

MAINTENANCE



SECTION MA

MA

CONTENTS

PERIODIC MAINTENANCE	MA- 2	CHASSIS AND BODY	
GENERAL MAINTENANCE	MA- 4	MAINTENANCE	MA-28
LUBRICATION CHART	MA- 7	Exhaust systems	MA-28
RECOMMENDED FUEL AND		Clutch	MA-28
LUBRICANTS	MA- 8	Manual transmission	MA-28
Fuel	MA- 8	Automatic transmission	MA-29
Lubricants	MA- 8	Propeller shaft and differential carrier ..	MA-29
SAE viscosity number	MA- 8	Front axle and front suspension	MA-30
APPROXIMATE REFILL		Rear axle and rear suspension	MA-33
CAPACITIES	MA- 8	Brake system	MA-34
ENGINE MAINTENANCE	MA- 9	Wheel and tire	MA-36
Before engine start	MA- 9	Steering system	MA-41
After engine warm-up	MA-13	Body	MA-42
DIAGNOSTIC PROCEDURE FOR		Heater and air conditioner	MA-43
PROBLEMS	MA-17	Checking refrigerant leak	MA-45
Diagnostic procedure for E.F.I.		SERVICE DATA AND	
engine	MA-17	SPECIFICATIONS (S.D.S.)	MA-46
Diagnostic procedure for E.C.C.S.		Engine maintenance	MA-46
engine	MA-24	Chassis and body maintenance	MA-47
		SPECIAL SERVICE TOOLS	MA-48

PERIODIC MAINTENANCE

PERIODIC MAINTENANCE

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

The periodic maintenance schedule is repeated beyond the last mileage and period shown.

EMISSION CONTROL SYSTEM MAINTENANCE

MAINTENANCE OPERATION	Miles x 1,000 (Kilometers x 1,000) Months	MAINTENANCE INTERVAL				Reference page
		15 (24)	30 (48)	45 (72)	60 (96)	
Periodic maintenance should be performed at number of miles, kilometers or months, whichever comes first.						
Drive belts			I		I	MA-9
Air cleaner filter			R		R	MA-9
Vapor lines			I*		I*	MA-9
Fuel lines (hoses, piping, connections, etc.)			I*		I*	MA-10
Fuel filter			See NOTE (1)*			MA-11
Engine coolant			R		R	MA-11
Engine oil (Except turbocharged engine) & oil filter			Replace every 7,500 miles (12,000 km) or 6 months.			MA-11
Engine oil (Turbocharged engine)			Replace every 3,750 miles (6,000 km)			MA-11
Spark plugs			R		R	MA-13
Ignition wires			I*		I*	MA-13
Intake & exhaust valve clearance (Except turbocharger engine)	See NOTE (2).	A	A	A	A	MA-13
Idle rpm (Except turbocharged engine)	See NOTE (3).	I*	I*	I*	I*	MA-15
Exhaust gas sensor			I		I	MA-16

NOTE: (1) If vehicle is operated under extremely adverse weather conditions or in areas where ambient temperatures are either extremely low or extremely high, the filters might become clogged. In such an event, replace them immediately.

(2) The first 1,000 mile (1,600 km) adjustment is required.

(3) The first 1,000 mile (1,600 km) inspection is required.

(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 or replace if necessary.

PERIODIC MAINTENANCE

CHASSIS AND BODY MAINTENANCE

MAINTENANCE OPERATION	MAINTENANCE INTERVAL				Reference page	
	Miles x 1,000 (Kilometers x 1,000) Months	15 (24)	30 (48)	45 (72)		60 (96)
Periodic maintenance should be performed at number of miles, kilometers or months, whichever comes first.						
Brake lines & hoses		I	I	I	I	MA-35
Brake pads & discs		I	I	I	I	MA-35
Brake fluid			R		R	MA-34
Manual and automatic transmission & differential gear oil		I	I	I	I	MA-28, 29
Power steering lines & hoses		I	I	I	I	MA-41
Steering gear & linkage, & suspension parts		I	I	I	I	MA-30, 33, 41
Steering linkage ball joints & front suspension ball joints					I	MA-30
Propeller shaft(s)			I		I	MA-29
Rear axle drive shaft joints (Except tripod drive shaft)			L		L	MA-34
Locks, hinges & hood latch		L	L	L	L	MA-42
Front wheel bearing grease			I		I	MA-30
Exhaust system		I	I	I	I	MA-28
Seat belts, buckles, retractors, anchors & adjuster		I	I	I	I	MA-42

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

MAINTENANCE UNDER SEVERE DRIVING CONDITIONS

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

Severe driving conditions

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

Driving condition	Maintenance item	Maintenance operation	Maintenance interval
. . C	Air cleaner filter	R	More frequently
A B C . E	Engine oil (Except turbocharged engine) & oil filter	R	Every 3,000 miles (5,000 km) or 3 months
	Engine oil (Turbocharged engine)	R	More frequently
A . C . E F G	Brake pads & discs	I	Every 7,500 miles (12,000 km) or 6 months
. H .	Brake fluid	R	Every 15,000 miles (24,000 km) or 12 months
. E . G	Manual and automatic transmission & differential gear oil	R	Every 30,000 miles (48,000 km) or 24 months
. G	Steering gear & linkage, & suspension parts	I	Every 7,500 miles (12,000 km) or 6 months
. . C D . F G	Steering linkage ball joints & front suspension ball joints	I	Every 7,500 miles (12,000 km) or 6 months
. F	Locks, hinges & hood latch	I	Every 7,500 miles (12,000 km) or 6 months
A . . . E F G	Exhaust system	I	Every 7,500 miles (12,000 km) or 6 months

Maintenance operations: I = Inspect, Correct or replace if necessary R = Replace

GENERAL MAINTENANCE

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

Item	Reference item in MA section
OUTSIDE THE VEHICLE	
Tires Check the pressure with a gauge periodically when at a service station, including the spare, and adjust to the specified pressure if necessary. Check carefully for damage, cuts or excessive wear.	● CHECKING TIRE CONDITION
Wheel nuts When checking the tires, make sure no nuts are missing, and check for any loose nuts. Tighten if necessary.	● TIRE REPLACEMENT Wheel nut.
Tire rotation Tires should be rotated every 24,000 km (15,000 miles).	● TIRE ROTATION
Wheel alignment and balance If the vehicle should pull to either side while driving on a straight and level road, or if you detect uneven or abnormal tire wear, there may be a need for wheel alignment. If the steering wheel or seat vibrates at normal highway speeds, wheel balancing may be needed.	● CHECKING TIRE CONDITION Abnormal tire wear ● CHECKING WHEEL ALIGNMENT ● WHEEL INSPECTION
Windshield glass Check for abrasions or scratches.	-
Windshield wiper blades Check for cracks or wear if they do not wipe properly.	-
Fluid leaks Check under the vehicle for fuel, oil, water or other fluid leaks after the vehicle has been parked for a while. Water dripping from the air conditioner after use is normal. If you should notice any leaks or gasoline fumes are evident, check for the cause and correct it immediately.	● CHECKING CLUTCH FLUID LEAKS ● INSPECTING MANUAL TRANSMISSION OIL ● INSPECTING AUTOMATIC TRANSMISSION FLUID ● INSPECTING DIFFERENTIAL GEAR OIL ● INSPECTING FRONT AXLE AND SUSPENSION PARTS ● INSPECTING REAR AXLE AND SUSPENSION PARTS ● INSPECTING BRAKE LINES & HOSES ● CHECKING POWER STEERING LINE & HOSES
Doors and engine hood Check that all doors and the engine hood operate smoothly as well as the trunk lid and back hatch. Also ensure, that all latches lock securely. Lubricate if necessary. Make sure that the secondary latch keeps the hood from opening when the primary latch is released.	● LUBRICATING LOCKS, HINGES AND HOOD LATCH
INSIDE THE VEHICLE	
The maintenance items listed here should be checked on a regular basis, such as when performing periodic maintenance, cleaning the vehicle, etc.	
Lights Make sure that the headlights, stop lights, tail lights, turn signal lights, and other lights are all operating properly and installed securely. Also check headlight aim.	

