking oil level, park the car on a level surface.



SMA012

### CHECKING ENGINE COMPRESSION PRESSURE

1. Warm up engine until water temperature indicator points to the middle of gauge.
2. Disconnect all spark plugs with spark plug wrench.
3. Disconnect cold start valve and all injector connectors.
4. Properly attach a compression tester to spark plug hole in cylinder being tested.



SMA016

5. Depress accelerator pedal to open throttle valve fully.
6. Crank engine and read gauge indication.

- Run engine at about 350 rpm.
- Engine compression measurement should be made as quickly as possible.

**Compression pressure:**

Unit: kPa (kg/cm<sup>2</sup>, psi)/rpm

	Models with turbocharger	Models without turbocharger
Standard	981 (10.0, 142)/350	1,177 (12.0, 171)/350
Minimum	686 (7.0, 100)/350	883 (9.0, 128)/350

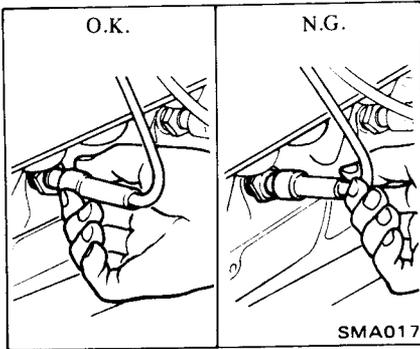
7. Cylinder compression in cylinders should not be less than 80% of the highest reading.

If cylinder compression in one or more cylinders is low, pour a small quantity of engine oil into cylinders through the spark plug holes and retest compression.

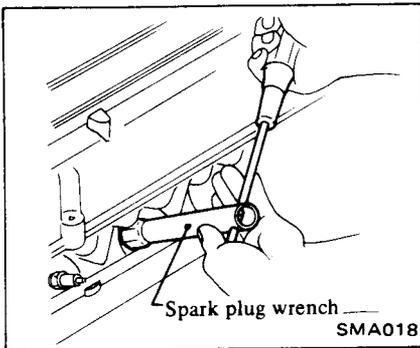
- If adding oil helps the compression pressure, chances are that piston rings are worn or damaged.
- If pressure stays low, valve may be sticking or seating improperly.
- If cylinder compression in any two adjacent cylinders is low, and if adding oil does not help the compression, there is leakage past the gasketed surface.  
Oil and water in combustion chambers can result from this problem.

### REPLACING SPARK PLUGS

1. Disconnect spark plug wire at boot. Do not pull on the wires.

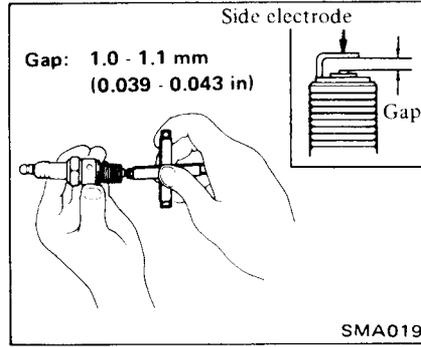


2. Remove spark plugs with spark plug wrench.



3. Using feeler gauge, check new spark plug gap.

If it is not within specified range, set gap by bending side electrode.



Spark plug:

	Models with turbocharger	Models without turbocharger
Standard type	BPR6ES-11	BPR6ES-11
Hot type		BPR5ES-11
Cold type	BPR7ES-11	BPR7ES-11

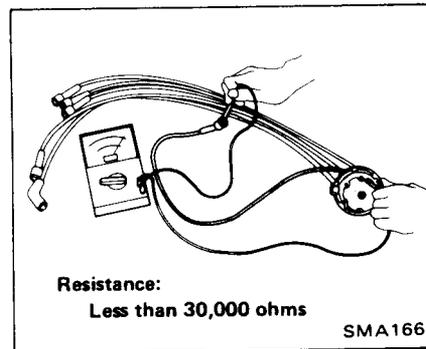
4. Install new spark plugs.

Reconnect high tension cables according to Nos. indicated on them.

- ⚠ Spark plug  
15 - 20 N·m  
(1.5 - 2.0 kg·m,  
11 - 14 ft·lb)

### CHECKING IGNITION WIRES

1. Visually check wires for cracks, damaged and burned terminals.
2. Using an ohmmeter, measure the resistance between cable terminal on the spark plug side and corresponding electrode inside cap.



Shake the wire while measuring resistance to check for intermittent breaks.

## AFTER ENGINE WARM-UP

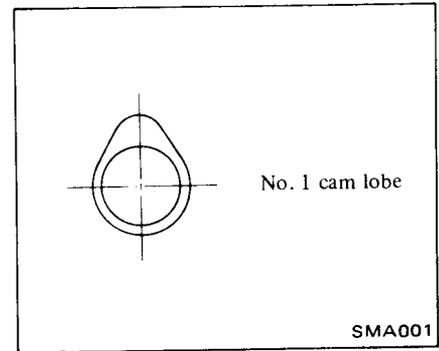
### ADJUSTING INTAKE AND EXHAUST VALVE CLEARANCE

Adjustment should be made while engine is hot.

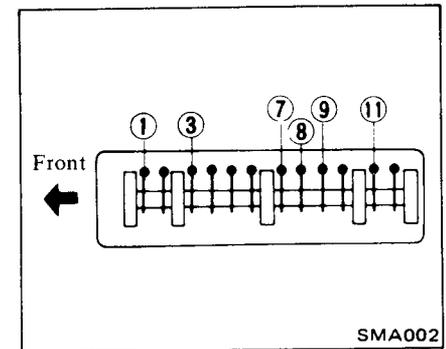
1. Start engine and warm up engine until water temperature indicator points to the middle of gauge, then stop engine.

Adjustment cannot be made while engine is in operation.

2. Remove valve rocker cover.
3. Set so that high point of No. 1 cam lobe points above.



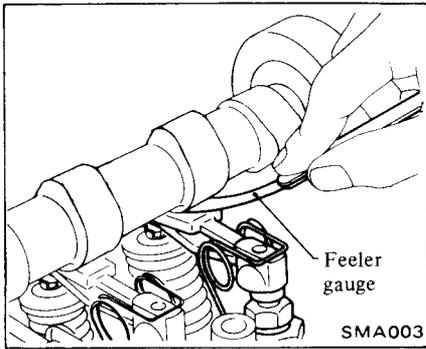
Adjust clearance of half of the valves. Adjust only ①, ③, ⑦, ⑧, ⑨ and ⑪ valves.



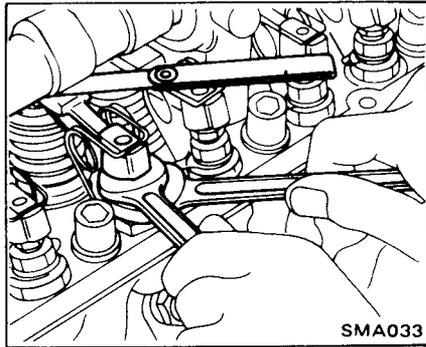
Valve clearance (Hot)

- Intake . . . ③ ⑧ ⑪ : 0.25 mm (0.010 in)
- Exhaust . . ① ⑦ ⑨ : 0.30 mm (0.012 in)

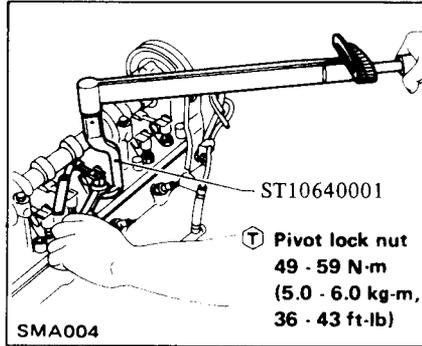
(1) Using feeler gauge, measure clearance between cam lobe and valve rocker.



(2) If the clearance is not specified value, loosen pivot lock nut and turn valve rocker pivot to provide proper clearance.



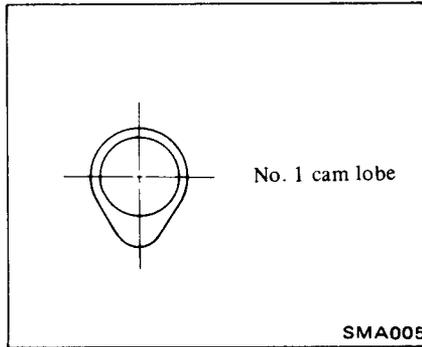
(3) Hold valve rocker pivot and tighten pivot lock nut using Tool.



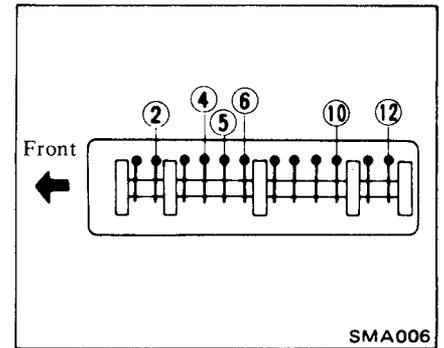
(4) Recheck clearance

Feeler gauge should move with a very slight drag.

4. Turn crankshaft and set so that high point of No. 1 cam lobe points down.



Adjust ②, ④, ⑤, ⑥, ⑩, and ⑫ valves, using same procedure as for Step 3.



**Valve clearance (Hot)**

Intake . . . ② ⑤ ⑩ : 0.25 mm (0.010 in)

Exhaust. . . ④ ⑥ ⑫ : 0.30 mm (0.012 in)

5. Install valve rocker cover.

## ADJUSTING IDLE RPM (Models without turbocharger)

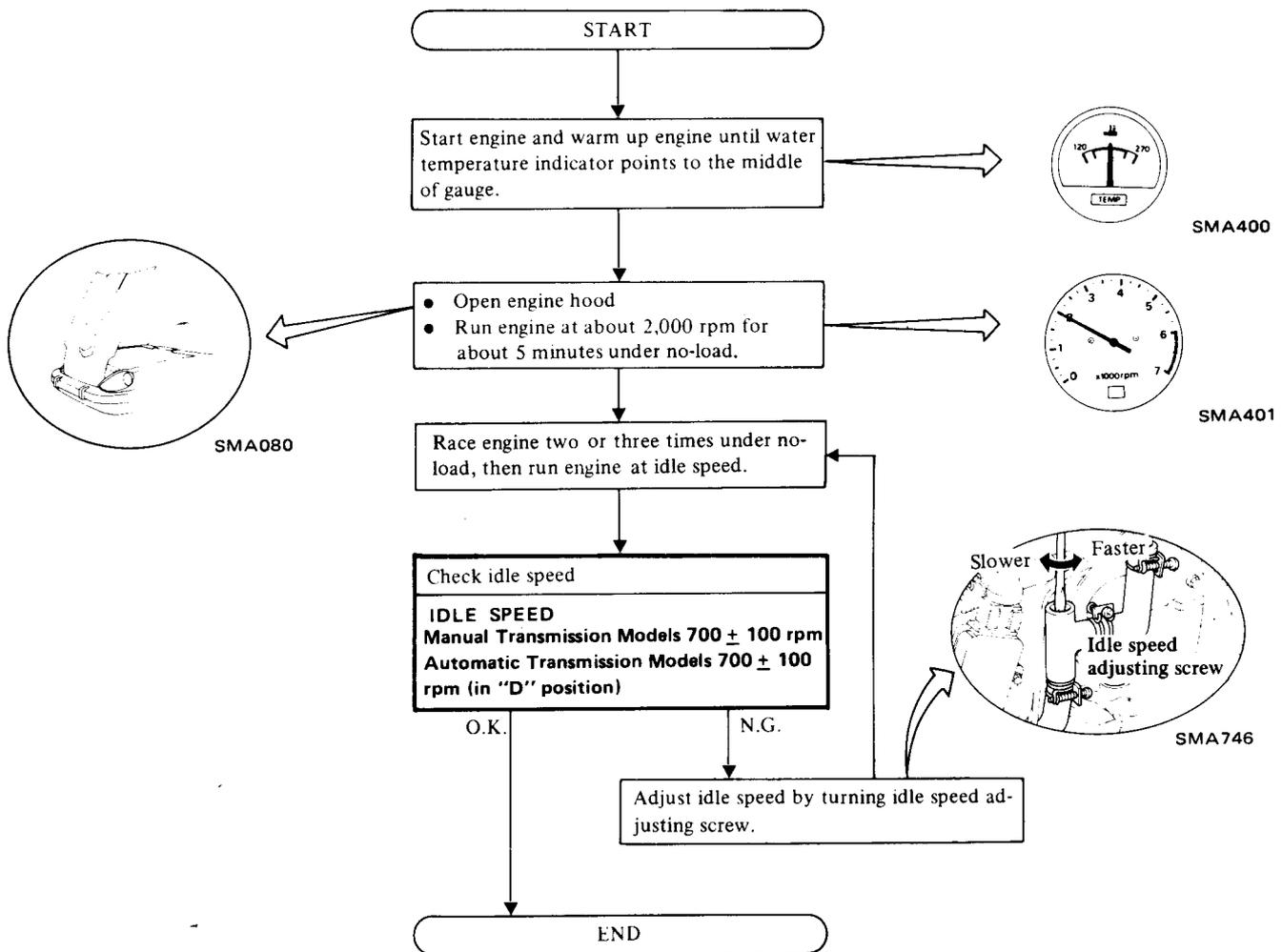
### Preparation

1. On air conditioner equipped models, checks should be carried out while the air conditioner is "OFF".
2. On automatic transmission equipped models, checks should be carried out while shift lever is in "D" position.

### WARNING:

- a. When selector lever is shifted to "D" position, apply parking brake and block both front and rear wheels with chocks.
- b. Depress brake pedal while accelerating the engine to prevent forward surge of car.
- c. After the adjustment has been made, shift the lever to the "N" or "P" position and remove wheel chocks.