GENERAL MAINTENANCE

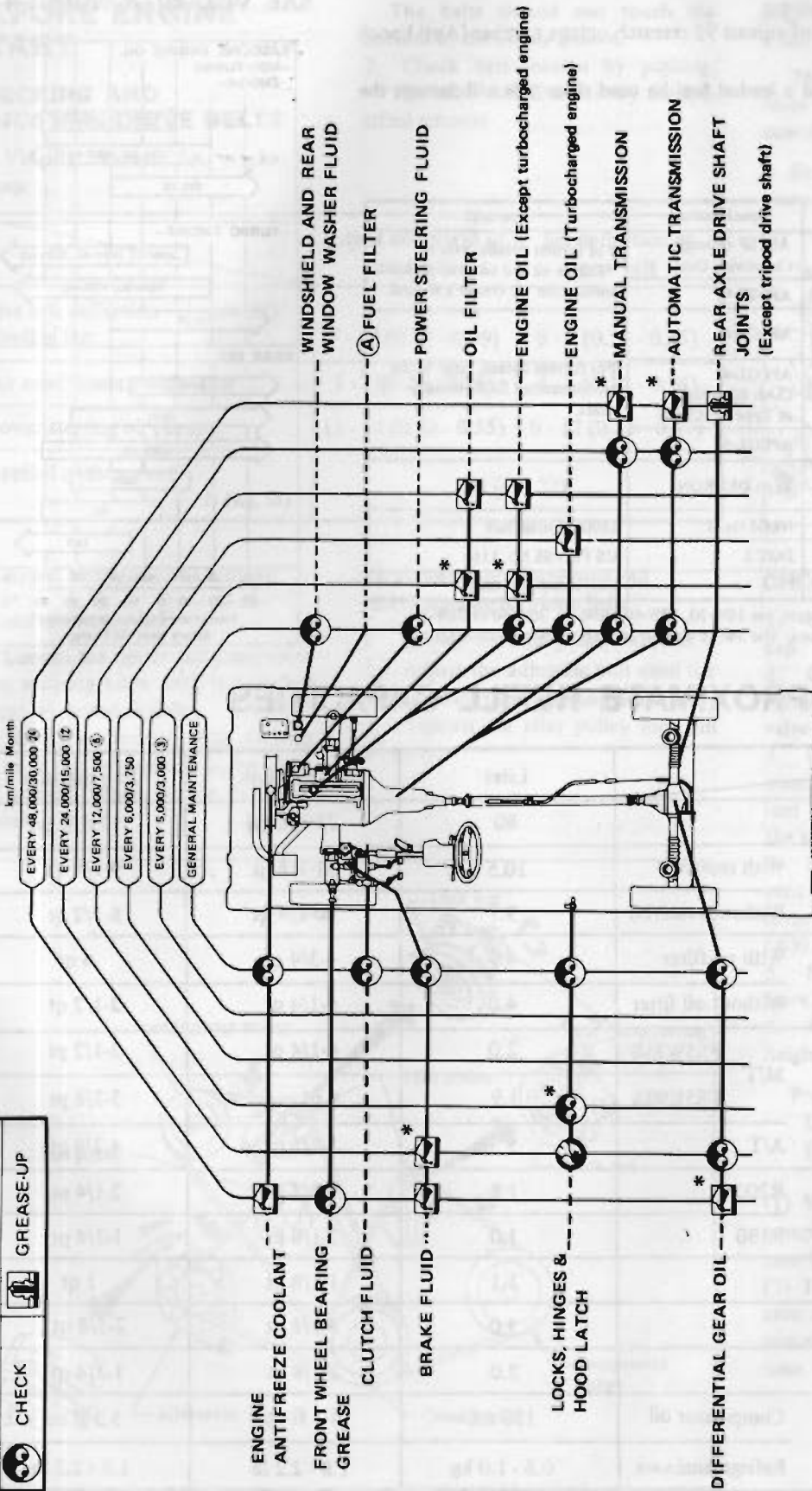
Item	Reference item in MA section
Warning lights and buzzers/chimes Make sure that all warning lights and buzzers/chimes are operating properly.	—
Horn Make sure it operates properly.	—
Windshield wiper and washer Check that the wipers and washer operate properly and that the wipers do not streak.	—
Windshield defroster Check that the air comes out of the defroster outlets properly and in sufficient quantity when operating the heater or air conditioner.	—
Rear view mirror Make sure that it is secure.	—
Sun visors Make sure that they can be moved freely and are secure.	—
Steering wheel Check that it has the specified freeplay. Be sure to check for changes in the steering condition, such as excessive freeplay, hard steering or strange noises.	Specification Free play: Less than 35 mm (1.38 in)
Seats Check front seat position controls such as seat adjusters, seatback recliner, etc. to ensure they operate smoothly and that all latches lock securely in every position. Check that the head restraints move up and down smoothly and that the locks (if so equipped) hold securely in all latched positions. Check that the latches lock securely for folding-down rear seatbacks.	—
Seat belts Check that all parts of the seat belt system e.g. buckles, anchors and retractors operate property and smoothly. Check the belt webbing for cuts, fraying, wear or damage.	<ul style="list-style-type: none"> ● INSPECTING SEAT BELTS, BUCKLES, ANCHORS, RETRACTORS AND ADJUSTER
Accelerator pedal Check the pedal for smooth operation and make sure the pedal does not catch or require uneven effort.	—
Clutch pedal Make sure the pedal operates smoothly and check that it has the proper free travel.	<ul style="list-style-type: none"> ● ADJUSTING CLUTCH PEDAL HEIGHT AND FREE PLAY
Brakes Check that the brake does not pull the vehicle to one side when applied.	—
Brake pedal Check the pedal for smooth operation and make sure it has the proper distance under it when depressed fully. Check the brake booster function.	<ul style="list-style-type: none"> ● CHECKING BRAKE PEDAL DEPRESSED HEIGHT ● CHECKING BRAKE BOOSTER FUNCTION
Parking brake Check that the lever has the proper travel and confirm that your vehicle is held securely on a fairly steep hill with only the parking brake applied.	<ul style="list-style-type: none"> ● CHECKING PARKING BRAKE
Automatic transmission "Park" mechanism Check that the lock release button on the selector lever operates properly and smoothly. On a fairly steep hill check that your vehicle is held securely with the selector lever in the "P" position without applying any brakes.	—

GENERAL MAINTENANCE

Item	Reference Item in MA section
UNDER THE HOOD AND VEHICLE	
The maintenance items listed here should be checked periodically e.g. each time you check the engine oil or refuel.	
Windshield washer fluid Check that there is adequate fluid in the tank.	—
Engine coolant level Check the coolant level when the engine is cold.	—
Radiator and hoses Check the front of the radiator and clean off any dirt, insects, leaves, etc., that may have accumulated. Make sure the hoses have no cracks, deformation, rot or loose connections.	—
Brake and clutch fluid levels Make sure that the brake and clutch fluid levels are between the "MAX" and "MIN" lines on the reservoir.	<ul style="list-style-type: none"> ● CHECKING CLUTCH FLUID LEAKS ● INSPECTING BRAKE LINES & HOSES
Engine drive belts Make sure that no belt is frayed, worn, cracked or oily.	<ul style="list-style-type: none"> ● CHECKING AND ADJUSTING DRIVE BELT
Engine oil level Check the level on the dipstick after parking the vehicle on a level spot and turning off the engine.	—
Power steering fluid level Check the level on the dipstick when the fluid is cold and the engine is turned off.	<ul style="list-style-type: none"> ● CHECKING POWER STEERING FLUID LEVEL
Automatic transmission fluid level Check the level on the dipstick after putting the selector lever in "P" with the engine idling.	<ul style="list-style-type: none"> ● CHECKING AUTOMATIC TRANSMISSION FLUID LEVEL
Exhaust system Make sure there are no loose supports, cracks or holes. If the sound of the exhaust seems unusual or there is a smell of exhaust fumes, immediately locate the trouble and correct it.	<ul style="list-style-type: none"> ● INSPECTING EXHAUST SYSTEM
Underbody The underbody is frequently exposed to corrosive substances such as those used on icy roads or to control dust. It is very important to remove these substances, otherwise rust will form on the floor pan, frame, fuel lines and around the exhaust system. At the end of winter, the underbody should be thoroughly flushed with plain water, being careful to clean those areas where mud and dirt can easily accumulate.	—

LUBRICATION CHART

	CHANGE		LUBRICATE
	CHECK		GREASE-UP



A If vehicle 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.

* : Maintenance under severe driving conditions

RECOMMENDED FUEL AND LUBRICANTS

FUEL

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

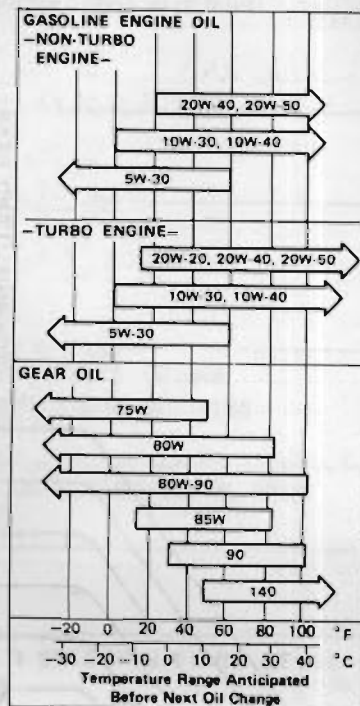
Under no circumstances should a leaded fuel be used since this will damage the catalytic converter.

LUBRICANTS

Lubricant		Specifications	Remarks
Engine oil	Non-Turbo engine	API SF (Energy Conserving Oils)	For further details, refer to "Engine oil and oil filter recommendation" in Owner's Manual.
	Turbo engine	API SE *1	
Gear oil	Transmission except for Turbo model	API GL-4	For further details, refer to the recommended SAE viscosity chart.
	Transmission for Turbo model	API GL-4 (SAE 80W-90) or Type DEXRON	
	Differential	API GL-5	
Automatic-T/M and power steering fluid		Type DEXRON	-
Multi-purpose grease		NLG1 No. 2	Lithium soap base
Brake and clutch fluid		DOT 3	US FMVSS No. 116
Anti-freeze			Ethylene glycol base

* 1: On models equipped with a turbocharger, use 10W-30, 10W-40, 20W-20, 20W-40 or 20W-50 except under extremely cold conditions. Use 5W-30 only under extremely cold conditions.

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	FS5W71B	2.0	4-1/4 pt
		FS5R90A	1.9	4 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.

	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

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

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

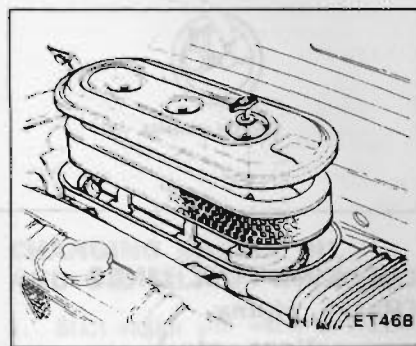
Air conditioner compressor and power steering oil pump belts

- Loosen the idler pulley lock nut.
- Adjust the adjusting bolt until the belt tension is the specified amount.
- 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.



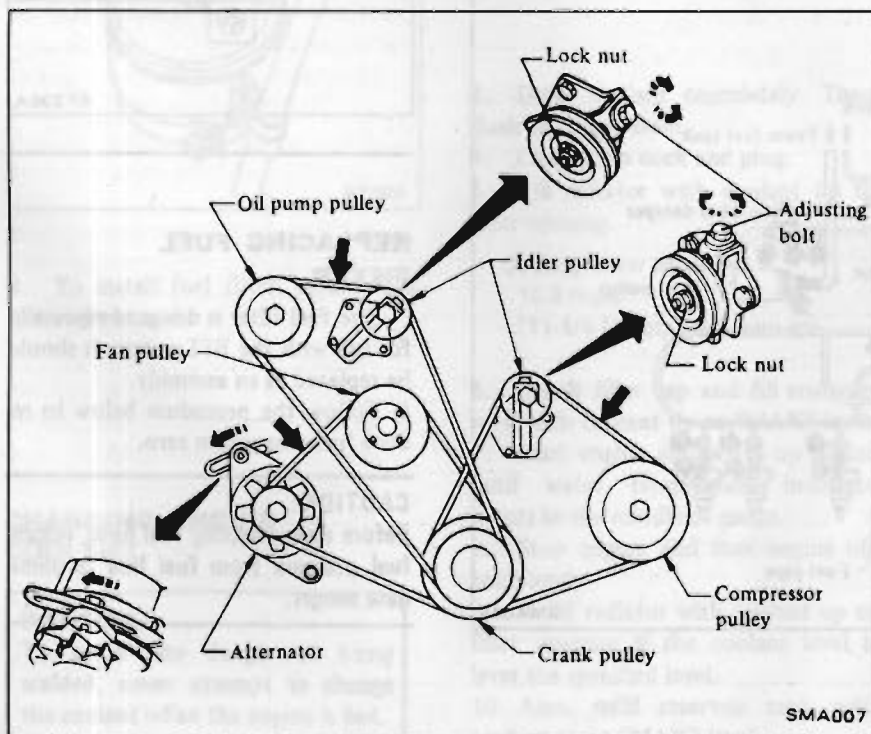
CHECKING VAPOR LINES

- Check all hoses and fuel tank filler cap.
- Disconnect vapor vent line connecting carbon canister to check valve.
- Connect a 3-way connector, a manometer and a cock (or an equivalent 3-way charge cock) to the end of the vent line.
- Supply fresh air into the vapor vent line through the cock little by little until pressure becomes 3.923 kPa (400 mmH₂O, 15.75 inH₂O).
- Shut the cock completely and leave it unattended.
- After 2.5 minutes, measure the height of the liquid in the manometer.

Pressure variation:

Less than 0.245 kPa
(25 mmH₂O, 0.98 inH₂O)

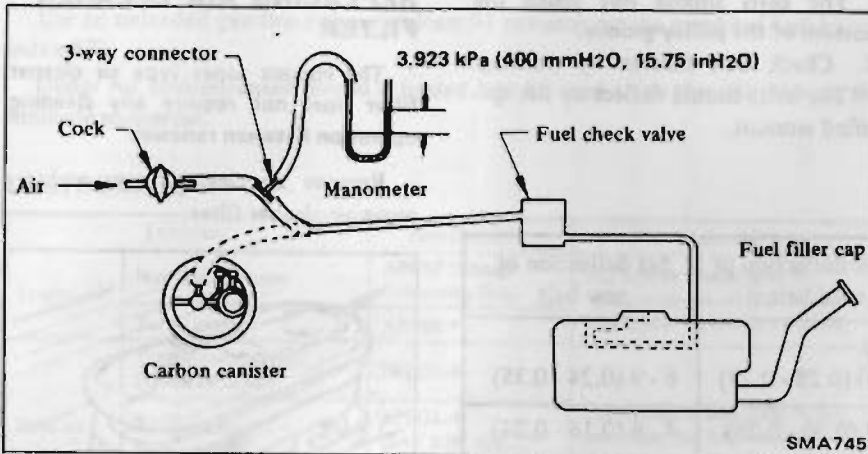
- When filler cap does not close completely, the height should drop to zero in a short time.
- If the height does not drop to zero in a short time when filler cap is removed, it is the cause of a stuffy hose.



ENGINE MAINTENANCE

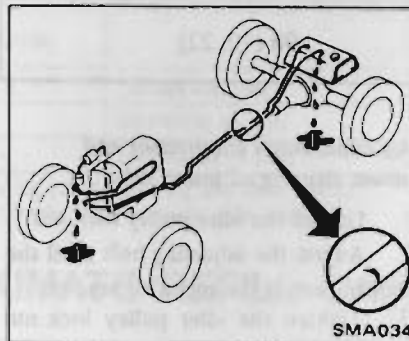
In case the vent line is stuffy, the breathing in fuel tank is not thoroughly made, thus causing insufficient de-

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



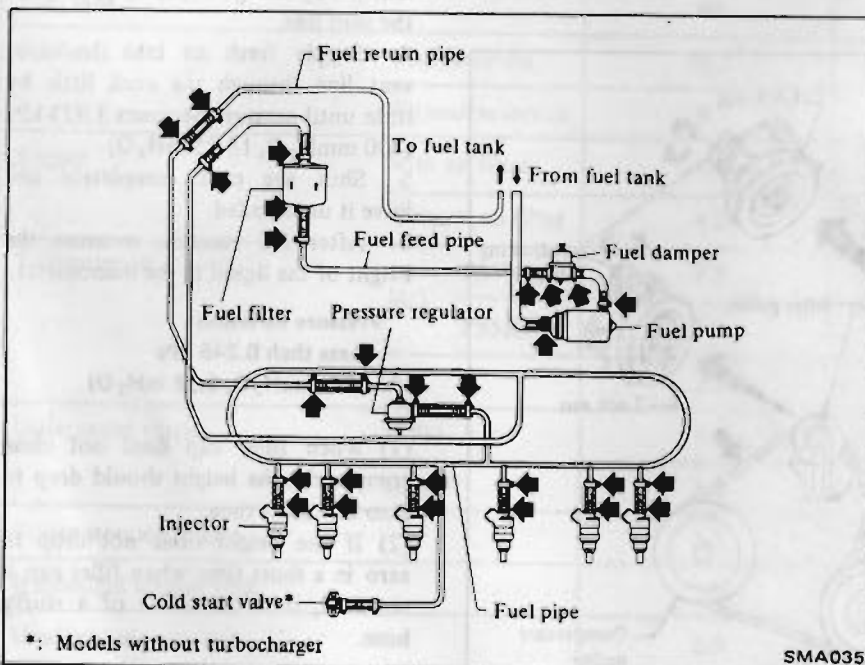
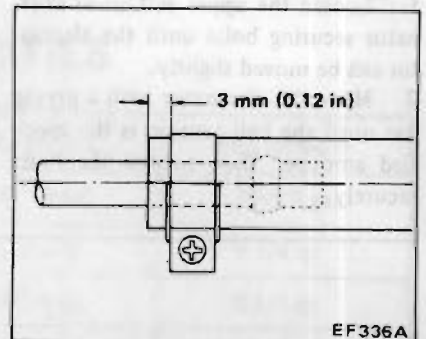
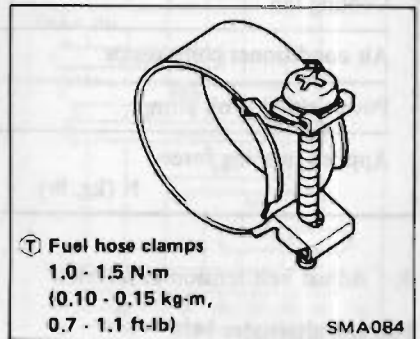
CHECKING FUEL LINES (Hoses, piping, connections, etc.)

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.

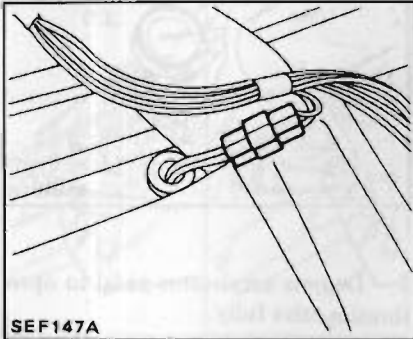
1. Follow the procedure below to reduce fuel pressure to zero.

CAUTION:

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

ENGINE MAINTENANCE

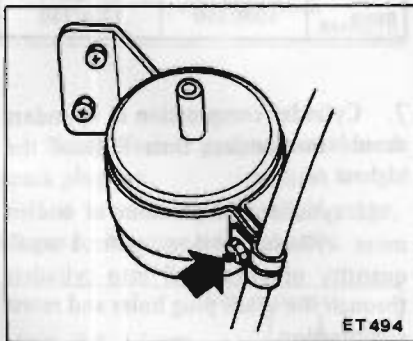
- (1) Start the engine.
- (2) Remove fuel pump connector with engine running.



- (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.

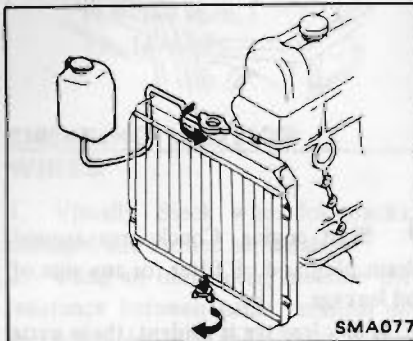
CHANGING ENGINE COOLANT

WARNING:

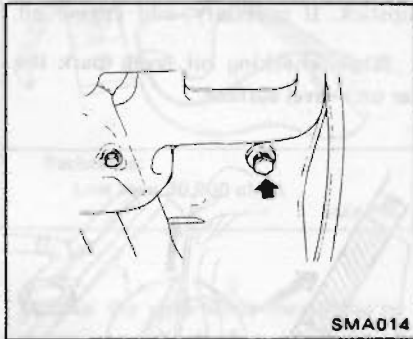
To avoid the danger of being scalded, never attempt to change the coolant when the engine is hot.

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.



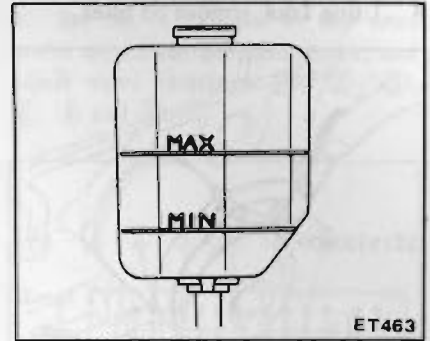
3. Drain coolant completely. Then flush cooling system.
4. Close drain cock and plug.
5. Fill radiator with coolant up to filler opening.

Cooling water capacity:

10.5 liters

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

6. Install filler cap and fill reservoir tank with coolant up to "MAX" level.
7. Start engine and warm up engine until water temperature indicator points to the middle of gauge.
8. Stop engine and cool engine off completely.
9. Refill radiator with coolant up to filler opening if the coolant level is lever the specified level.
10. Also, refill reservoir tank with coolant up to "MAX" level.

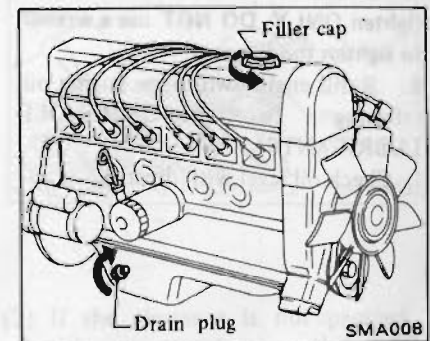


CHANGING ENGINE OIL AND OIL FILTER

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.

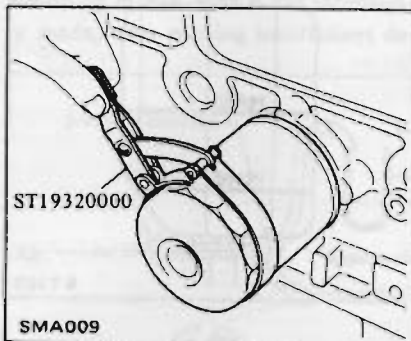


- A milky oil indicates the presence of cooling water. Isolate the cause and take corrective measure.
- An oil with extremely low viscosity indicates dilution with gasoline.

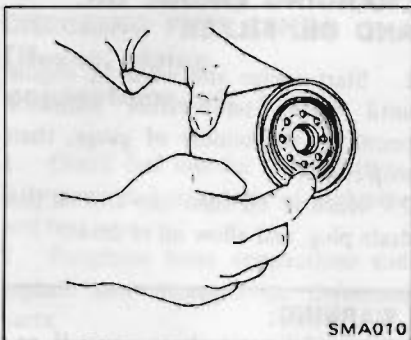
3. Clean and install oil pan drain plug with washer.

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

4. Using Tool, remove oil filter.



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

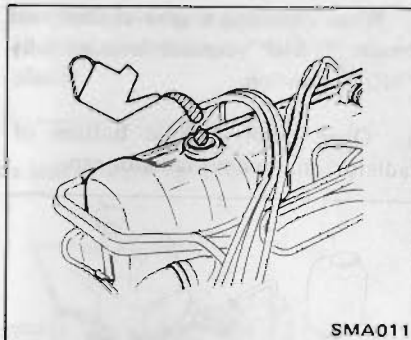


7. Install new oil filter. Hand-tighten **ONLY**. **DO NOT** use a wrench to tighten the filter.
8. Refill engine with new engine oil, referring to **RECOMMENDED LUBRICANTS**.
Check oil level with dipstick.