### Maintenance procedure



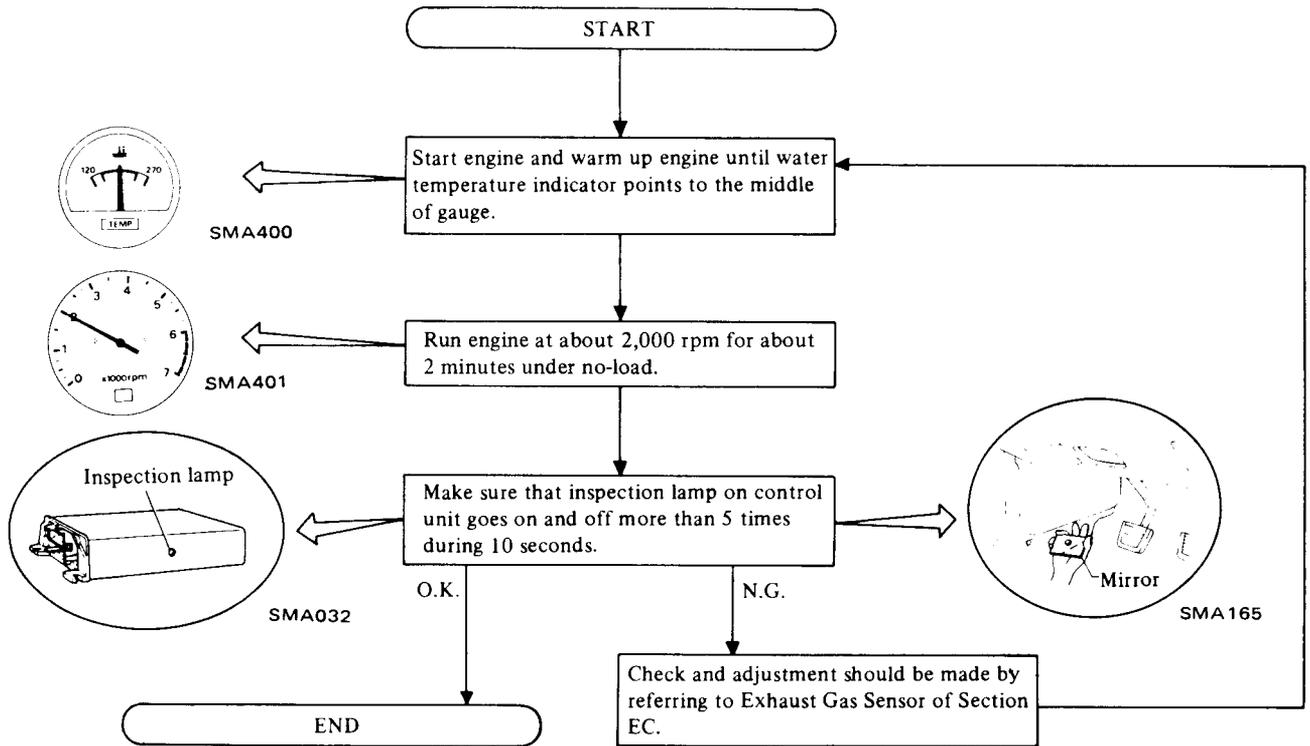
## CHECKING EXHAUST GAS SENSOR

### Preparation

When checking exhaust gas sensor, make sure that the following parts are in good order.

- Battery
- Ignition system
- Engine oil and coolant levels
- Fuses
- EFI component parts
- EFI harness connectors
- Hoses
- Oil filler cap and oil level gauge
- Valve clearance, engine compression

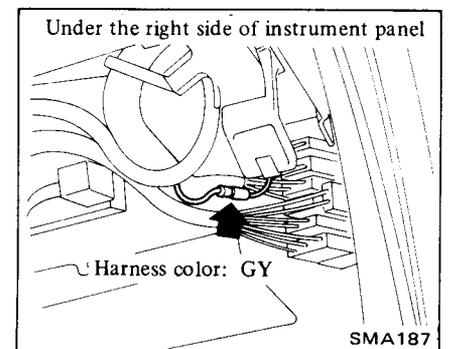
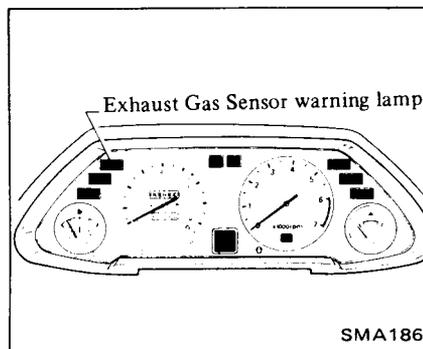
### Maintenance procedure



### 48,000 km (30,000 miles) or 24 Months Service

Exhaust gas sensor should be checked after 48,000 km (30,000 miles) or 24 months of operation.

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



After inspection, disconnect warning lamp harness connector so that warning lamp will not come on thereafter.

If sensor should be checked on the 24th month before 48,000 km (30,000 miles) of operation, also disconnect warning lamp harness connector.

## MINOR TROUBLE DIAGNOSES AND CORRECTIONS

Condition	Probable cause	Corrective action
<b>CANNOT CRANK ENGINE OR SLOW CRANKING</b>	Improper grade oil.	Replace with proper grade oil.
	Partially discharged battery.	Charge battery.
	Malfunctioning battery.	Replace.
	Loose fan belt.	Adjust.
	Trouble in charging system.	Inspect.
	Wiring connection trouble in starting circuit	Correct.
	Malfunctioning ignition switch.	Repair or replace.
	Malfunctioning starting motor.	Repair or replace.

(Trouble-shooting procedures on starting circuit)  
Switch on the starting motor with head lights "ON".

When head lights go off or dim considerably,

- a. Check battery.
- b. Check connection and cable.
- c. Check starting motor.

When head lights stay bright,

- a. Check wiring connection between battery and starting motor.
- b. Check ignition switch.
- c. Check starting motor.

### ENGINE WILL CRANK NORMALLY BUT WILL NOT START

In this case, the following trouble causes may exist, but in many cases ignition system or fuel system is in trouble.

*Ignition system in trouble*

*Fuel system in trouble*

*Valve mechanism does not work properly*

*Low compression*

*(Trouble-shooting procedure)*

Check spark plug first by following procedure.

Disconnect high tension cable from one spark plug and hold it about 10 mm (0.39 in) from the engine metal part and crank the engine.

Good spark occurs.

- a. Check spark plug.
- b. Check ignition timing.
- c. Check fuel system.
- d. Check revolution trigger signal.
- e. Check cylinder compression.

No spark occurs.

Very high current.

Check the current flow in primary circuit.  
Inspect primary circuit for short.  
Check distributor pick-up coil operation.  
Check ignition system.

Low or no current.

Check for loose terminal or disconnection in primary circuit.



Condition	Probable cause	Corrective action
<p><b>UNSTABLE ENGINE IDLING</b></p> <p><b>Ignition system in trouble*</b></p> <p><b>Engine mechanical system in trouble</b></p> <p><b>Fuel system malfunction*</b></p> <p><b>Others*</b></p>	<p>Incorrect idle speed adjustment.</p> <p>Malfunctioning ignition system (spark plug, high tension cable, distributor, IC ignition unit, ignition coil, etc.)</p> <p>Incorrect basic ignition timing.</p> <p>Loose manifold and cylinder head bolts.</p> <p>Incorrect valve clearance.</p> <p>Clogged air cleaner filter.</p> <p>Damaged manifold gaskets.</p> <p>Intake air leakage at following points:                      Dipstick                      Oil filler cap                      Blow-by hoses                      Intake air duct--air flow meter to throttle chamber, etc.</p> <p>Damaged electronic fuel injection harness.</p> <p>Seized injector (Listen to operating sound).</p> <p>Malfunctioning air regulator (During warm-up driving only)</p> <p>Damaged control unit.</p> <p>Damaged exhaust gas sensor.</p> <p>Damaged cylinder head temp. sensor or water temp. sensor.</p> <p>Malfunctioning throttle valve switch.</p> <p>Irregular fuel pressure.</p> <p>Malfunctioning E.G.R. control system</p>	<p>Adjust.</p> <p>Replace.</p> <p>Adjust.</p> <p>Retighten bolts.</p> <p>Adjust.</p> <p>Replace filter.</p> <p>Replace gasket.</p> <p>Repair or replace.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace.</p> <p>Repair or replace.</p> <p>Replace pressure regulator.</p> <p>Clear or replace.</p>
<p><b>HIGH ENGINE IDLE SPEED</b></p>	<p>Dragged accelerator linkage.</p> <p>Malfunctioning B.C.D.D. system.</p> <p>Malfunctioning air regulator.</p> <p>Incorrect adjustment of idle speed adjusting screw.</p> <p>Throttle valve is opened excessively at idle.</p> <p>Malfunctioning F.I.C.D.</p>	<p>Check and correct accelerator linkage.</p> <p>If engine idling speed rises above 1,800 to 2,000 rpm, the cause may be malfunctioning B.C.D.D. system.                      Check B.C.D.D. system.                      Repair or replace if necessary.</p> <p>Replace.                      For inspection procedures for air regulator, refer to Engine Fuel Section.</p> <p>Correct.</p> <p>Replace throttle chamber.</p> <p>Replace.</p>

For inspection procedures for electronic fuel injection system components, refer to Engine Fuel Section.

\* Refer to EF section for models with turbocharger.

Condition	Probable cause	Corrective action
<p><b>ENGINE POWER NOT UP TO NORMAL</b></p> <p><b>Low compression</b></p> <p><b>Ignition system in trouble*</b></p>	<p>Incorrect ignition timing.</p> <p>Malfunctioning spark plugs.</p> <p>Malfunctioning distributor pick-up coil.</p>	<p>Previously mentioned.</p> <p>Adjust.</p> <p>Clean, adjust or replace plugs.</p> <p>Replace.</p>
<p><b>ENGINE POWER BELOW NORMAL</b></p> <p><b>Fuel system malfunction*</b></p> <p><b>Air intake system malfunction*</b></p> <p><b>Overheating</b></p> <p><b>Overcooling</b></p>	<p>Throttle valve does not open fully.</p> <p>Damaged electronic fuel injection harness.</p> <p>Seized injector (Listen to operating sound).</p> <p>Malfunctioning air flow meter.</p> <p>Malfunctioning throttle valve switch.</p> <p>Irregular fuel pressure.</p> <p>Clogged fuel pipe.</p> <p>Dirty or clogged fuel filter.</p> <p>Fuel pump will not work properly.</p> <p>Clogged air cleaner filter.</p> <p>Air leaking from manifold gasket.</p> <p>Intake air leakage at following points:              Dipstick              Oil filler cap              Blow-by hoses              Intake air duct—air flow meter to throttle chamber              etc.</p> <p>Insufficient coolant.</p> <p>Loose fan belt.</p> <p>Worn or damaged fan belt.</p> <p>Malfunctioning thermostat.</p> <p>Malfunctioning water pump.</p> <p>Clogged or leaky radiator.</p> <p>Malfunctioning radiator filler cap.</p> <p>Air in cooling system.</p> <p>Improper engine oil grade.</p> <p>Incorrect ignition timing.</p> <p>Malfunctioning thermal vacuum valve (for E.G.R. system).</p> <p>Malfunctioning thermostat.</p>	<p>Adjust.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace.</p> <p>Repair or replace.</p> <p>Replace pressure regulator if necessary.</p> <p>Replace if necessary.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace filter.</p> <p>Replace gasket.</p> <p>Repair or replace.</p> <p>Replenish.</p> <p>Adjust fan belt.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace.</p> <p>Flush, repair or replace.</p> <p>Replace.</p> <p>Retighten each part of cooling system.</p> <p>Replace with proper grade oil.</p> <p>Adjust.</p> <p>Replace.</p> <p>Replace.</p>

} For inspection procedures for electronic fuel injection system components, refer to Engine Fuel Section.

\* Refer to EF section for models with turbocharger.

Condition	Probable cause	Corrective action
<b>Others</b>	Improper octane fuel. Improper tire pressure. Dragging brake. Clutch slipping.	Replace with specified octane fuel. Inflate to specified pressure. Adjust. Adjust.
<b>NOISY ENGINE</b>		
<b>Engine knocking</b>	Overloaded engine. Carbon knocking. Timing knocking. Fuel knocking. Preignition (misusing of spark plug).	Use right gear in driving. Disassemble cylinder head and remove carbon. Adjust ignition timing. Use specified octane fuel. Use specified spark plug.
<b>Mechanical knocking</b> Crankshaft bearing knocking.	This strong dull noise increases when engine is accelerated. To locate the place, cause a misfire in each cylinder. If the noise stops by the misfire, this cylinder generates the noise.	This is caused by worn or damaged bearings, or unevenly worn crankshaft. Renew bearings and adjust or change crankshaft. Check lubrication system.
Connecting rod bearing knocking.	This is a little higher-pitched noise than the crankshaft knocking, and also increases when engine is accelerated. Cause a misfire in each cylinder and if the noise diminishes almost completely, this crankshaft bearing generates the noise.	Same as the case of crankshaft bearings.
Piston and cylinder noise.	When you hear an overlapping metallic noise which increases its magnitude with the engine revolution and which decreases as engine is warmed up, this noise is caused by piston and cylinder. To locate the place, cause a misfire in each cylinder.	This may cause an abnormal wearing of cylinder and lower compression which in turn will cause a lower out-put power and excessive oil consumption. Overhaul engine.
Piston pin noise.	This noise is heard at each highest and lowest dead end of piston. To locate the place, cause a misfire in each cylinder.	This may cause a wear on piston pin, or piston pin hole. Renew piston and piston pin assembly.
Water pump noise.	This noise may be caused by worn or damaged bearings, or by the uneven surface of sliding parts.	Replace water pump with a new one.
Others.	An improper adjustment of valve clearance. An excessive end-play on crankshaft. <b>This noise will be heard when clutch is disengaged.</b> Wear on clutch pilot bushing. <b>This noise will be heard when clutch is disengaged.</b>	Adjust. Disassemble engine and renew main bearing. Renew bushing and adjust drive shaft.



Condition	Probable cause	Corrective action
<p><b>Excessive oil consumption</b></p> <p><b>Others</b></p>	<p>Fatigue of valve oil seal lip. Worn valve stem.</p> <p>Inadequate quality of engine oil. Engine overheating.</p>	<p>Replace seal lip with a new one. Renew valve or guide.</p> <p>Use the designated oil. Previously mentioned.</p>
<p><b>POOR FUEL ECONOMY*</b></p> <p><b>Ignition system in trouble*</b></p> <p><b>Others*</b></p> <p><b>Emission control system malfunction*</b></p> <p><b>Fuel system malfunction*</b></p>	<p>Excessive idle rpm.</p> <p>Malfunctioning E.G.R. control system.</p> <p>Fuel leakage. Damaged electronic fuel injection harness. Damaged control unit. Damaged exhaust gas sensor. Malfunctioning air flow meter. Damaged air temperature sensor. Malfunctioning throttle valve switch. Fuel leakage at injector or cold start valve. Fuel leakage at rubber fuel hose. Irregular fuel pressure.</p>	<p>Previously mentioned.</p> <p>Adjust it to the designated rpm. Repair or tighten the connection of fuel pipes.</p> <p>Replace.</p> <p>Repair or replace.</p> <p>Replace. } Replace. } For inspection procedures for Replace. } electronic fuel injection system Replace. } components, refer to Engine Replace. } Fuel Section.</p> <p>Replaced damaged part. Repair or replace. Replace pressure regulator if necessary.</p>
<p><b>TROUBLE IN OTHER FUNCTIONS</b></p> <p><b>Decreased oil pressure</b></p> <p><b>Excessive wear on the sliding parts</b></p>	<p>Inadequate oil quality. Overheating. Malfunctioning oil pump regulator valve. Functional deterioration of oil pump. Blocked oil filter. Increased clearance in various sliding parts. Blocked oil strainer. Malfunctioning oil gauge pressure switch.</p> <p>Oil pressure decreases. Damaged quality or contamination of oil.</p>	<p>Use the designated oil. Previously mentioned. Disassemble oil pump and repair or renew it. Repair or replace it with a new one. Renew it. Disassemble and replace the worn parts with new ones. Clean it. Replace it with a new one.</p> <p>Previously mentioned. Exchange the oil with proper one and change element.</p>

\* Refer to EF section for models with turbocharger.

Condition	Probable cause	Corrective action
<b>Excessive wear on the sliding parts</b>	Air leakage from air intake duct. Damaged air cleaner. Overheating or overcooling. Improper fuel mixture.	Repair or replace. Change element. Previously mentioned. Check the fuel system.
<b>Scuffing of sliding parts</b>	Decrease of oil pressure. Insufficient clearances. Overheating. Improper fuel mixture.	Previously mentioned. Readjust to the designated clearances. Previously mentioned. Check the fuel system.

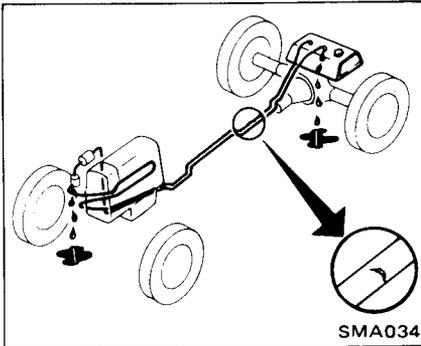
# CHASSIS AND BODY MAINTENANCE

## ENGINE CONTROL, FUEL AND EXHAUST SYSTEMS

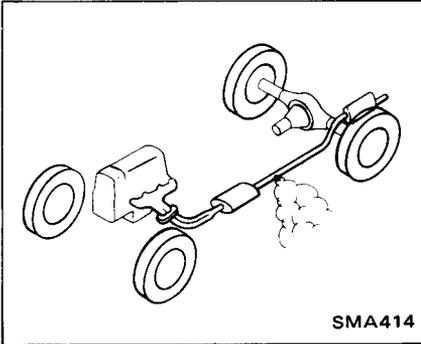
### CHECKING FUEL AND EXHAUST SYSTEMS

Check fuel and exhaust systems for condition, connections and leaks.

#### Fuel system

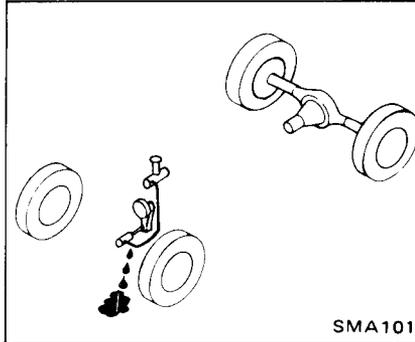


#### Exhaust system



### CHECKING CLUTCH SYSTEM

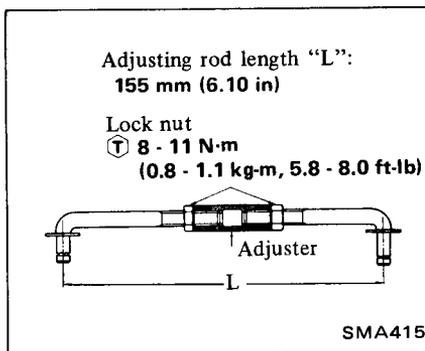
Check clutch system for proper attachment, leaks, chafing, abrasion, deterioration, etc.



### CHECKING CLUTCH PEDAL HEIGHT AND FREE PLAY

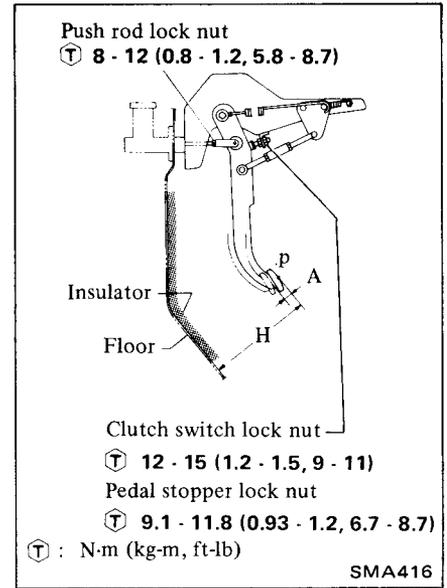
Check clutch pedal height and free play. Adjust if necessary.

1. Make sure that adjusting rod length “L” is adjusted to specified value. If length is not within specified value, loosen lock nut at each end of adjuster and turn adjuster until specified rod length is reached. After rod length adjustment, tighten lock nut securely.



2. Loosen pedal stopper or clutch switch. Loosen push rod lock nut, and turn push rod until distance between center “point P” of pedal pad and floor panel is 206 mm (8.11 in), then tighten lock nut securely.

While adjusting pedal pad-to-floor panel distance, ensure that pedal does not contact stopper or switch.



3. Next, turn switch or stopper until distance between center “point P” of pedal pad and floor panel is adjusted to specified value, and tighten lock nut securely. When pedal height is finally adjusted to the specified value of 203 mm (7.99 in), ensure that clutch pedal is depressed less than 4 mm (0.16 in) and that push rod is not pushed more than free play.

**Pedal height “H”:**

203 mm (7.99 in)

**Pedal free play “A”:**

1 - 5 mm (0.04 - 0.20 in)

**Pedal free play means the following total measured at position of pedal pad.**

- Play due to clevis pin and clevis pin hole in pedal lever.
- Play due to piston and piston rod.

4. After pedal height adjustment, initial effort to depress pedal should be within specification. If it is not, adjust adjusting rod length “L”.

**Initial effort to depress pedal (Reference data):**

**Models equipped with A.S.C.D.**

15.7 N (1.6 kg, 3.5 lb)

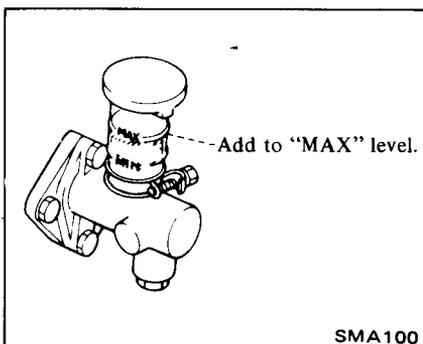
**Models not equipped with A.S.C.D.**

18.6 N (1.9 kg, 4.2 lb)

Depress and release clutch pedal over its entire stroke to ensure that the clutch linkage operates smoothly without squeak noise, interference and binding.

## CLUTCH

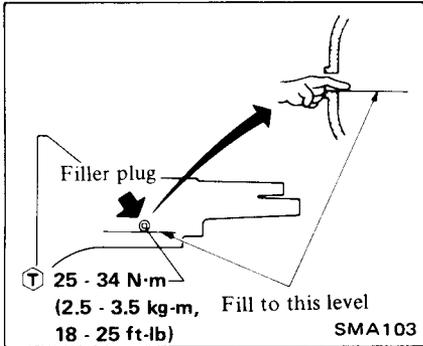
### CHECKING CLUTCH FLUID LEVEL AND LEAKS



## MANUAL TRANSMISSION

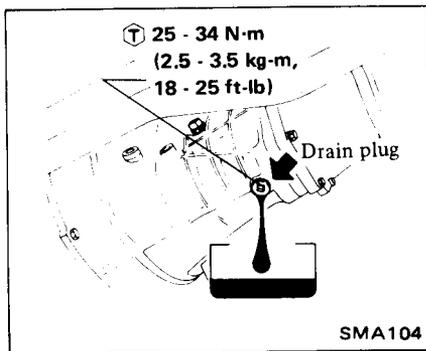
### CHECKING MANUAL TRANSMISSION OIL LEVEL

Never start engine while checking oil level.

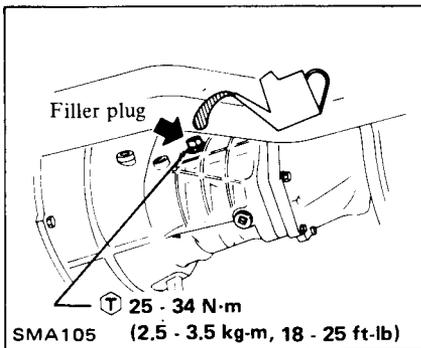


### CHANGING MANUAL TRANSMISSION OIL

1. Drain oil completely.



2. Refill transmission and check oil level.



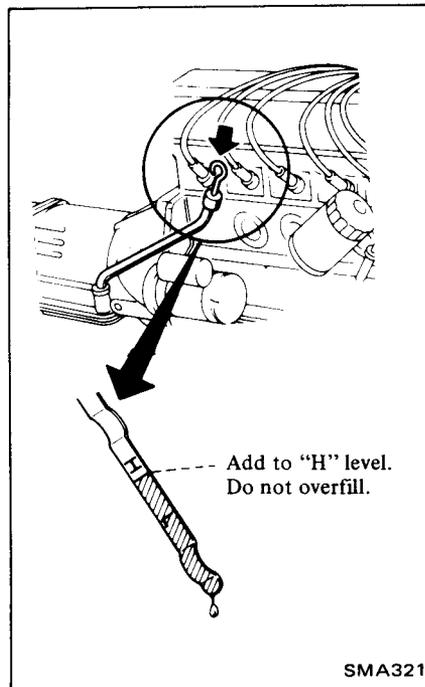
Oil capacity:  
FS5W71B  
2.0 liters  
(4-1/4 US pt, 3-1/2 Imp pt)

## AUTOMATIC TRANSMISSION

### CHECKING AUTOMATIC TRANSMISSION FLUID LEVEL

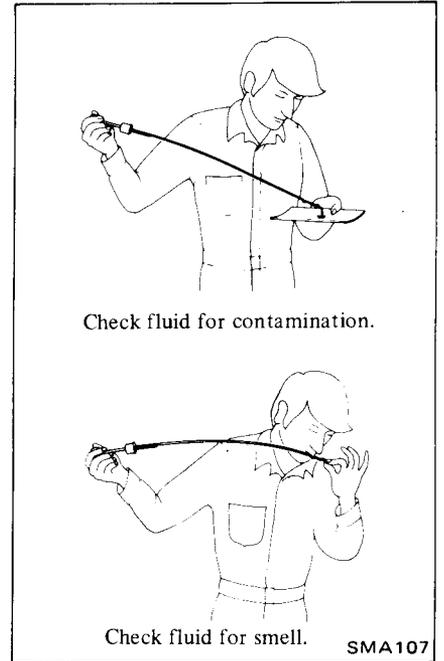
- Check under following conditions.
  - Place selector lever in "P" (PARK) position and idle engine.
  - Maintain fluid temperature at 50 to 80°C (122 to 176°F).
- Add fluid, if necessary.

Use only automatic transmission fluid having "DEXRON" identifications in 3N71B automatic transmission.



### CHECKING AUTOMATIC TRANSMISSION FLUID CONDITION

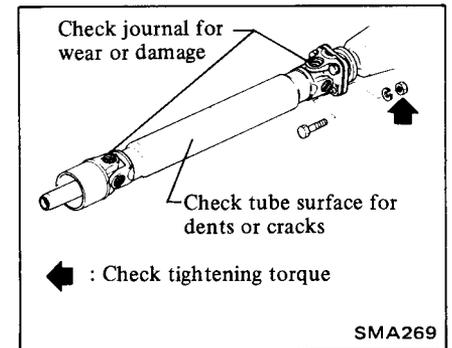
Check fluid for contamination to determine condition of automatic transmission. If fluid is very dark or smells burned, the frictional material (clutches, band, etc.) may need replacement.



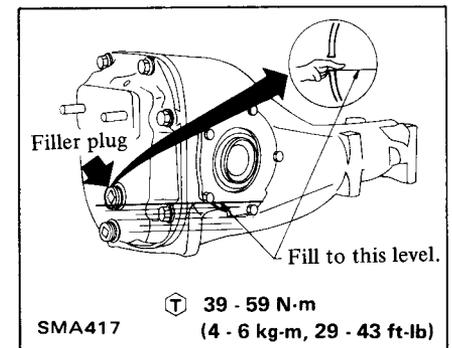
## PROPELLER SHAFT AND DIFFERENTIAL CARRIER

### CHECKING PROPELLER SHAFT

Check propeller shaft, replace if necessary.