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)

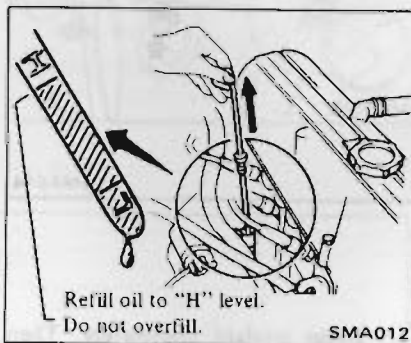


9. Start engine. Check area around drain plug and oil filter for any sign of oil leakage.

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

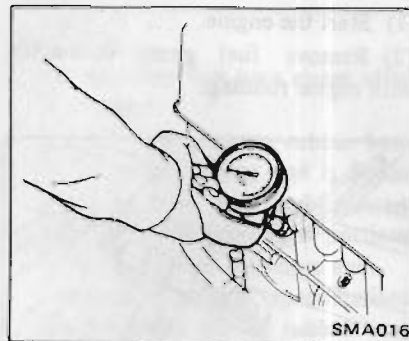
10. Run engine until water temperature indicator points to the middle of gauge. Then stop engine and wait several minutes. Check oil level with dipstick. If necessary, add engine oil.

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



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.



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/cm², 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

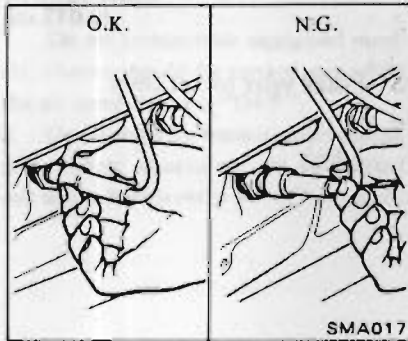
7. Cylinder compression in cylinders should not be less than 80% of the highest reading.

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.

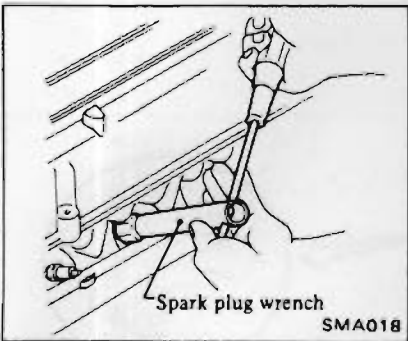
- If adding oil helps the compression pressure, chances are that piston rings are worn or damaged.
- If pressure stays low, valve may be sticking or seating improperly.
- If cylinder compression in any two adjacent cylinders is low, and if adding oil does not help the compression, there is leakage past 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.

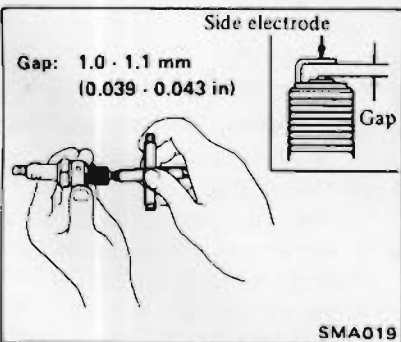


2. Remove spark plugs with spark plug wrench.



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

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



Spark plug:

Standard type	BPR6ES-11
Hot type	BPR5ES-11
Cold type	BPR7ES-11

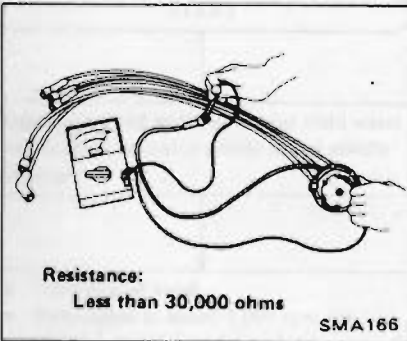
4. Install new spark plugs.

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 (Model without turbocharger)

Adjustment should be made while engine is hot.

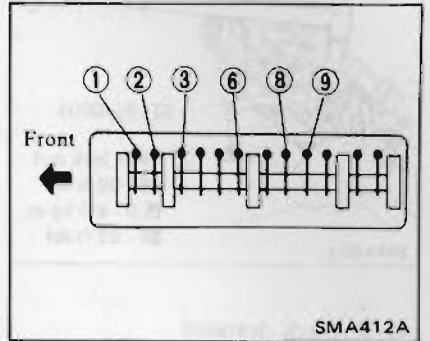
1. Start engine and warm up engine until water temperature indicator points to the middle of gauge, then stop engine.

Adjustment cannot be made while engine is in operation.

2. Remove valve rocker cover.
3. Rotate crankshaft.

When turning crankshaft with starter, remove high tension cable from ignition coil, then turn it.

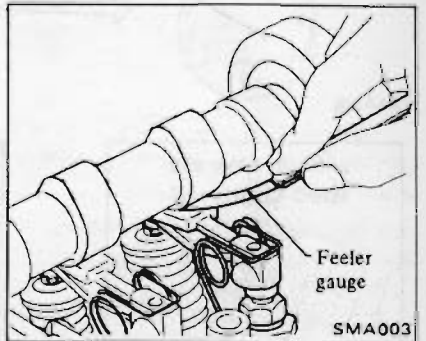
4. Set No. 1 cylinder in top dead center on its compression stroke, and adjust valve clearance ①, ②, ③, ⑥, ⑧ and ⑨.



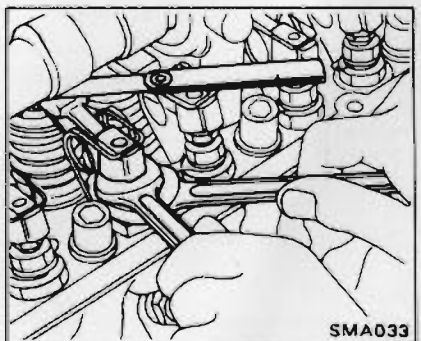
Valve clearance (Hot)

- Intake . . . ② ③ ⑧ : 0.25 mm (0.010 in)
- Exhaust . . ① ⑥ ⑨ : 0.30 mm (0.012 in)

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

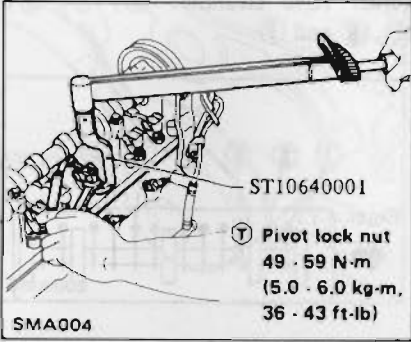


(2) If the clearance is not specified value, loosen pivot lock nut and turn valve rocker pivot to provide proper clearance.



ENGINE MAINTENANCE

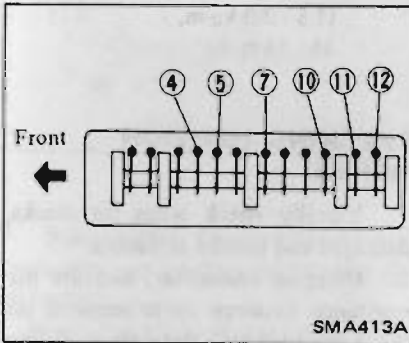
(3) Hold valve rocker pivot and tighten pivot lock nut using Tool.



(4) Recheck clearance

Feeler gauge should move with a very slight drag.

5. Again, rotate crankshaft one turn so that No. 4 cylinder is in top dead center of its compression stroke, and adjust valve clearance ④, ⑤, ⑦, ⑩, ⑪ and ⑫.



Valve clearance (Hot)

Intake . . . ⑤ ⑩ ⑪ : 0.25 mm
(0.010 in)

Exhaust . . . ④ ⑦ ⑫ : 0.30 mm
(0.012 in)

6. Install valve rocker cover.

ENGINE MAINTENANCE

ADJUSTING IDLE RPM (Models without turbocharger)