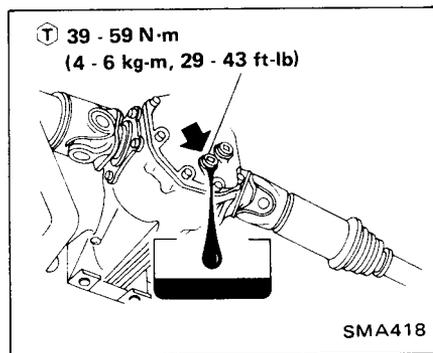


### CHECKING DIFFERENTIAL CARRIER OIL LEVEL

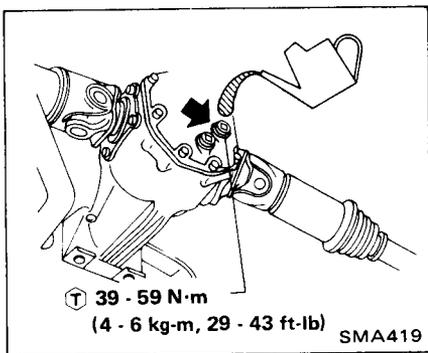


## CHANGING DIFFERENTIAL CARRIER OIL

1. Drain oil completely.



2. Refill differential carrier and check oil level.



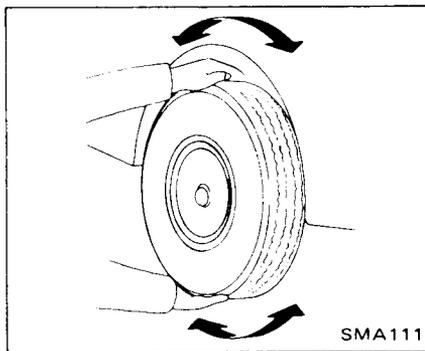
### Oil capacity:

#### R200

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

#### R180

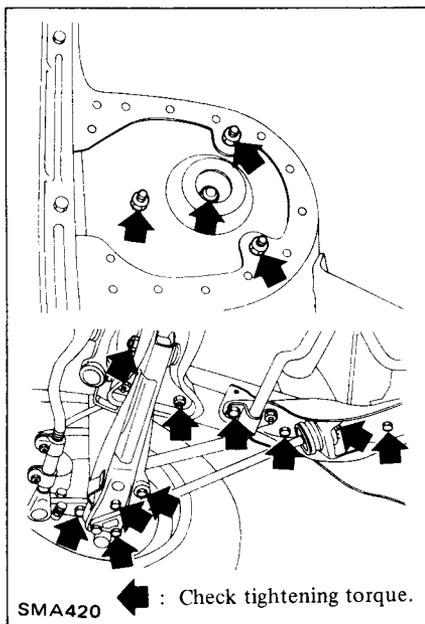
1.0 liter (2-1/8 US pt,  
1-3/4 Imp pt)



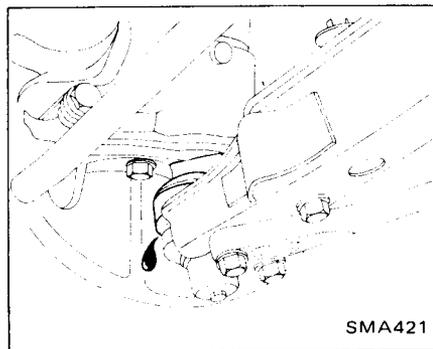
Check suspension parts for looseness, wear, or damage.

Retighten all loose nuts and bolts to the specified torque. Refer to Section FA for tightening torque.

Replace all worn parts as described under Front Suspension (Section FA).



4. Check suspension ball joint for grease leakage and ball joint dust cover for damage.



5. Remove wheel and tire assembly.

6. Check front axle parts for crack or damage.

Replace worn parts.

Refer to Front Axle (Section FA).

7. Remove brake pads.

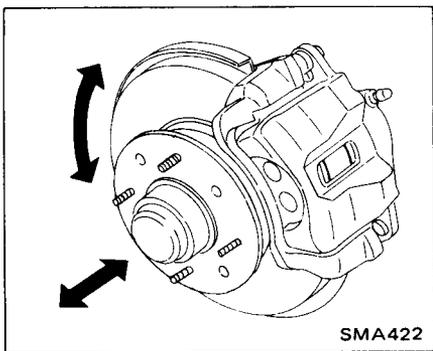
Refer to section BR.

8. Check wheel bearing.

If there is any axial end play or if wheel bearing does not smoothly turn, adjust bearing to specifications.

Replace worn or damaged bearings.

Refer to Front Axle (Section FA).



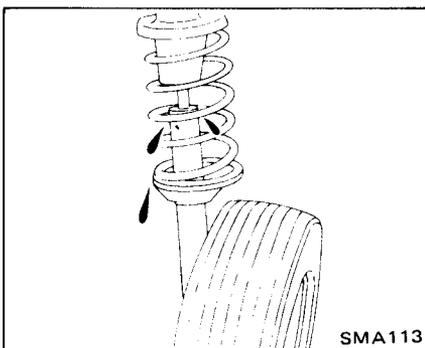
## FRONT AXLE AND FRONT SUSPENSION

### CHECKING FRONT AXLE AND SUSPENSION PARTS

1. Block rear wheels with chocks and raise front of car, and then support it with safety stand. Refer to Lifting Points and Towing (Section GI).

2. Shake each front wheel by holding upper and lower surfaces of tires as shown.

3. Check strut (Shock absorber) for oil leakage or damage.



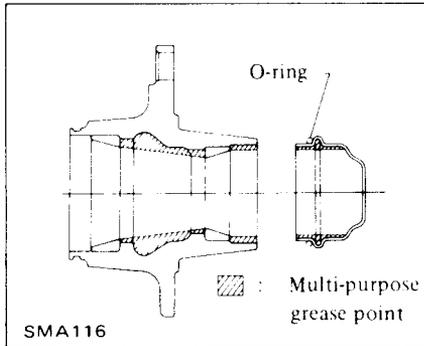
### ADJUSTING WHEEL BEARING PRELOAD

After wheel bearing has been replaced or front axle has been re-assembled be sure to adjust wheel bearing preload as described below.

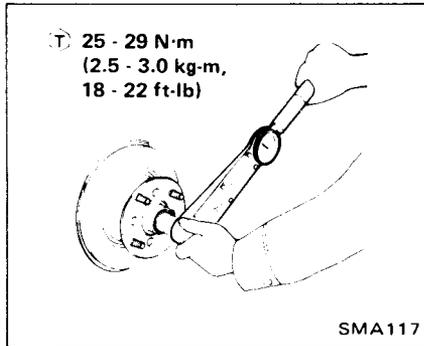
1. Before adjustment, thoroughly clean all parts to prevent possible entry of dirt.

2. Apply recommended multi-purpose grease sparingly to the following parts.

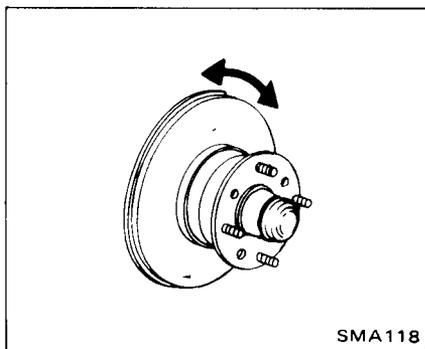
- Threaded portion of spindle.
- Contact surface between wheel bearing washer and outer wheel bearing.
- Hub, hub cap and O-ring.
- Grease seal lip.



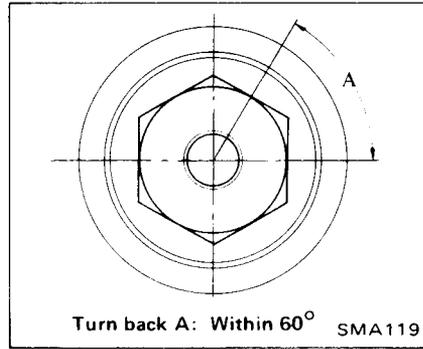
3. Tighten wheel bearing nut.



4. Turn wheel hub several times in both directions to seat wheel bearing correctly.

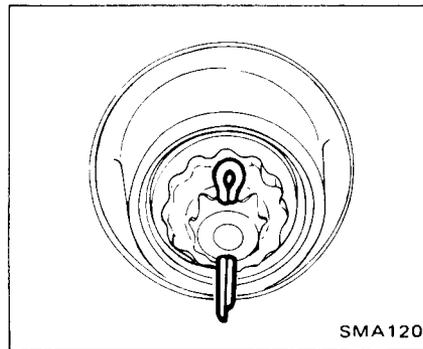


5. Again tighten wheel bearing nut.
6. Turn back wheel bearing nut within 60°.

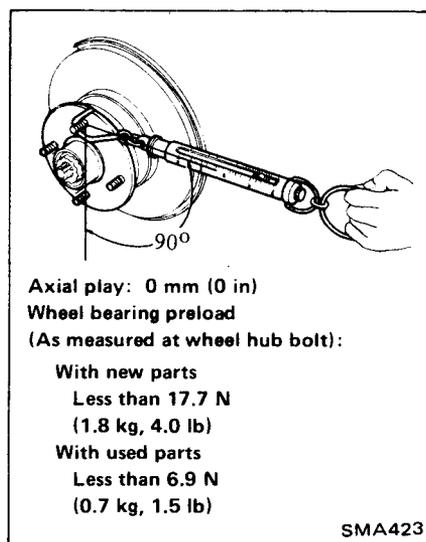


7. Fit adjusting cap and new cotter pin.

If the above procedure fails to align hole and slot together, then tighten lock nut as much as 15° until hole in spindle is aligned with any slot.

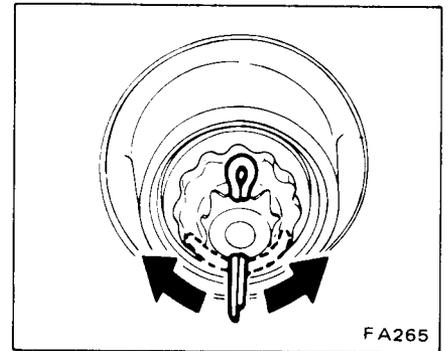


8. Measure wheel bearing preload and axial play.



Repeat above procedures until correct starting torque is obtained.

9. Spread cotter pin.



10. Install hub cap with new O-ring.

## CHECKING WHEEL ALIGNMENT

Before checking front wheel alignment, be sure to make a preliminary inspection of all front end parts.

- Tire pressure
- Wheel bearing axial play
- Suspension ball joint
- Steering gear housing looseness at frame
- Steering linkage and connections
- Shock absorber operation
- Tighten each front axle and suspension parts.
- Measure car height (Unladen).
- Repair or replace the damaged portion or parts.

“Unladen”

- Fuel tank, radiator and engine oil tank all full.
- Spare tire, jack, hand tools, mats in position.
- All tires inflated to specified pressure.
- All accumulation of mud, dirt and road deposits removed from chassis and underbody.

## Camber, caster and king-pin inclination

Camber, caster and king-pin inclination are preset at the factory and cannot be adjusted.

If camber, caster or king-pin inclination alignment is not within specifications, check pertinent parts.

Repair or replace as necessary.

**Camber:**

-35' - 55'

**Caster:**

4° 10' - 5° 40'

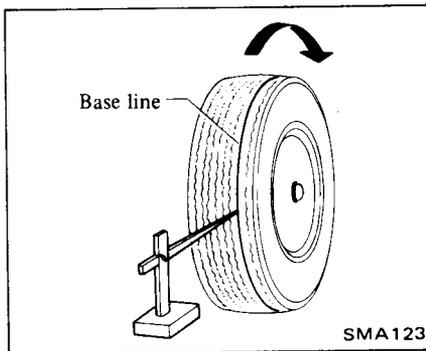
**Kingpin inclination:**

8° 35' - 10° 5'

**Toe-in**

Measure toe-in, and make necessary adjustments. Use the following procedure when making adjustments.

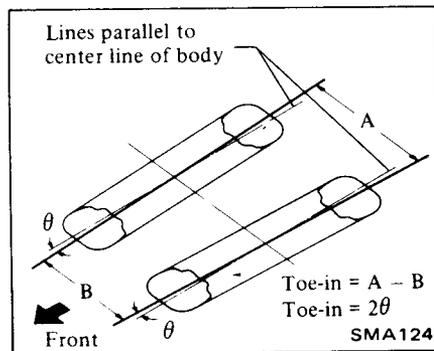
1. Raise front of car and mark a base line across the tread of left and right wheels.



2. Set wheels in a straight-ahead position, and then lower front of car.

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

3. Measure toe-in and make necessary adjustments.



**Toe-in (Unladen):**

0 - 2 mm (0 - 0.08 in)

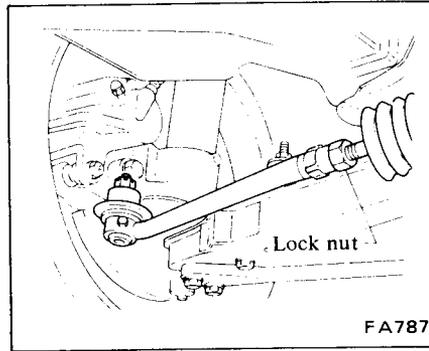
6' - 16' (On both sides)

**Side slip (Reference data)**

Out 3 mm - In 3 mm/m

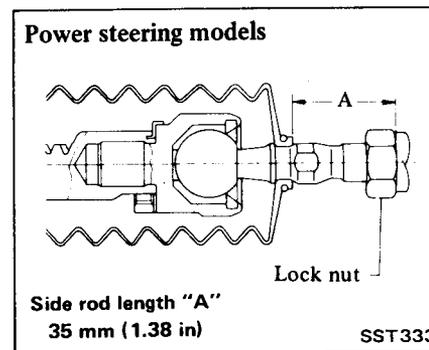
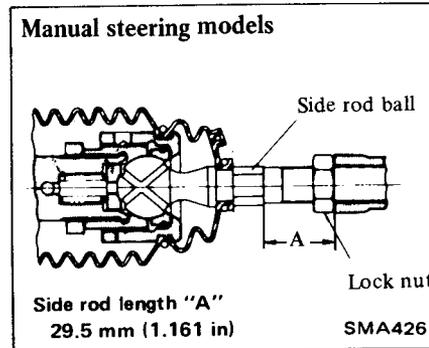
(Out 0.036 in - In 0.036 in/ft)

Toe-in can be adjusted by varying the length of steering side rods.



- a. Loosen lock nuts and turn left and right side rod bars equally.
- b. The side rod bars have right-handed threads, and should be turned as viewed from outside, clockwise to increase, or counterclockwise to decrease, toe-in.

- If side rods have been disassembled, set side rod length to specified value "A" before reassembling.
- Make sure that side rod bars are screwed into side rods more than 25 mm (0.98 in).

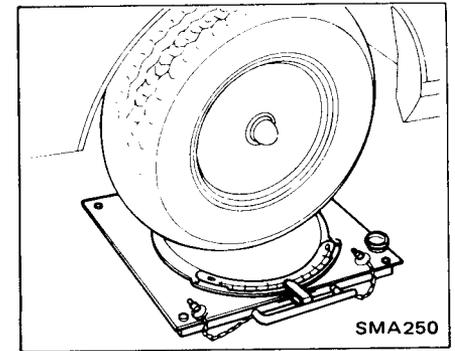


After correct toe-in is obtained, tighten side rod lock nuts.

Ⓣ : 78 - 98 N-m  
(8 - 10 kg-m, 58 - 72 ft-lb)

**Front wheel turning angle**

1. Set wheels in straight ahead position and then move car forward until front wheels rest on turning radius gauge properly.



2. Remove stopper pin of turning radius gauge and then rotate steering wheel to the right and left; measure turning angle on wheel.

**Front wheel turning angle**

- **Toe-out turns**  
(When inner wheel is 20°)  
**Outer wheel**  
RP15L: 18.7°  
IPRP15L: 18.7°
- **Full turns**  
RP15L:  
**Inner wheel** 33-1/2° - 37-1/2°  
**Outer wheel** 29° - 33°  
IPRP15L:  
**Inner wheel** 33-1/2° - 37-1/2°  
**Outer wheel** 29° - 33°

If turning angle does not satisfy specifications, check rack stroke by referring to Section ST.

**Rack stroke (each side)**

RP15L: 66.4 mm (2.614 in)

IPRP15L: 66.4 mm (2.614 in)

**CHECKING FRONT WHEEL BEARING GREASE**

1. Block rear wheel with chocks and raise front of car, and then support it with safety stands. Refer to Lifting Points and Towing (Section GI).
2. Remove wheel and tire.
3. Check for grease leakage from front wheel bearing grease seals by inspecting the area around them. Replace worn or damaged grease seal. Refer to Front Axle (Section FA).

4. Check wheel bearing.

If there is any axial end play or if wheel bearing does not turn smoothly, adjust bearing to specifications.

Replace worn or damaged bearings.  
Refer to Front Axle (Section FA).

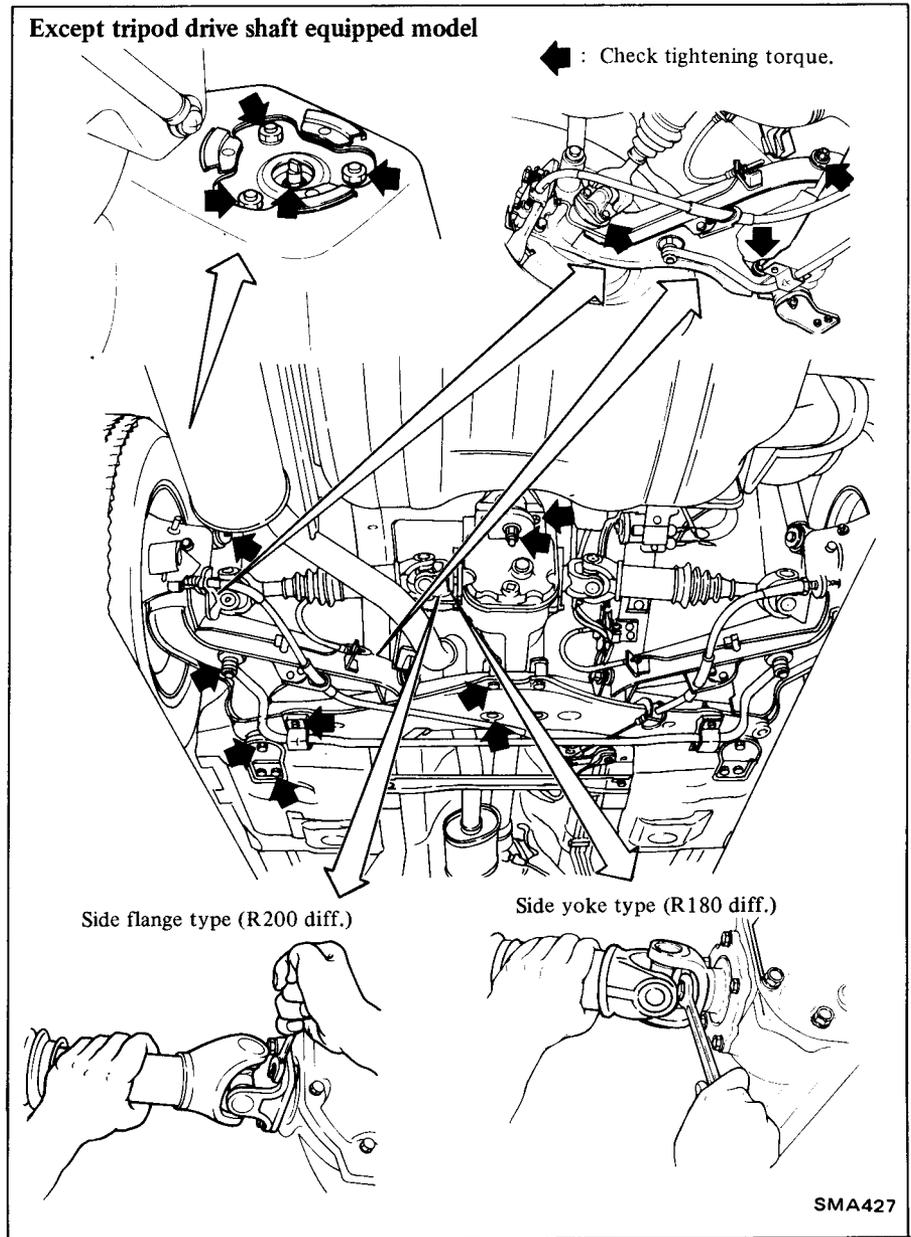
## REAR AXLE AND REAR SUSPENSION

### CHECKING REAR AXLE AND SUSPENSION PARTS

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

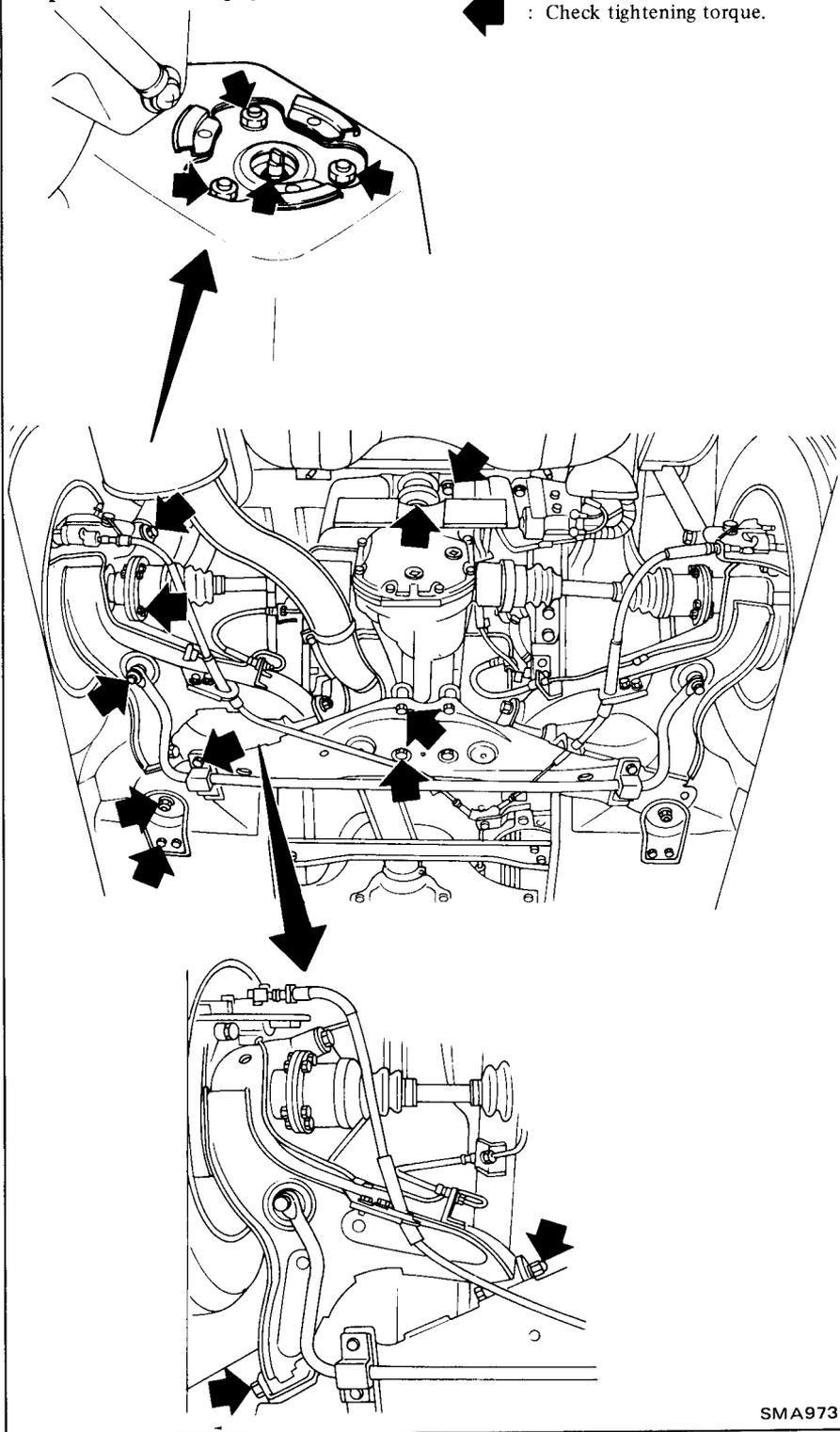
Retighten all loose nuts and bolts to the specified torque. Refer to Section RA for tightening torque.

Replace all worn parts as instructed under Rear Suspension (Section RA).



Tripod drive shaft equipped model

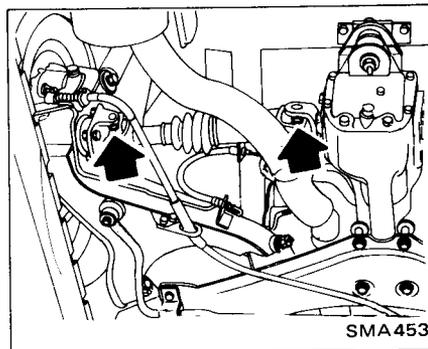
← : Check tightening torque.



## GREASING REAR AXLE DRIVE SHAFT JOINTS (Except tripod drive shaft)

Lubricate rear axle drive shaft joints with recommended multi-purpose grease.

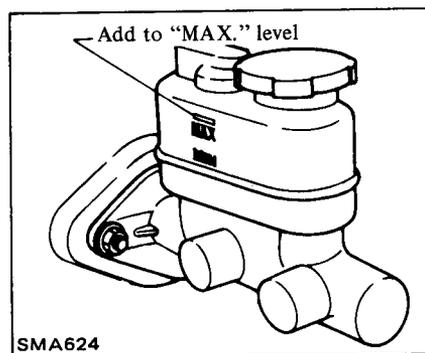
1. Wipe dirt and grease from around plugs.
2. Remove plugs and install grease nipples in their place.
3. Pump grease slowly.
4. Remove grease nipples and install plugs.



Do not over lubricate so that grease leaks from dust seal, as this will destroy weathertight seal.

## BRAKE SYSTEM

### CHECKING BRAKE FLUID LEVEL AND LEAKS



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

### CHANGING BRAKE FLUID

1. Change brake fluid.

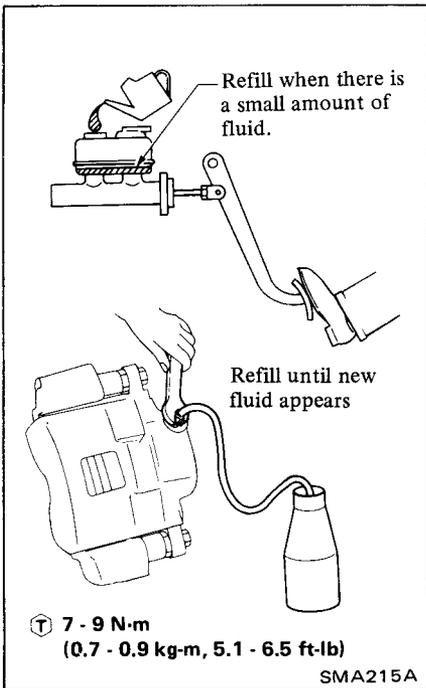
Use same procedure as in air bleeding to change brake fluid in system. This operation should be done for one wheel at a time. Refer to Section BR.

**CAUTION:**

Never reuse brake fluid because its characteristic is changed by oxidation as well as contains the foreign material and dirt.

Recommended brake fluid specification:

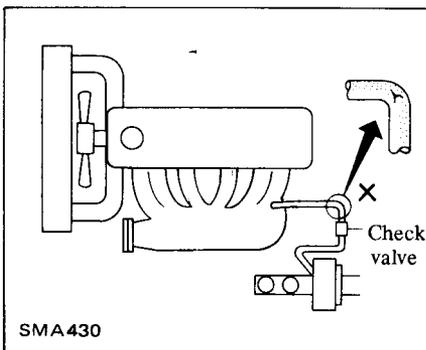
DOT 3 (F.M.V.S.S. No. 116)



2. Check brake fluid level.
3. Check for leaks.

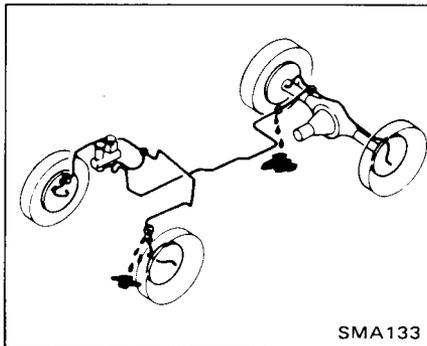
**CHECKING BRAKE BOOSTER VACUUM HOSES, CONNECTIONS AND CHECK VALVE**

1. Check condition of vacuum hoses and connections.
2. Check vacuum hoses and check valve for air tightness.



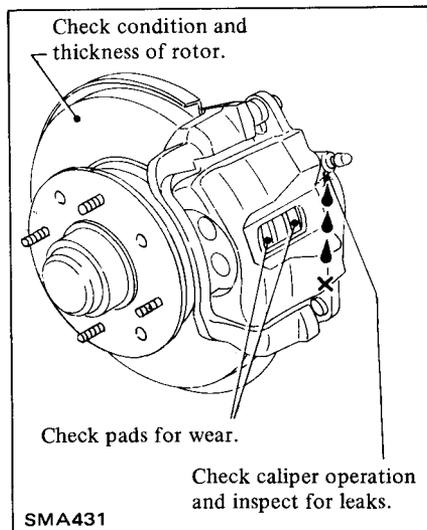
**CHECKING BRAKE SYSTEM**

1. Check brake system for proper attachment, leaks, chafing, abrasion, deterioration, etc.

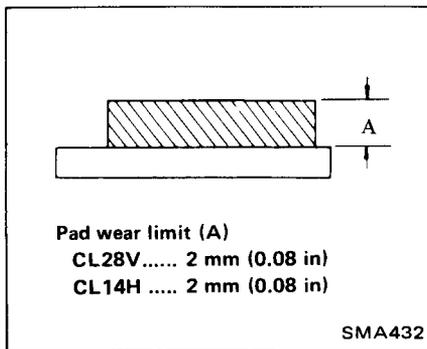


**CHECKING DISC BRAKE**

1. Check condition of disc brake components.



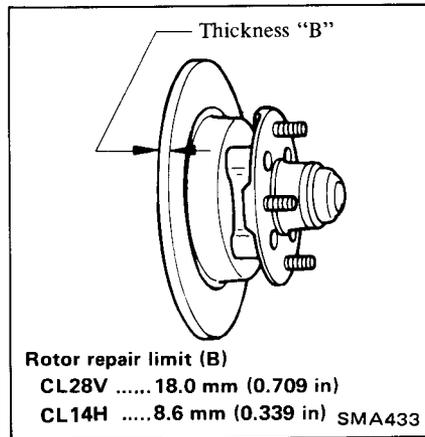
**Pad wear limit**



Pad wear limit (A)  
 CL28V ..... 2 mm (0.08 in)  
 CL14H ..... 2 mm (0.08 in)

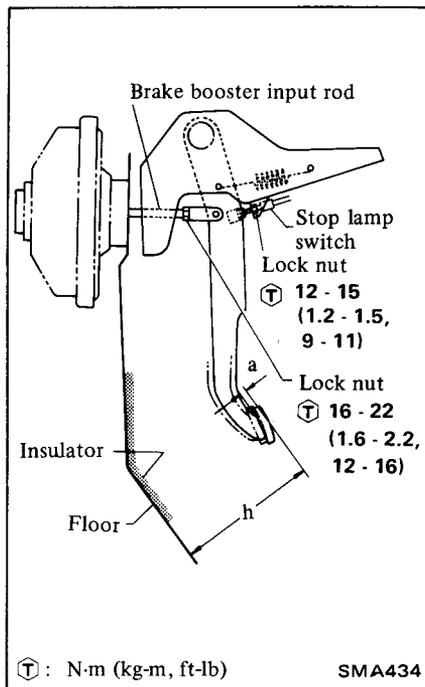
Refer to Section BR for pad replacement.