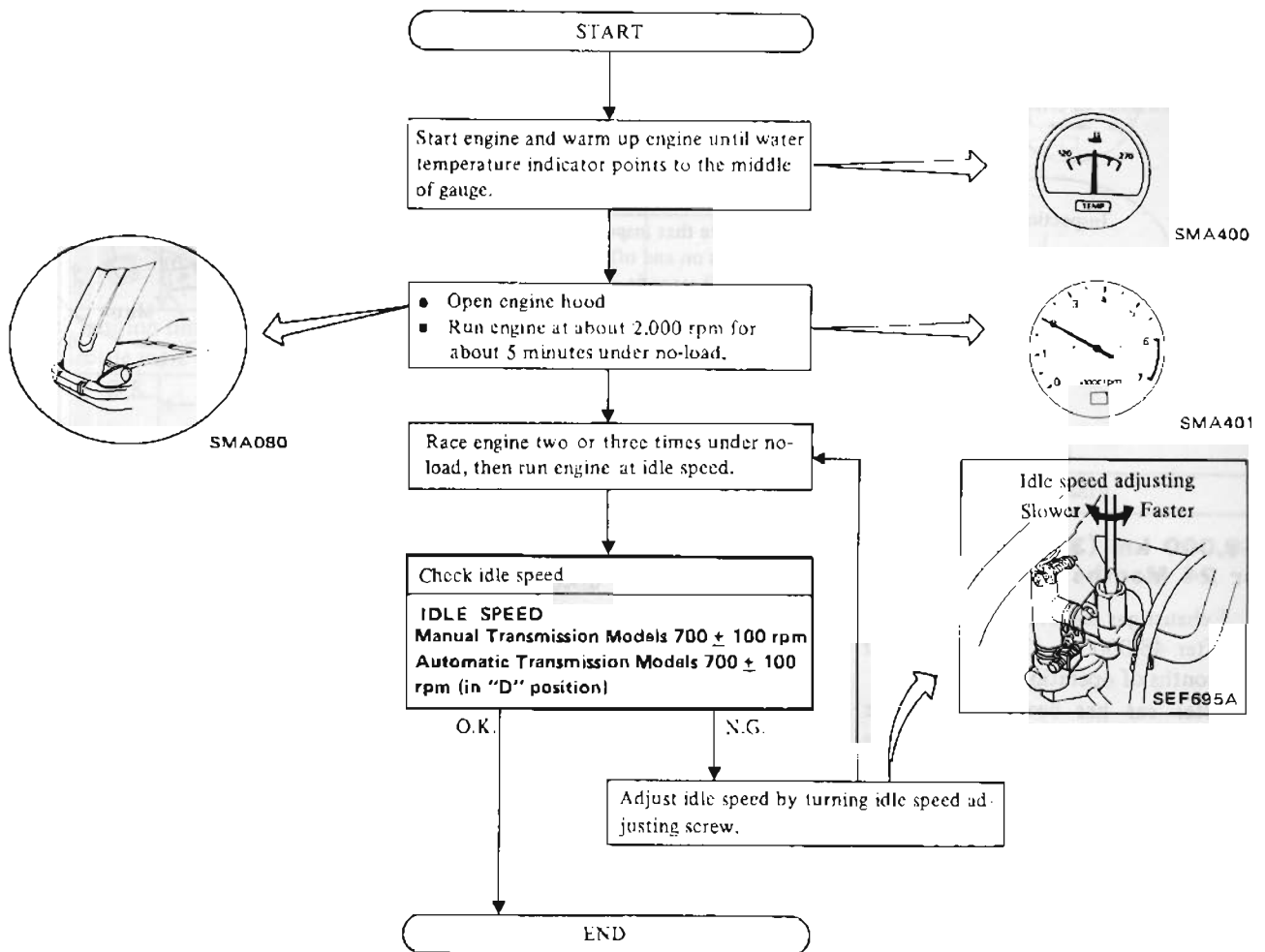
Preparation

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

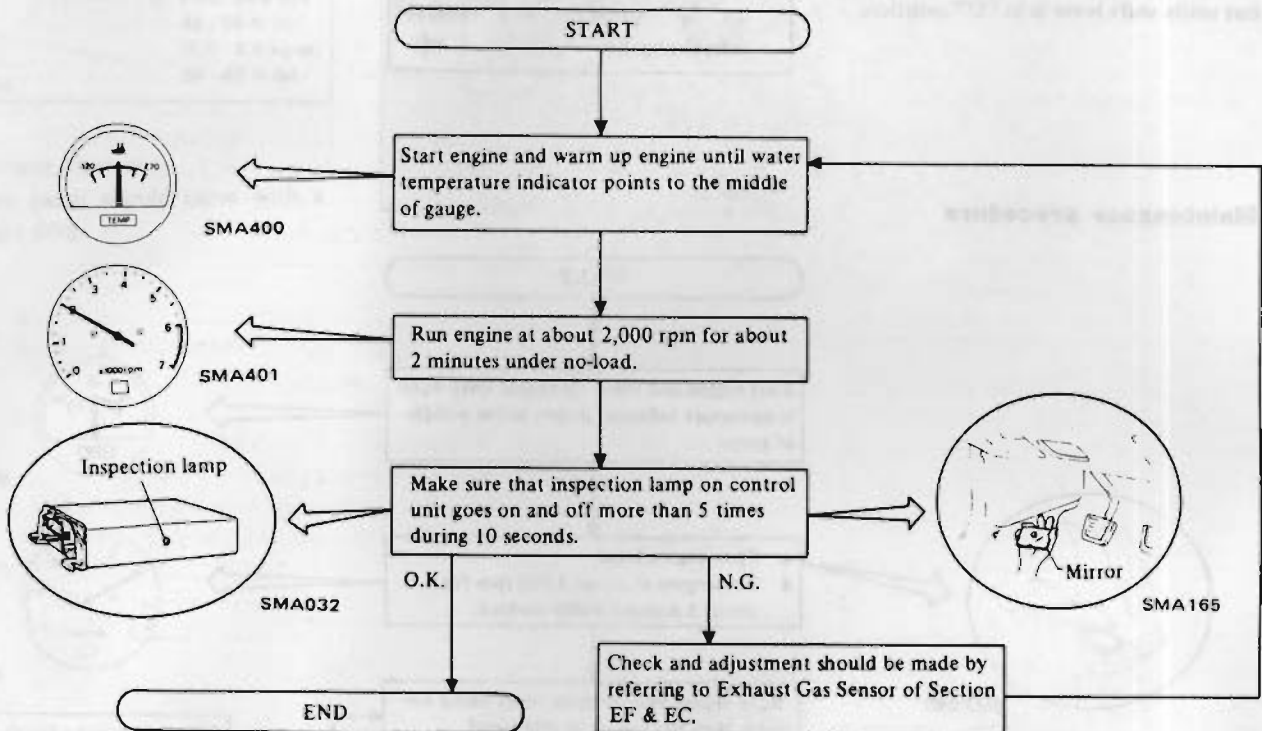
Preparation

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

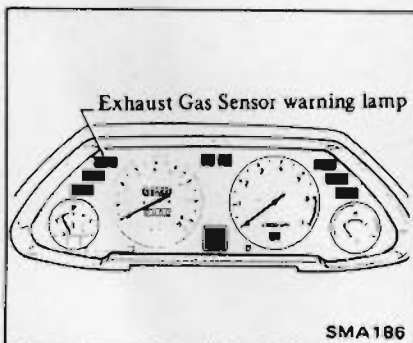
Maintenance procedure



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

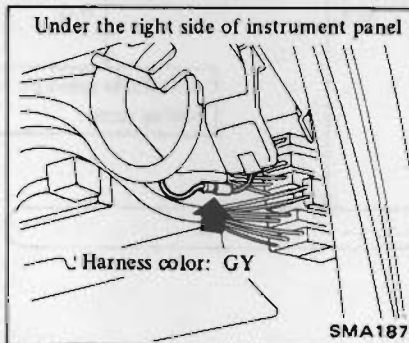
Exhaust gas sensor should be checked after 48,000 km (30,000 miles) or 24 months of operation.

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.



For U.S.A. models

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.

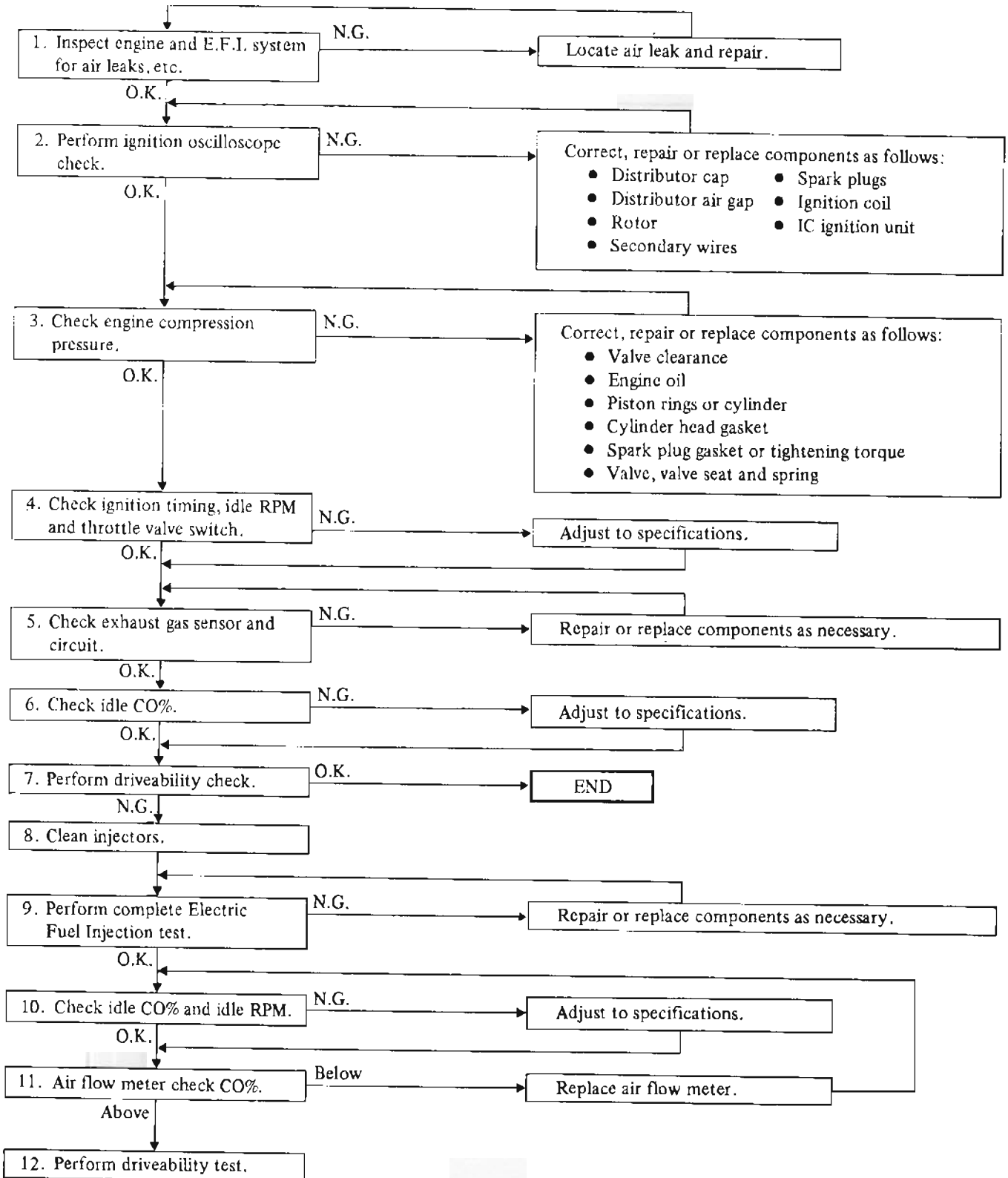
For Canada models

After inspection, disconnect the hold relay so that warning lamp will not come on thereafter.