**Rotor repair limit**



**CHECKING FOOT BRAKE**

1. Check brake pedal free height and free play.  
 Adjust if necessary.



Pedal height "h":  
 M/T model  
 181 - 187 mm  
 (7.13 - 7.36 in)  
 A/T model  
 190 - 196 mm  
 (7.48 - 7.72 in)  
 Pedal free play "a":  
 1 - 5 mm (0.04 - 0.20 in)

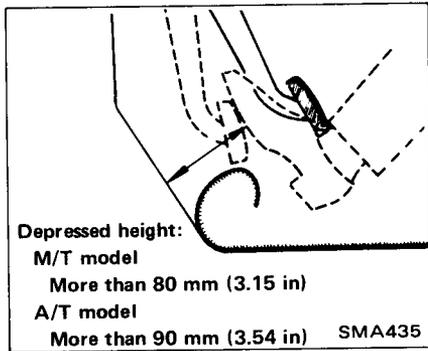
(1) Adjust pedal free height with stop lamp switch. Then tighten lock nut.

(2) Adjust pedal free play with brake booster input rod. Then tighten lock nut.

Pedal free play means the following total measured at position of pedal pad.

- Play due to clevis pin and clevis pin hole in pedal lever.
- Play due to piston and piston rod.

2. Check brake pedal depressed height.

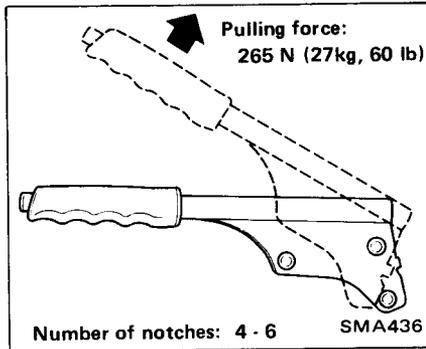


If depressed height is below the specified value, check brake system for leaks, accumulation of air or any abnormality regarding component parts (master cylinder, adjuster, etc.), and make the necessary repairs.

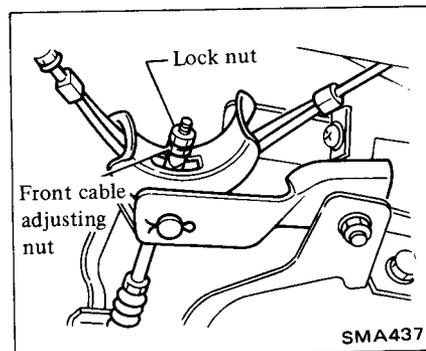
### CHECKING PARKING BRAKE

1. Pull lever with specified amount of force.

Measure lever stroke with number of notches.



2. Adjust front cable adjusting nut to adjust lever stroke.



3. After returning parking brake control lever to its position, ensure that:

- All rear brake toggle levers return to their original positions.
- Rear cables are not slack.

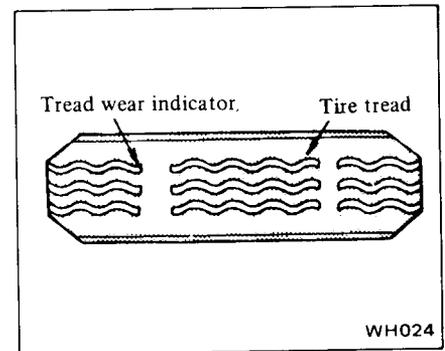
4. Bend parking brake warning lamp switch plate down so that brake warning light comes on when ratchet at parking brake lever is moved back one notch and goes out when returned to its original position.

## WHEEL AND TIRE

### CHECKING TIRE CONDITION

#### Tire condition

1. Tires are provided with “tread wear indicator” at six places around tire circumference, indicating 1.6 mm (1/16 in) tread depth. When tires wear and then marks appear, replace them with new ones.



2. Remove pebbles, glass or any other foreign material embedded in tire treads.

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

4. Check tire valves for air leakage.

#### Tire inflation

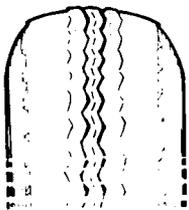
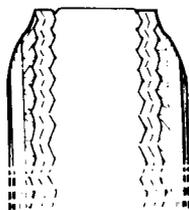
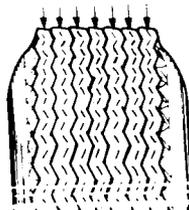
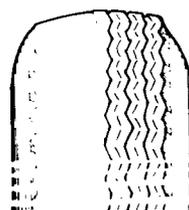
1. Check tire pressure. If necessary, adjust it to the specified value indicated in the label attached to the center console box lid, also found in Owner's Manual or S.D.S.

**Tire pressure should be measured when tire is cold.**

2. After inflating tires, valves should be checked for leakage. Whenever tire pressure is checked, be sure to tighten valve caps firmly by hand to keep dust and water out.

**Abnormal tire wear**

Correct abnormal tire wear according to the chart shown below.

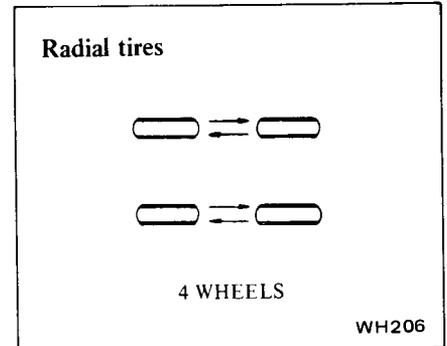
Condition	Probable cause	Corrective action
 <p>Shoulder wear</p>	<ul style="list-style-type: none"> <li>● Underinflation (both sides wear)</li> <li>● Incorrect wheel camber (one side wear)</li> <li>● Hard cornering</li> <li>● Lack of rotation</li> </ul>	<ul style="list-style-type: none"> <li>● Measure 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>

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**TIRE ROTATION**

1. Tires tend to wear unevenly and become unbalanced after a certain running distance. Uneven tire wear often results in tire noise which is attributed to rear axle gears, bearing, etc. Front tires also tend to wear unevenly because of improperly aligned front wheels.

2. Accordingly, to equalize tire wear, it is necessary to **rotate tires periodically**.



**TIRE REPLACEMENT**

**CAUTION:**

Different types of tires, such as bias, bias belted and radial tires, must not be mixed under any circumstances. Mixed use of different types of tires can adversely affect car handling and may cause driver to lose control.

a. When replacing a worn or damaged tire, use a replacement tire of the same size and load carrying capacity as that with which the car was equipped when manufactured. The use of different size and/or load capacity tires will not only shorten tire service life but may also result in a serious accident.

b. Do not use tires and wheels other than those recommended, and do not mix tires of different brands or tread patterns.

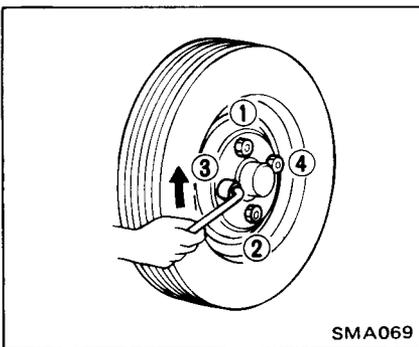
The use of tires and wheels other than those recommended or the mixed use of tires of different brands or tread patterns can adversely affect the ride, braking, handling, ground clearance, body-to-tire clearance, and speedometer calibration.

- c. It is recommended that new tires be installed in pairs on the same axle. When replacing only one tire, it should be paired with the most tread, to equalize braking traction.
  - d. When replacing original tires with those tires of an optional recommended size and of different diameter, the speedometer must be recalibrated.
1. To replace a tire with a jack in a safe manner, refer to Lifting Points (Section GI) for jacking up.

**WARNING:**

Never get under car while it is supported only by jack.  
Always use safety stands to support side member of body construction when you must get beneath car.

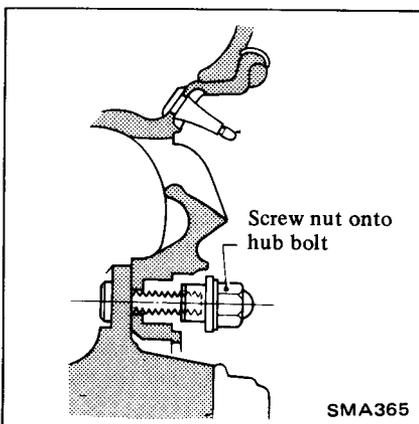
2. To install wheel, tighten wheel nuts in criss-cross fashion.



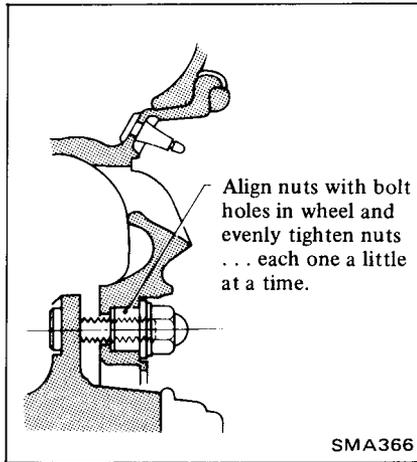
**Aluminum wheel**

To install an aluminum wheel, proceed as follows:

1. Snugly tighten four nuts after the wheel is positioned.



2. Slightly pull the wheel back to properly align the nuts with bolt holes in the wheel, and tighten the nuts as much as possible with your fingers.



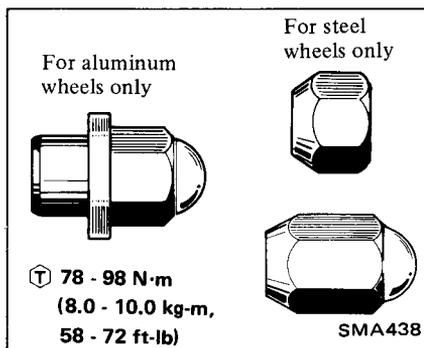
3. Tighten wheel nuts evenly with a wheel wrench in criss-cross fashion.

Be sure to check the wheel nuts for tightness, after the aluminum wheel has been run for the first 1,000 km (600 miles) (also in cases of repairing flat tires, tire rotation, etc.). Retighten if necessary.

**Wheel nut**

**CAUTION:**

Two types of wheel nuts are used; one is designed for use with steel wheel and the other for use with aluminum wheel. Do not mix different types of wheel nuts.



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

**SPARE TIRE**

This model is equipped with the Space Saver Spare tire or the Foldable 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. However, the canister must be replaced after each inflation.

Be sure to obtain 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 car as required and remove the damaged tire. Then mount the uninflated spare tire to the axle. (Tighten wheel nuts slightly.)

On aluminum wheels equipped cars, be sure to use spare wheel nuts in the tool bag.

The wheel nuts for aluminum wheels must not be used 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 takes about 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 means of protection.

(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 must 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 operation is slow, run the engine while the air pump is operating. In this case, remove jack with the spare tire attached to the axle.

**WARNING:**

- Do not run the engine in closed space or with the car being jacked up.
- Do not touch the air pump with the bare hands while it is operating for it may become quite hot.

(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 authorized B.F. Goodrich dealers (for Space Saver Spare tire) or authorized Bridgestone or DATSUN dealers (for Foldable Spare tire) if service is required.

**TIRE REPAIR**

Inspect tire, following the procedure shown below. If any defect is present, repair or replace as necessary.

1. Apply soapy solution or submerge tire and wheel or tube in water after inflating it to specified pressure.
2. Inspect for leaks.
3. Specially inspect for leaks around valve or wheel rim and along tread.
4. Note bead and rim where leakage occurs. Wipe water away from any area which leaks air bubbles and then mark place with chalk.
5. Remove object which caused puncture and seal the point.

a. When repairing a puncture, use a tire repair kit furnished by any tire dealer, following instructions provided with kit.

b. If a puncture is too large or there is some damage to tire fabric, repair should be carried out by authorized tire dealer.

6. Discard when any of the following problems occurs:

- Broken or damaged bead wire.
- Ply or tread separation.

- Worn fabric damage on tubeless tire.
- Cracked or damaged side wall.
- Tires with tread wear indicator showing, etc.

**CAUTION:**

When replacing tire, take extra care not to damage tire bead, rim-flange and bead seat.

Do not use tire irons to force beads away from wheel rim-flange; that is, always use tire replacement device whenever tire is removed.

7. Install tire, noting the following items:

- a. Install valve core and inflate to proper pressure. Check the locating rings of the tire to be sure they show around the rim flanges on both sides.
- b. Check valves for leakage after inflating tires.
- c. Be sure to tighten valve caps firmly by hand.

**WARNING:**

When, while tire is being inflated, bead snaps over safety hump, it might break. Thus, 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**

Inspect wheel, taking care of the following points, in order to ensure satisfactory steering condition as well as maximum tire life. If any defect is present, repair or replace as necessary.

1. Check wheel rim, especially rim flange and bead seat, for rust, distortion, cracks or other faults which might cause air leaks. Function of tubeless tire depends on a good seal between tire bead and wheel rim.