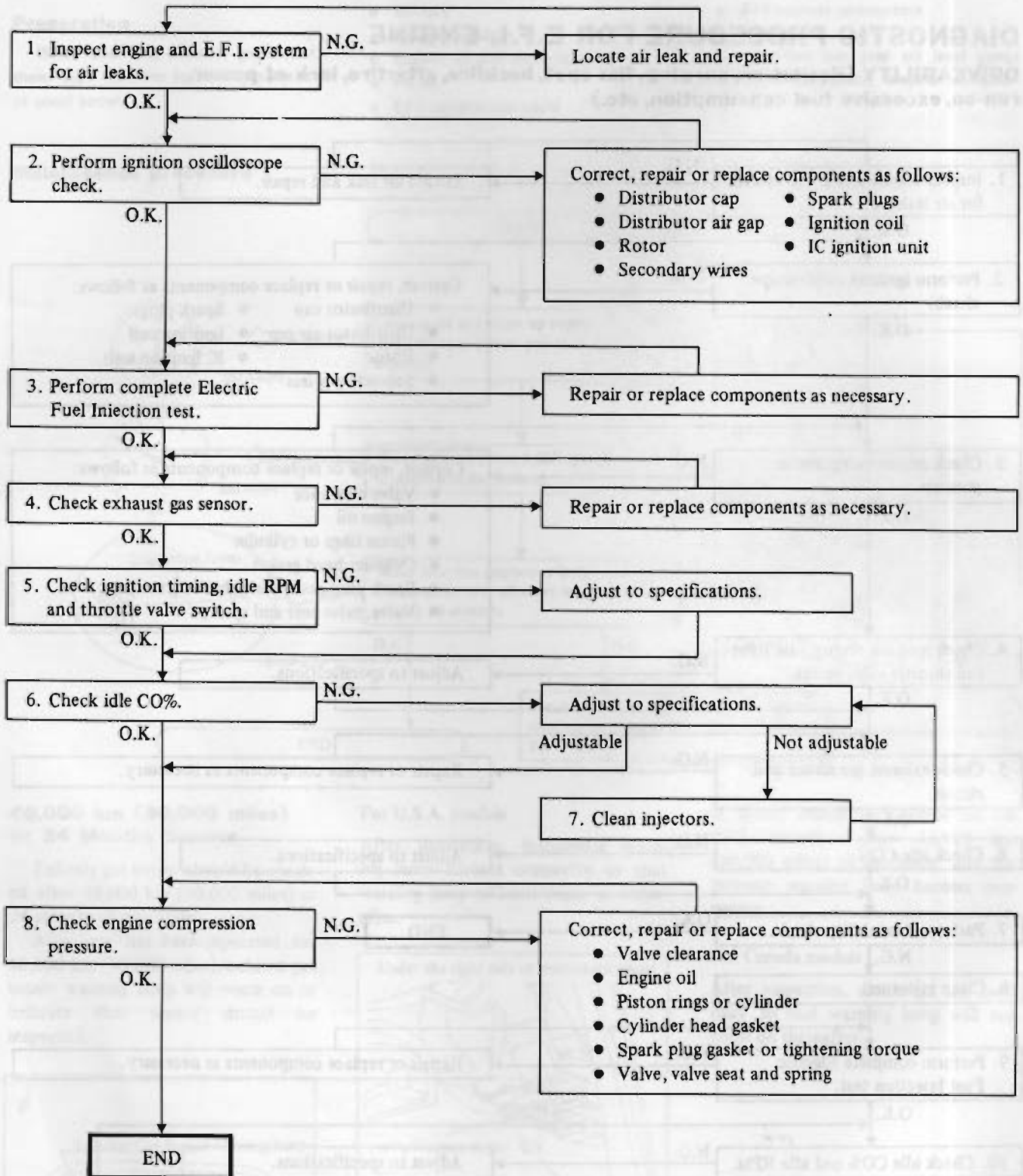
DIAGNOSTIC PROCEDURE FOR PROBLEMS

DIAGNOSTIC PROCEDURE FOR E.F.I. ENGINE

DRIVEABILITY (Hesitation, surging, flat spot, backfire, afterfire, lack of power, run-on, excessive fuel consumption, etc.)

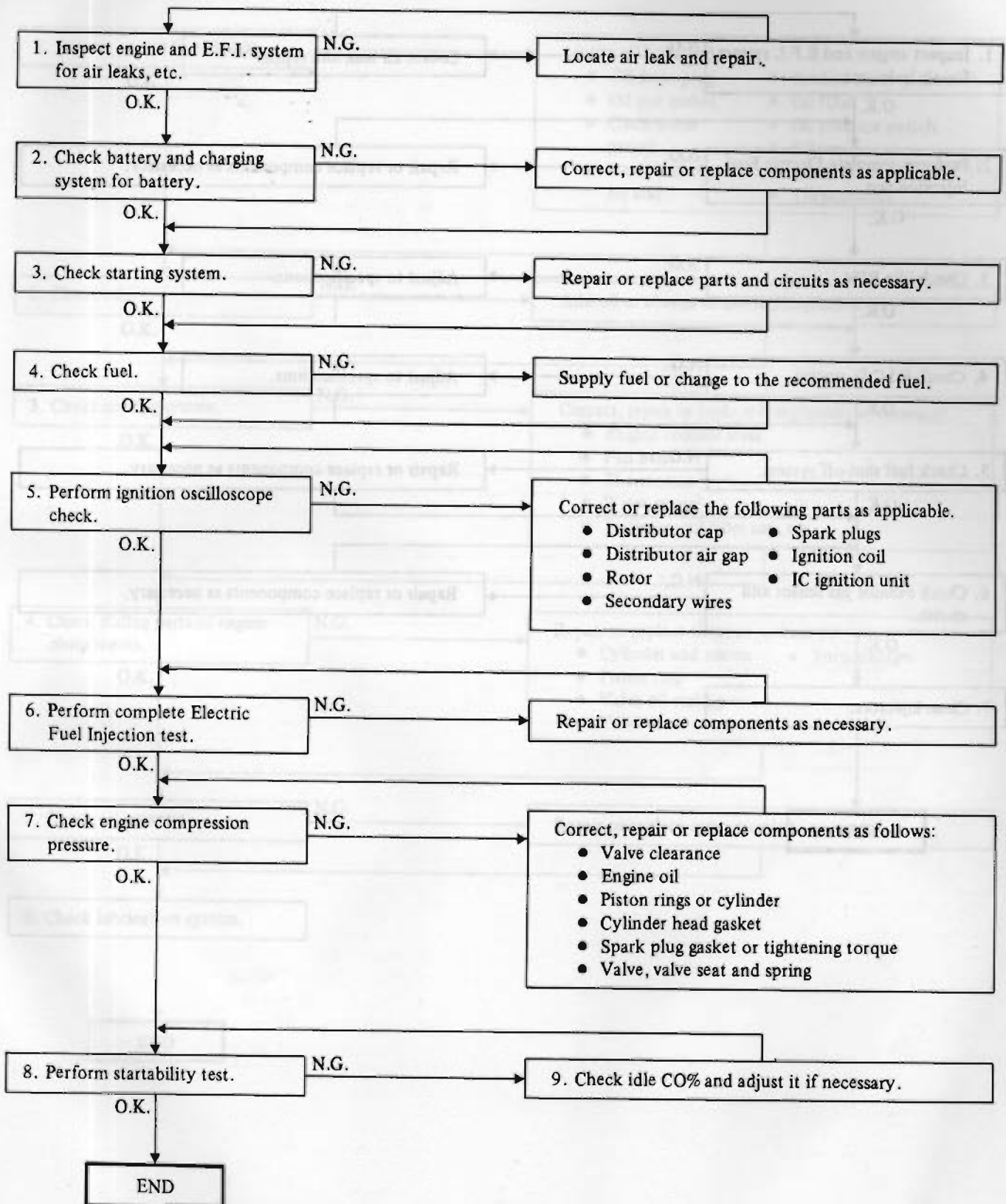


IMPROPER IDLING (Rough idle, no return to idle, high idle, etc.)

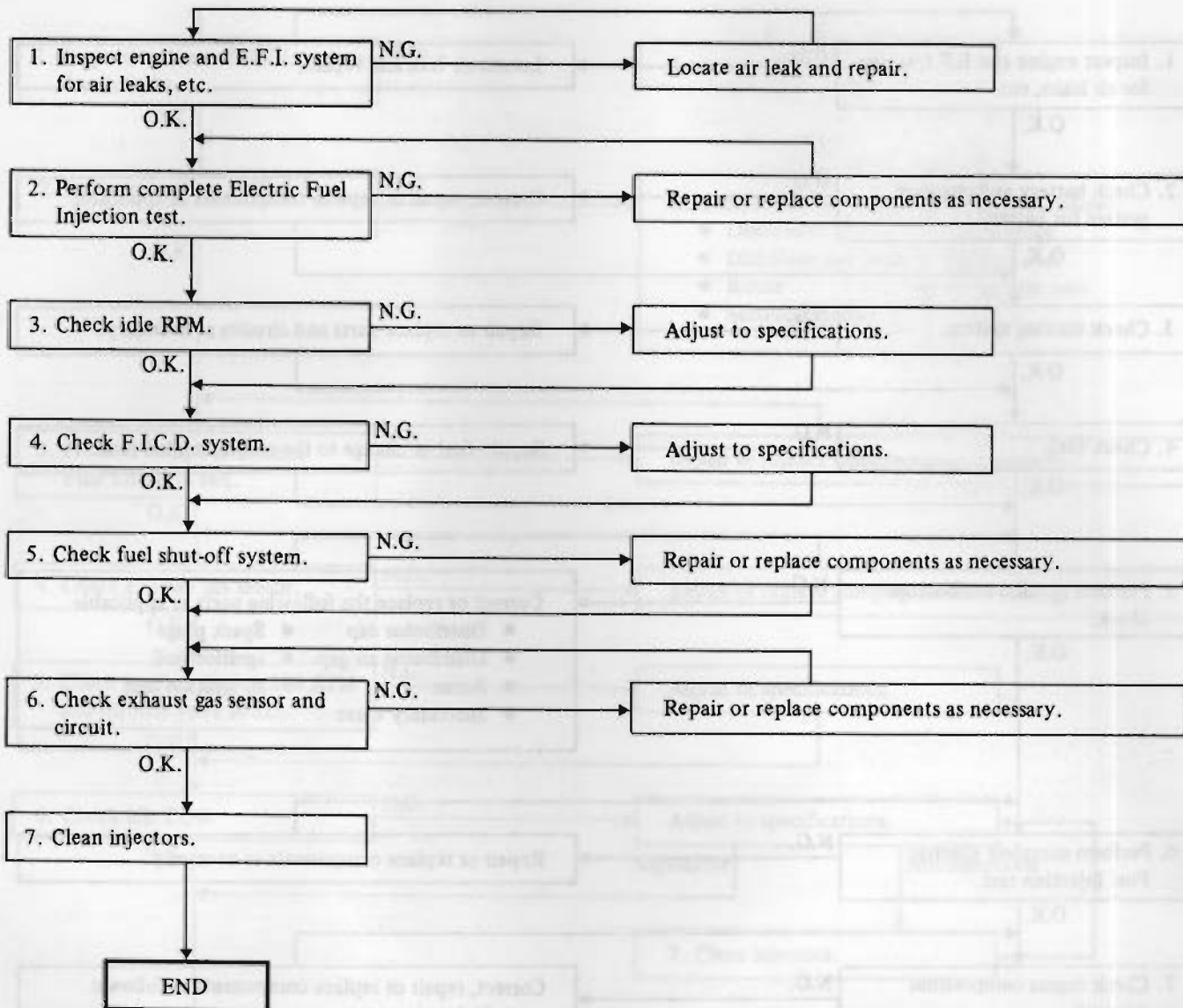


DIAGNOSTIC PROCEDURE FOR PROBLEMS

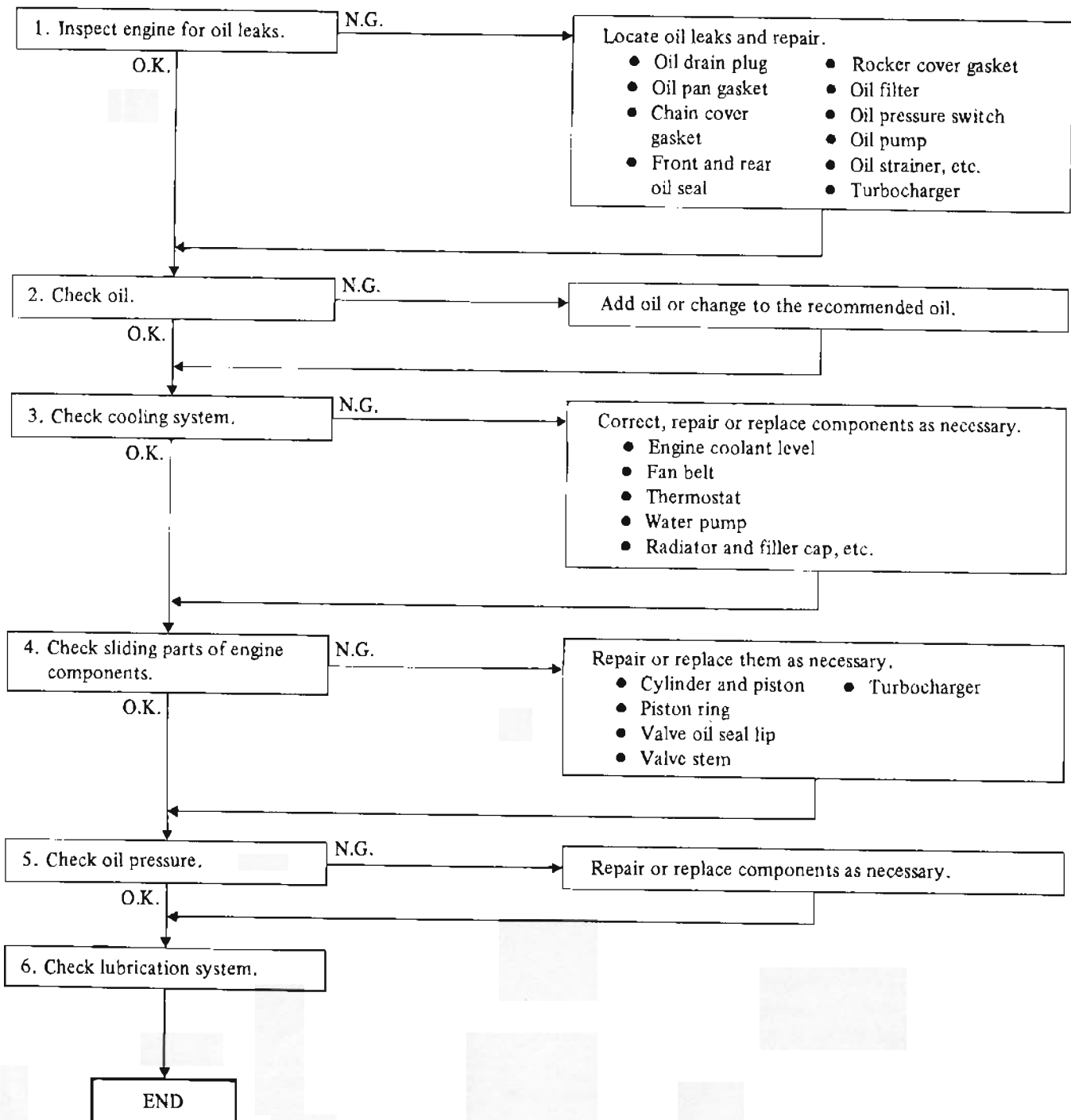
ENGINE STARTABILITY (Hard start, no start, hard restart, no restart, etc.)