2. Thoroughly remove rust, dust, oxidized rubber or sand from wheel rim.

Rim bead seats should be cleaned with the following.

**Steel wheel:**

Wire brush, coarse steel wool, etc.

**Aluminum wheel:**

Neutral detergent, cloth, etc.

3. Examine wheel rim for lateral and radial runout, using dial gauge.

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**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)

4. Replace wheel when any of the following problems occurs.

- Bent, dented or heavily rusted
- Elongated bolt holes
- Excessive lateral or radial runout
- Air leaks through welds
- Wheel nuts will not stay tight

**Wheel balance**

Inspect wheel and tire for wheel balance and correct it if unbalance is present, taking the following points into consideration.

1. Correct unbalance when the symptom of unbalance appears as wheel tramps and wheel shimmy.
2. Balance wheel and tire both statically and dynamically.

**Balancing wheels**

**WARNING:**  
When balancing wheel and tire on the car, be sure to observe the equipment manufacturers instructions carefully.

Cause	Wheel static unbalance	Wheel dynamic unbalance
Symptom of unbalance	Wheel tramp Wheel shimmy	Wheel shimmy
Corrective action	Balance statically  <p style="text-align: center;">Place balance weights here</p> <p style="text-align: center;">Wheel tramp</p> <p style="text-align: center;">Heavy Location</p>	Balance dynamically  <p style="text-align: center;">Wheel shimmy</p> <p style="text-align: center;">Place balance weights here</p> <p style="text-align: center;">Heavy location</p> <p style="text-align: center;">Wheel shimmy</p>

SMA075

Balance weights

**Maximum allowable unbalance at rim flange:**  
10 g (0.35 oz)

**Balance weight:**  
10 - 60 g (0.35 - 2.12 oz)  
at 10 g (0.35 oz) interval

SMA076

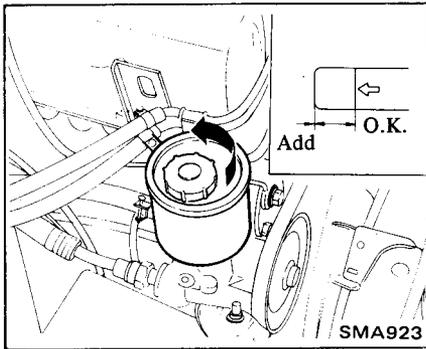
- a. Be sure to place correct balance weights on inner edge of rim.
- b. Do not put more than two weights on each side.
- c. Two types of balance weights are used; one is designed for use with steel wheel and the other for use with aluminum wheel. Do not mix different types of balance weights.
- d. Properly rebalance the wheel and tire whenever puncture is repaired.

## STEERING SYSTEM

### CHECKING ZF POWER STEERING FLUID AND LINES

1. Check the fluid level in reservoir by observing the dipstick when the fluid is cold. Add fluid as necessary to bring the level into the proper range on dipstick.

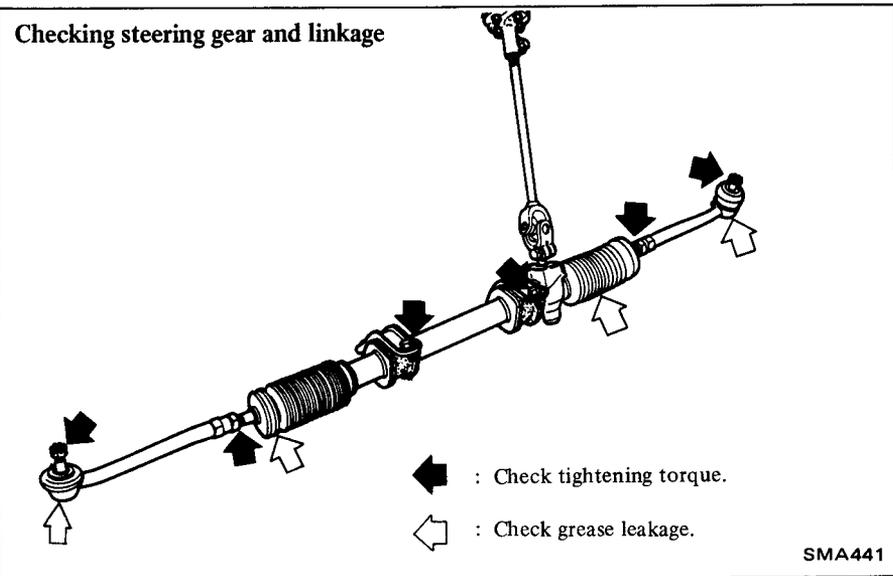
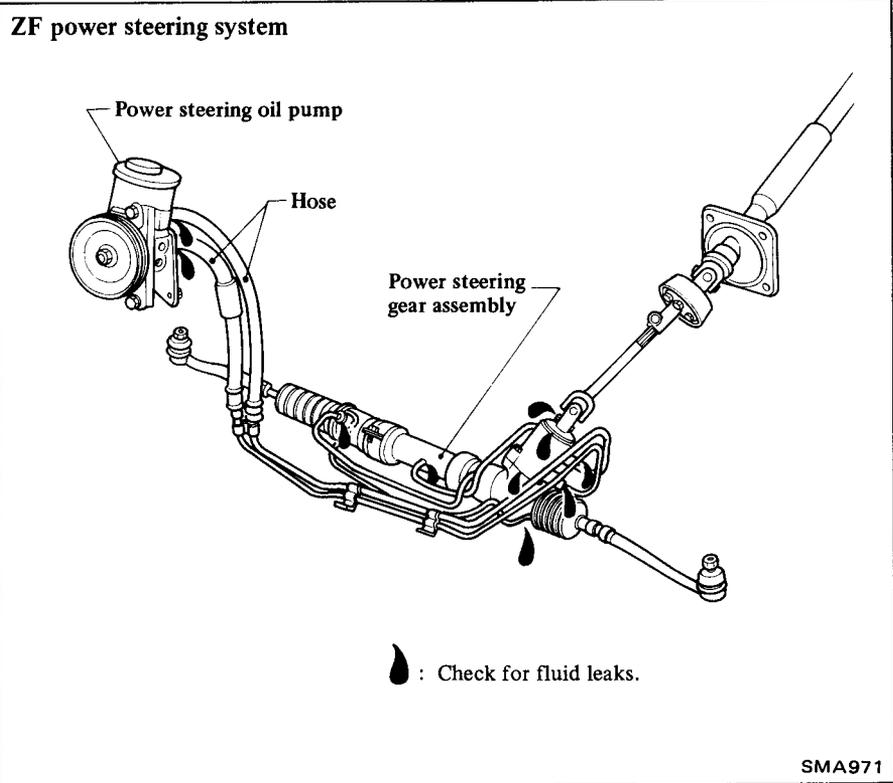
**CAUTION:**  
Do not overfill.



2. Inspect line condition and check for leaks.

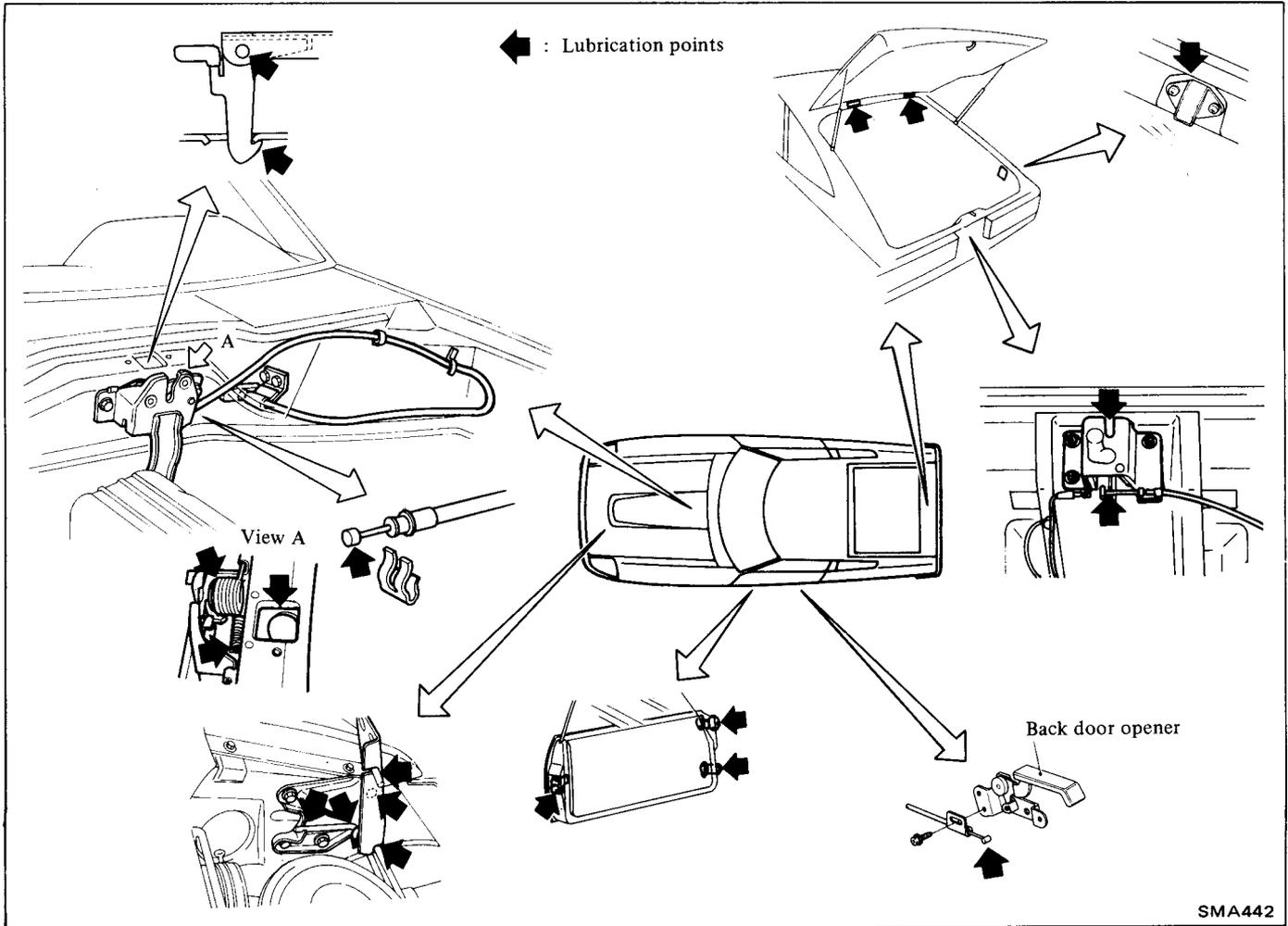
### CHECKING STEERING GEAR AND LINKAGE

- Check parts for looseness, wear or damage. Retighten if necessary. Refer to Section ST for tightening torque.
- Check ball joints for grease leakage.
- Check for any missing parts (cotter pins, washer, etc.).

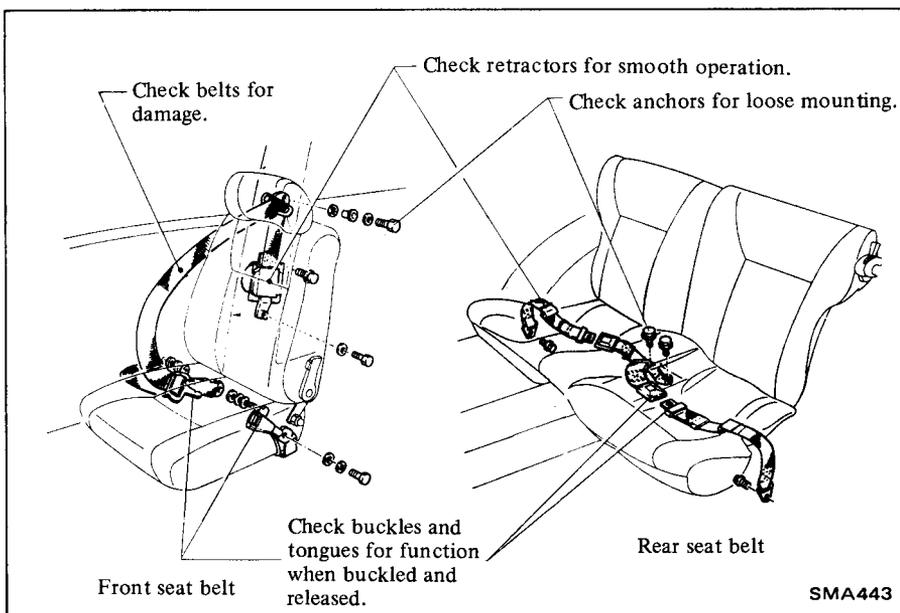


## BODY

### LUBRICATING LOCKS, HINGES AND HOOD LATCH



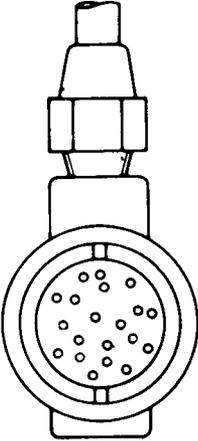
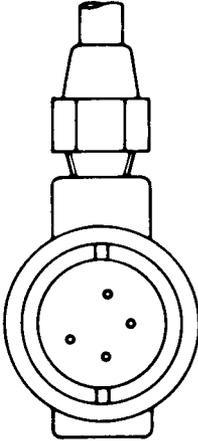
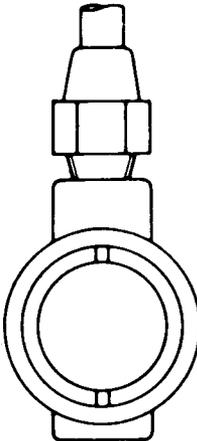
### CHECKING SEAT BELTS, BUCKLES, RETRACTORS, ANCHORS AND ADJUSTER



# HEATER AND AIR CONDITIONER

## CHECKING REFRIGERANT LEVEL

1. Open doors fully.
2. Start the engine.
3. Set air conditioner switch to "ON" position.
4. Set temperature lever to maximum cold position.
5. Set blower to maximum speed.
6. Check sight glass after the lapse of about five minutes. Judge according to the following table.

Amount of refrigerant	Almost no refrigerant	Insufficient	Suitable	Too much refrigerant
Check item				
Temperature of high pressure and low pressure lines.	Almost no difference between high pressure and low pressure side temperature.	High pressure side is warm and low pressure side is fairly cold.	High pressure side is hot and low pressure side is cold.	High pressure side is abnormally hot.
State in sight glass.	Bubbles flow continuously. <b>Bubbles will disappear and something like mist will flow when refrigerant is nearly gone.</b>  AC256	The bubbles are seen at intervals of 1 - 2 seconds.  AC257	Almost transparent. Bubbles may appear when engine speed is raised and lowered.  <b>No clear difference exists between these two conditions.</b>  AC258	No bubbles can be seen.
Pressure of system.	High pressure side is abnormally low.	Both pressure on high and low pressure sides are slightly low.	Both pressures on high and low pressure sides are normal.	Both pressures on high and low pressure sides are abnormally high.
Repair.	<b>Stop compressor immediately</b> and conduct an overall check.	Check for gas leakage, repair as required, replenish and charge system.		Discharge refrigerant from service valve of low pressure side.

a. The bubbles seen through the sight glass are influenced by the ambient temperature. Since the bubbles are hard to show up in comparatively low temperatures below 20°C (68°F), it is possible that a slightly larger amount of refrigerant would be filled, if supplied according to the sight glass. Be sure to recheck

the amount when it exceeds 20°C (68°F). In higher temperature the bubbles are easy to show up.  
b. When the screen in the receiver drier is clogged, the bubbles will appear even if the amount of refrigerant is normal. In this case, the outlet side pipe of the receiver drier becomes considerably cold.

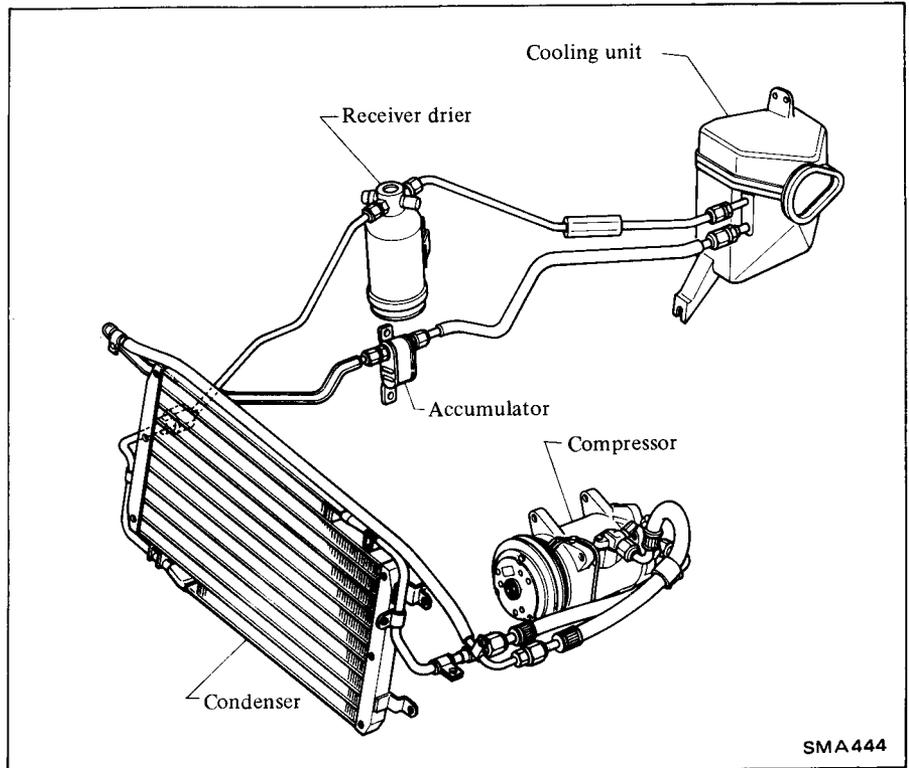
## CHECKING COMPRESSOR DRIVE BELT

Refer to Engine Maintenance for inspection and adjustment.

## CHECKING HOSES AND PIPES

Check heater and air conditioner for damaged hoses or pipes due to interference or friction with adjoining parts. If damage is minor, repair those affected hose or pipes. If damage is major and if there is the possibility of encountering holes, replace the affected parts.

Carefully check hoses and pipes, especially those located close to moving parts or sharp edge of panel.

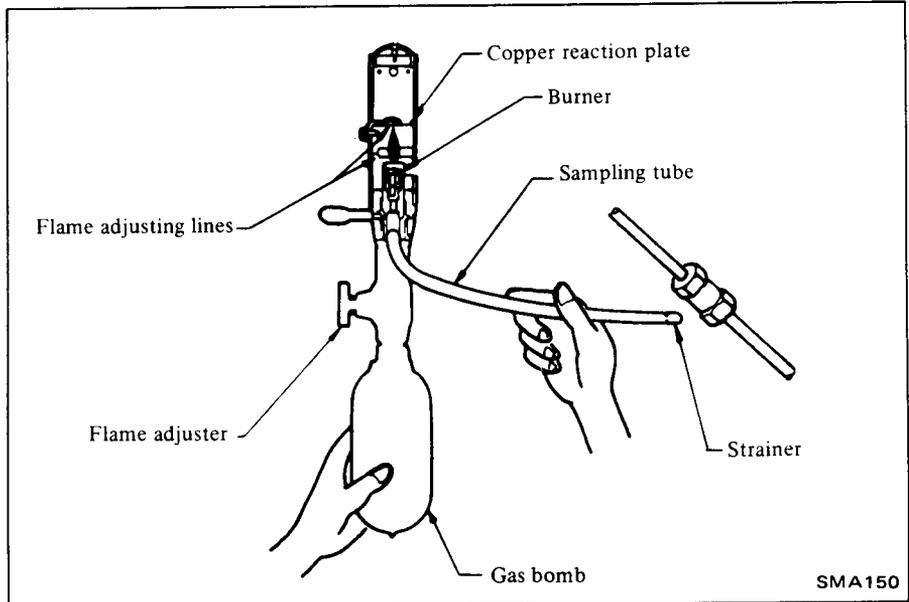


## CHECKING REFRIGERANT LEAKS

Conduct a leak test with halide or electric leak detector whenever leakage of refrigerant is suspected and when conducting service operations which are accompanied by disassembly or loosening of connection fittings.

### Major check points

- (1) Compressor
  - Compressor shaft seal (rotate the compressor by hand)
  - Flexible hose connections
  - Front and rear head gaskets
  - Service valve
- (2) Condenser
  - Condenser pipe fitting
  - Condenser inlet and outlet pipe connections
- (3) Refrigerant lines
  - Flared section of high pressure and low pressure flexible hoses.
  - Line connections
- (4) Evaporator housing
  - Inlet and outlet line connections
  - Expansion valve
  - Suction throttle valve



The following information and cautions should be kept in mind when checking for leakage.

- If a halide leak detector is used, determine whether or not there is gas leaking by the color of the flame, as indicated in the chart below.

	Propane type	Butane type
NO LEAK	Greenish blue	Pale blue
SMALL LEAK	Yellow	Bright blue
LARGE LEAK	Purple	Vivid green

**WARNING:**

- a. Never inhale the fumes produced by combustion of refrigerant gas since they are toxic.
- b. Never use halide torch in a place where combustible or explosive gas is present.

- Since refrigerant gas is heavier than air, small leaks can be easily detected by placing sampling tube directly below the check point.
- If any trace of oil is noted at and around connection fittings, it is a sure indication that refrigerant is leaking.

If a gas leak is detected, proceed as follows:

1. Check torque on the connection fitting and, if too loose, tighten to the proper torque. Refer to Section HA for tightening torque. Check for gas leakage with a leak detector.
2. If leakage continues even after the fitting has been retightened, discharge refrigerant from system, disconnect the fittings, and check its seating face for damage. Always replace even if damage is slight.
3. Check compressor oil and add oil if required.
4. Charge refrigerant and recheck for gas leaks. If no leaks are found, evacuate and charge system.

**OFF-SEASON MAINTENANCE**

Even in the off-season, turn the compressor for 10 minutes at least **once a month** by running the engine at idling rpm.

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

## ENGINE MAINTENANCE

### INSPECTION AND ADJUSTMENT

#### Basic mechanical system

Valve clearance mm (in)	Hot	Intake	0.25 (0.010)
		Exhaust	0.30 (0.012)
	Cold*	Intake	0.17 (0.007)
		Exhaust	0.24 (0.009)
		Adjust deflection of used belt	Set deflection of new belt
Drive belt deflection mm (in)	7 - 10 (0.28 - 0.39)		6 - 9 (0.24 - 0.35)
Cooling fan	5 - 7 (0.20 - 0.28)		4 - 6 (0.16 - 0.24)
Air conditioner compressor	11 - 14 (0.43 - 0.55)		9 - 12 (0.35 - 0.47)
Power steering oil pump	98 (10, 22)		
Applied pushing force N (kg, lb)	98 (10, 22)		
		Models with turbocharger	Models without turbocharger
Compression pressure kPa (kg/cm <sup>2</sup> , psi)/rpm	Standard	981 (10.0, 142)/350	1,177 (12.0, 171)/350
	Minimum	686 (7.0, 100)/350	883 (9.0, 128)/350

\* These values are measured when engine is cold and ambient temperature is 20°C (68°F). After checking valve clearance while engine is cold, also check them when engine is hot to see if they remain within the specified range. If they do not, readjust them.

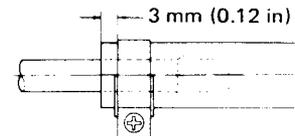
#### Ignition and fuel system

		Models with turbocharger	Models without turbocharger
Spark plug	Type	Standard	BPR6ES-11
		Hot	BPR5ES-11
		Cold	BPR7ES-11
Gap mm (in)		1.0 - 1.1 (0.039 - 0.043)	
Ignition timing* and idle speed degree/rpm	Manual transmission models	20±3° B.T.D.C. /700±50	8±2° B.T.D.C. /700±100
	Automatic transmission models (in "D" position)	20±3° B.T.D.C. /650±50	8±2° B.T.D.C. /700±100
"CO" % at idle speed		Idle mixture screw is preset and sealed at factory.	

\* On models without turbocharger, ignition timing should be checked with distributor vacuum hose disconnected and plugged up.

#### TIGHTENING TORQUE

Unit	N·m	kg·m	ft·lb
Pivot lock nut	49 - 59	5.0 - 6.0	36 - 43
Oil pan drain plug	20 - 29	2.0 - 3.0	14 - 22
Spark plug	15 - 20	1.5 - 2.0	11 - 14
Fuel hose clamp	1.0 - 1.5	0.10 - 0.15	0.7 - 1.1



Fuel hose clamping position.

EF336A

# CHASSIS AND BODY MAINTENANCE

## INSPECTION AND ADJUSTMENT

### Clutch

Unit: mm (in)

Pedal height "H"	203 (7.99)
Pedal free play "A"	1 - 5 (0.04 - 0.20)

### Front axle and front suspension

Axial play	mm (in)	0 (0)
Wheel bearing preload (As measured at wheel hub bolt)		
With new parts	N (kg, lb)	Less than 17.7 (1.8, 4.0)
With used parts	N (kg, lb)	Less than 6.9 (0.7, 1.5)
Wheel alignment (Unladen)		
Camber		-35' - 55'
Caster		4°10' - 5°40'
Kingpin inclination		8°35' - 10°5'
Toe-in		0 - 2 mm (0 - 0.08 in) 6' - 16' (On both sides)
Side lip (Reference data)		Out 3 mm - In 3 mm/m (Out 0.036 in - In 0.036 in/ft)
	Power steering models	Manual steering models
Standard side rod length "A"	mm (in)	35 (1.38)      29.5 (1.161)
Front wheel turning angle Toe-out turns (When inner wheel is 20°) Outer wheel		18.7°      18.7°
Full turns*		
Inner wheel		33-1/2° - 37-1/2°      33-1/2° - 37-1/2°
Outer wheel		29° - 33°      29° - 33°

\* 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.

### Brake system

Unit: mm (in)

Pad wear limit	CL28V	2 (0.08)
	CL14H	2 (0.08)
Rotor repair limit	CL28V	18.0 (0.709)
	CL14H	8.6 (0.339)
Pedal height "h"		
M/T model		181 - 187 (7.13 - 7.36)
A/T model		190 - 196 (7.48 - 7.72)
Pedal free play "a"		1 - 5 (0.04 - 0.20)
Pedal depressed height		
M/T model		More than 80 (3.15)
A/T model		More than 90 (3.54)
Parking brake [at pulling force: 265 N (27 kg, 60 lb)]		
Number of notches		4 - 6

### Wheel and tire

Unit: psi (kPa)

Recommended cold tire inflation pressure			
Tire size	Car speed	Under 160 km/h (100 MPH)	Over 160 km/h (100 MPH)
195/70HR14		28 (200)	32 (230)
P205/70R14		28 (200)	32 (230)
P205/60R15		28 (200)	32 (230)
Spare tire C78-14	Do not use in excess of 80 km/h (50 MPH).		
	28 (200)		

Tire pressure should be checked when tires are COLD.

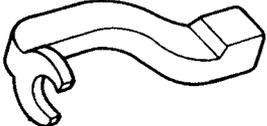
Wheel rim lateral and radial runout	mm (in)	Less than 1.0 (0.039) *1 0.5 (0.020) *2
Difference between right and left lateral runout	mm (in)	Less than 0.5 (0.020) *1 0.2 (0.008) *2
Wheel balance (Maximum allowable unbalance at rim flange)	gr (oz)	10 (0.35)
Tire balancing weight	gr (oz)	10 - 60 (0.35 - 2.12) Spacing 10 (0.35)

\*1: Steel wheel      \*2: Aluminum wheel

### TIGHTENING TORQUE

Unit	N-m	kg-m	ft-lb
Clutch Pedal stopper lock nut	9.1 - 11.8	0.93 - 1.2	6.7 - 8.7
Clutch switch lock nut	12 - 15	1.2 - 1.5	9 - 11
Master cylinder push 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	39 - 59	4 - 6	29 - 43
Front axle and front suspension			
Side rod lock nut	14 - 17	1.4 - 1.7	10 - 12
	78 - 98	8 - 10	58 - 72
Brake Air bleed valve	7 - 9	0.7 - 0.9	5.1 - 6.5
Stop lamp switch lock nut	12 - 15	1.2 - 1.5	9 - 11
Brake booster input rod lock nut	16 - 22	1.6 - 2.2	12 - 16
Wheel and tire Wheel nut	78 - 98	8.0 - 10.0	58 - 72

### SPECIAL SERVICE TOOLS

Tool number (Kent-Moore No.)	Tool name	
ST10640001 - (J25615-01)	Pivot adjuster	
ST19320000 (J25664)	Oil filter wrench	