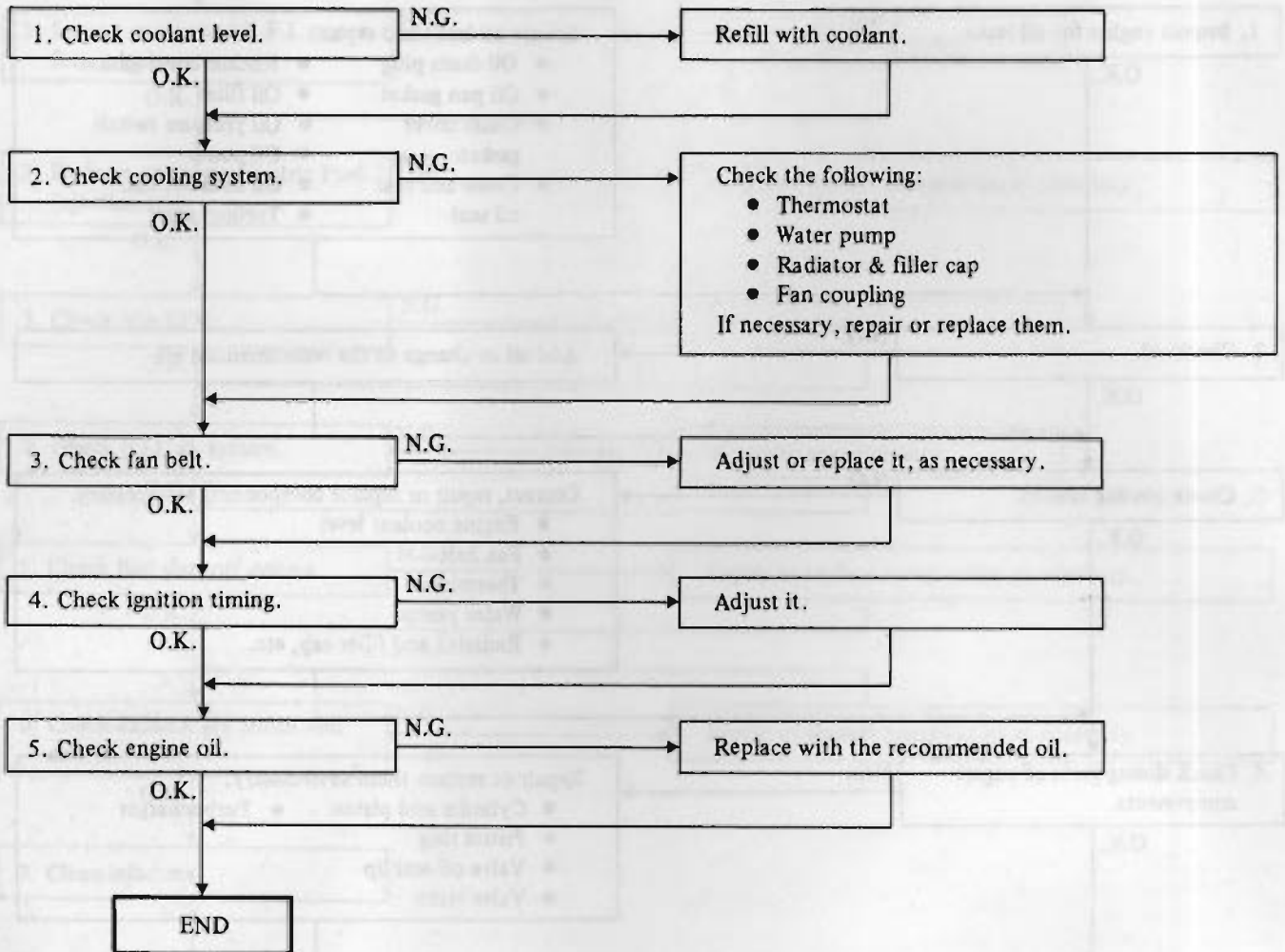
ENGINE STALL



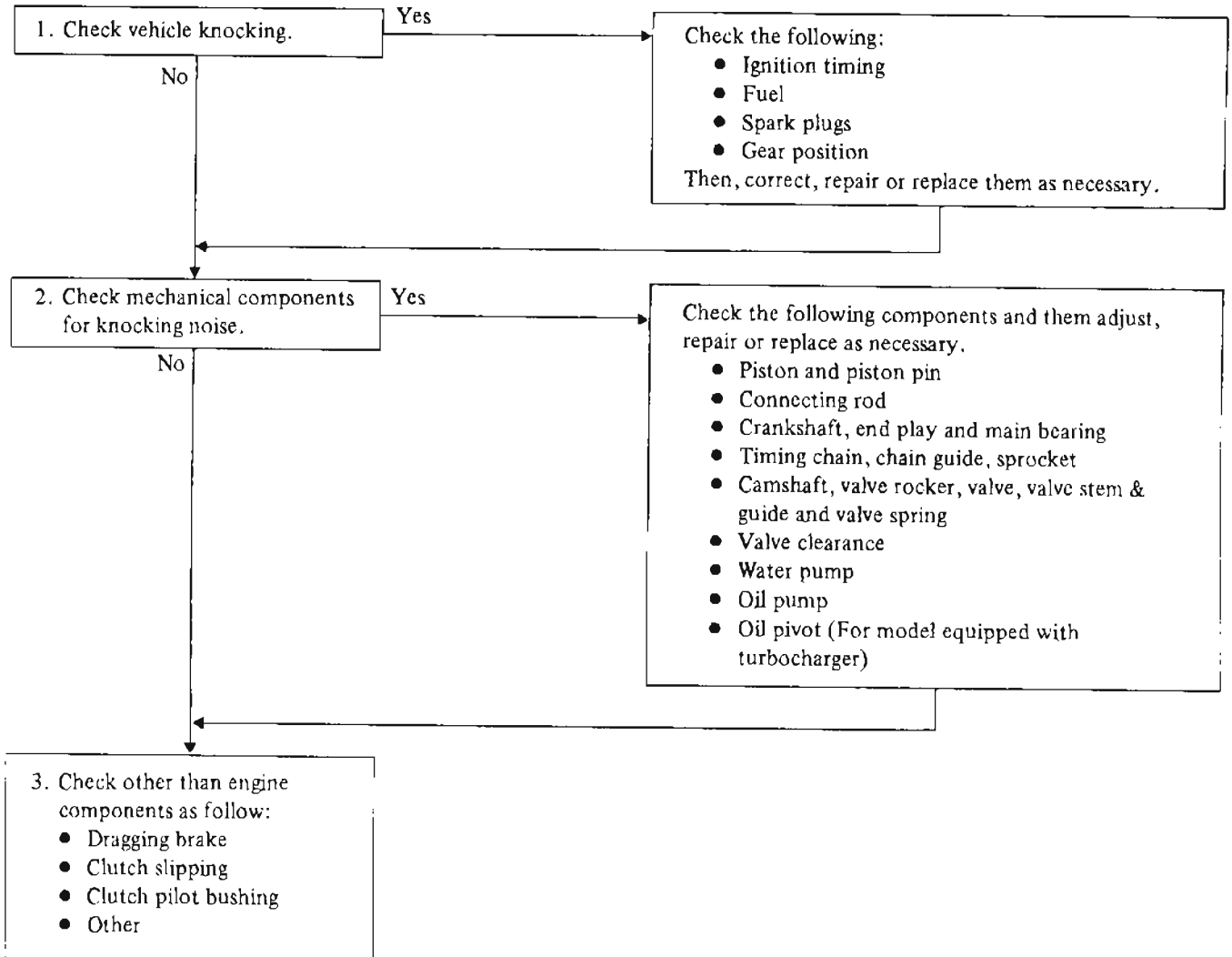
EXCESSIVE OIL CONSUMPTION



OVERHEATING

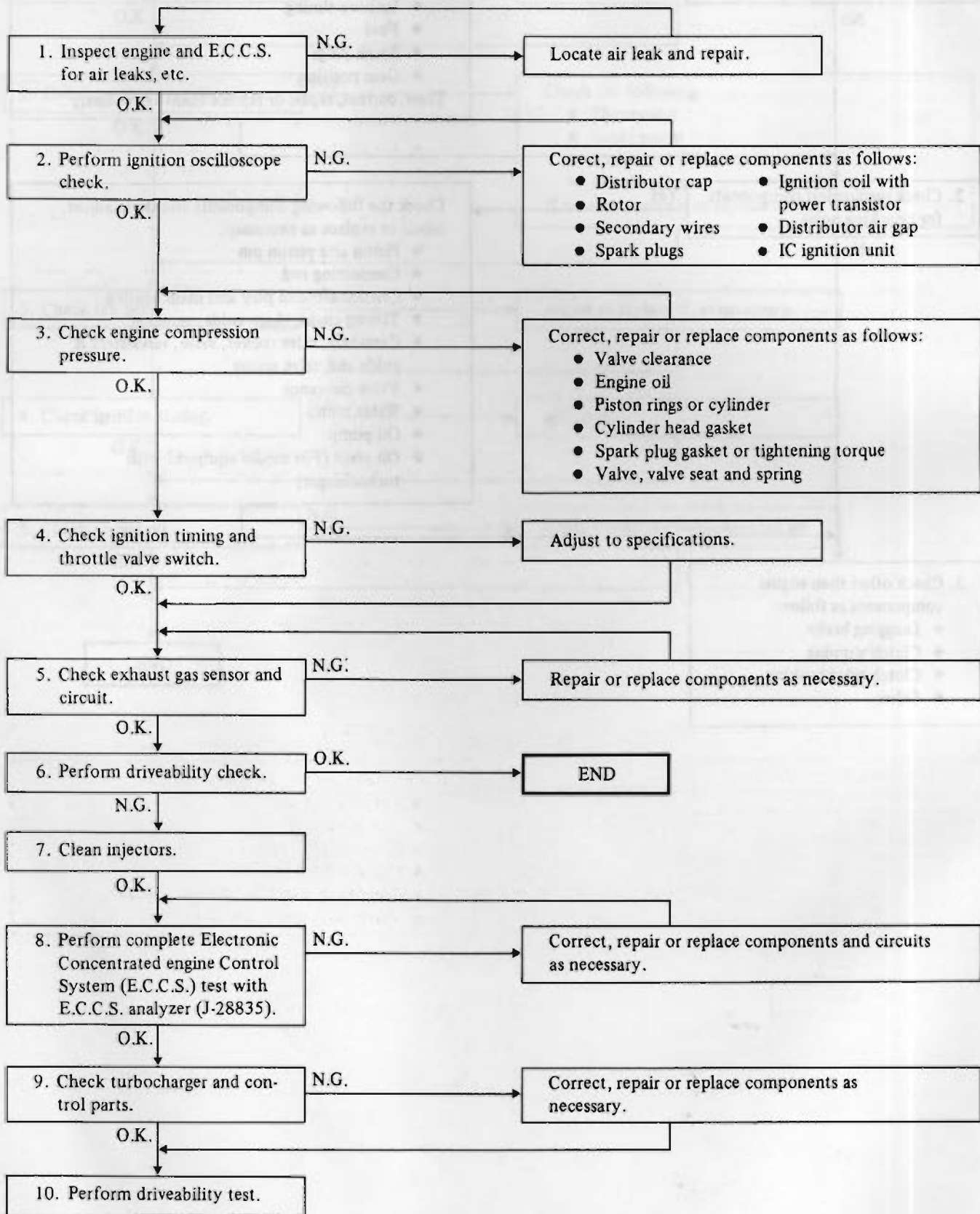


NOISY ENGINE



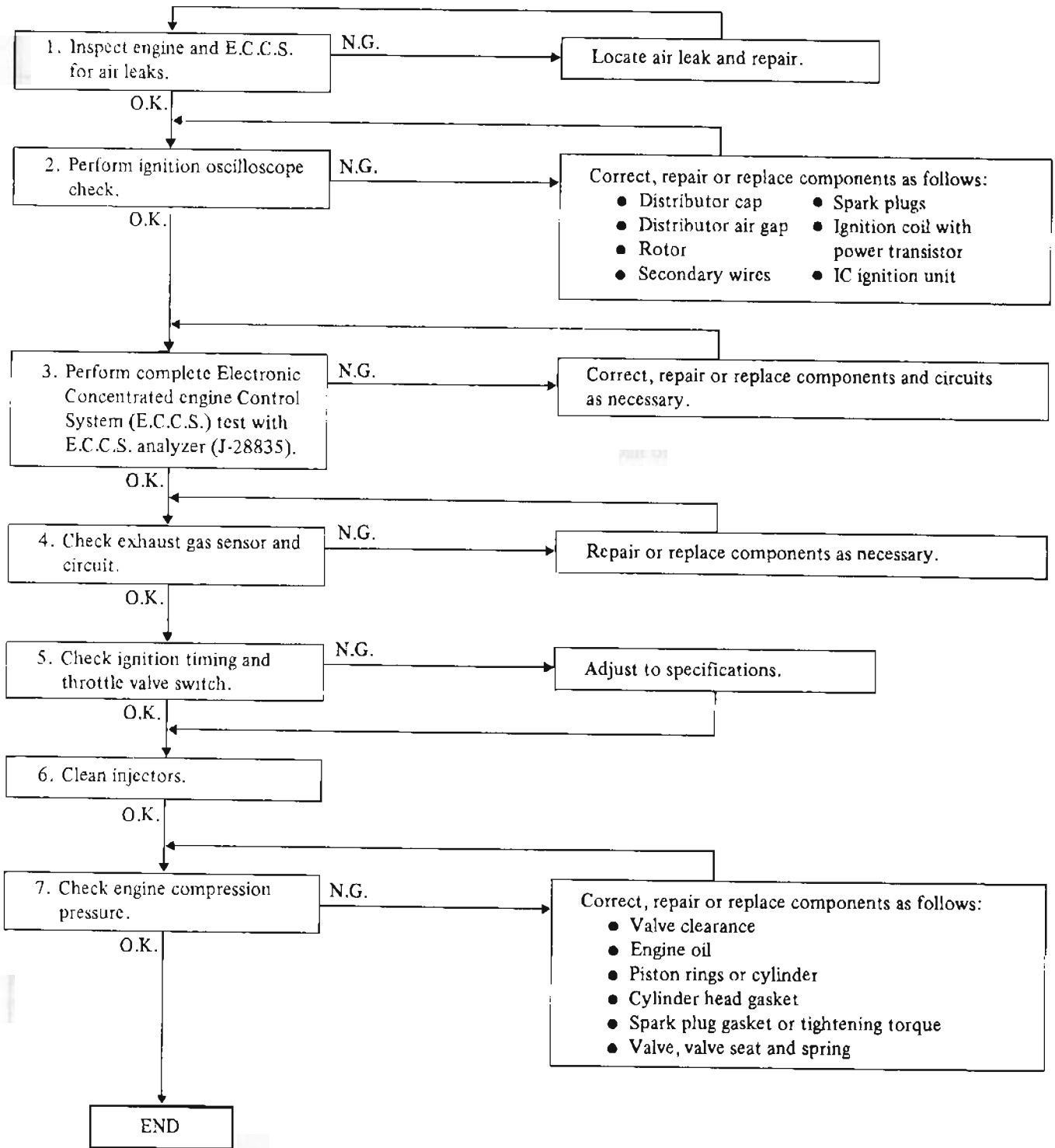
DIAGNOSTIC PROCEDURE FOR E.C.C.S. ENGINE

DRIVEABILITY (Hesitation, surging, flat spot, backfire, afterfire, lack of power, run-on, excessive fuel consumption, etc.)



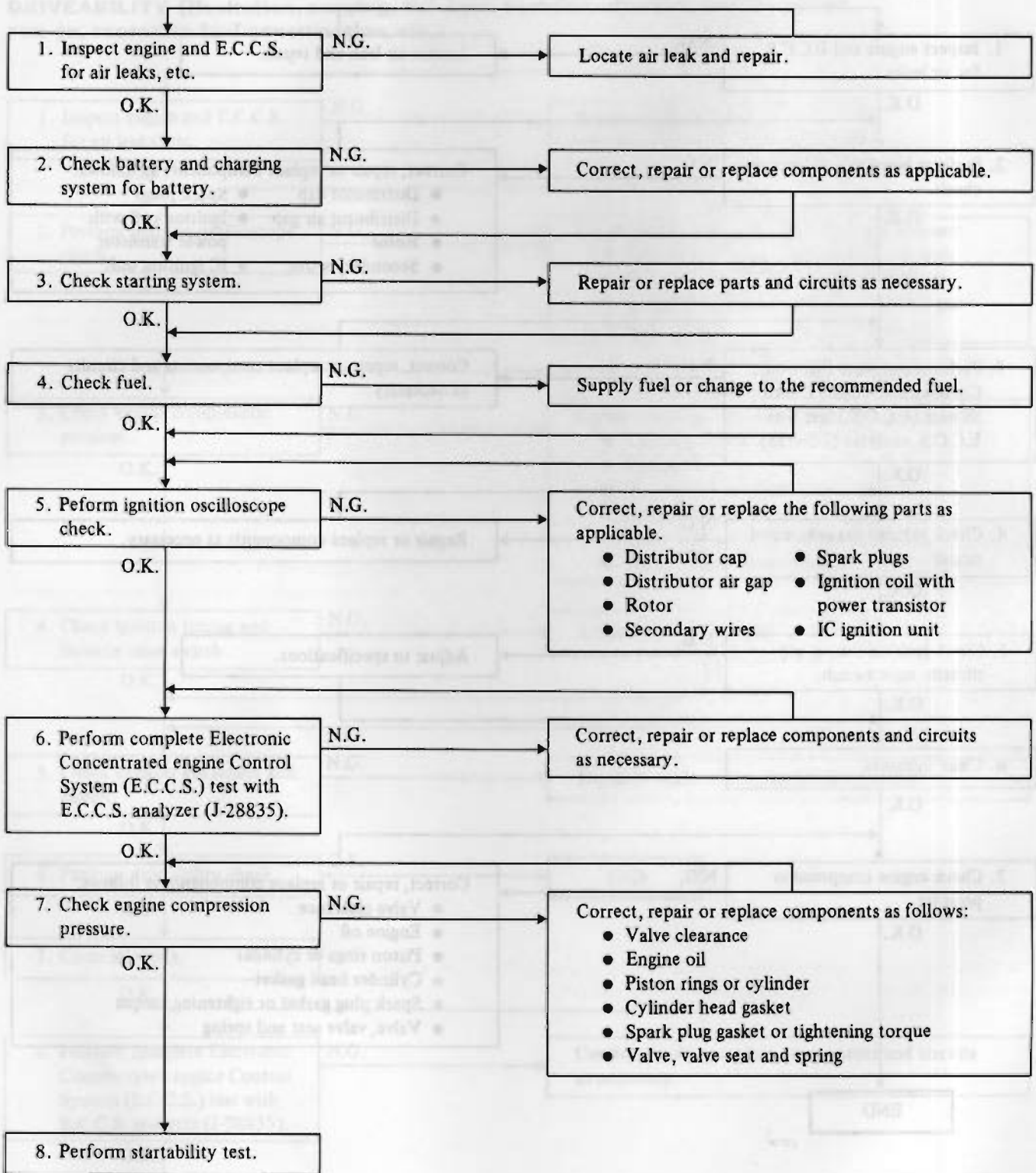
DIAGNOSTIC PROCEDURE FOR PROBLEMS

IMPROPER IDLING (Rough idle, no return to idle, high idle, etc.)



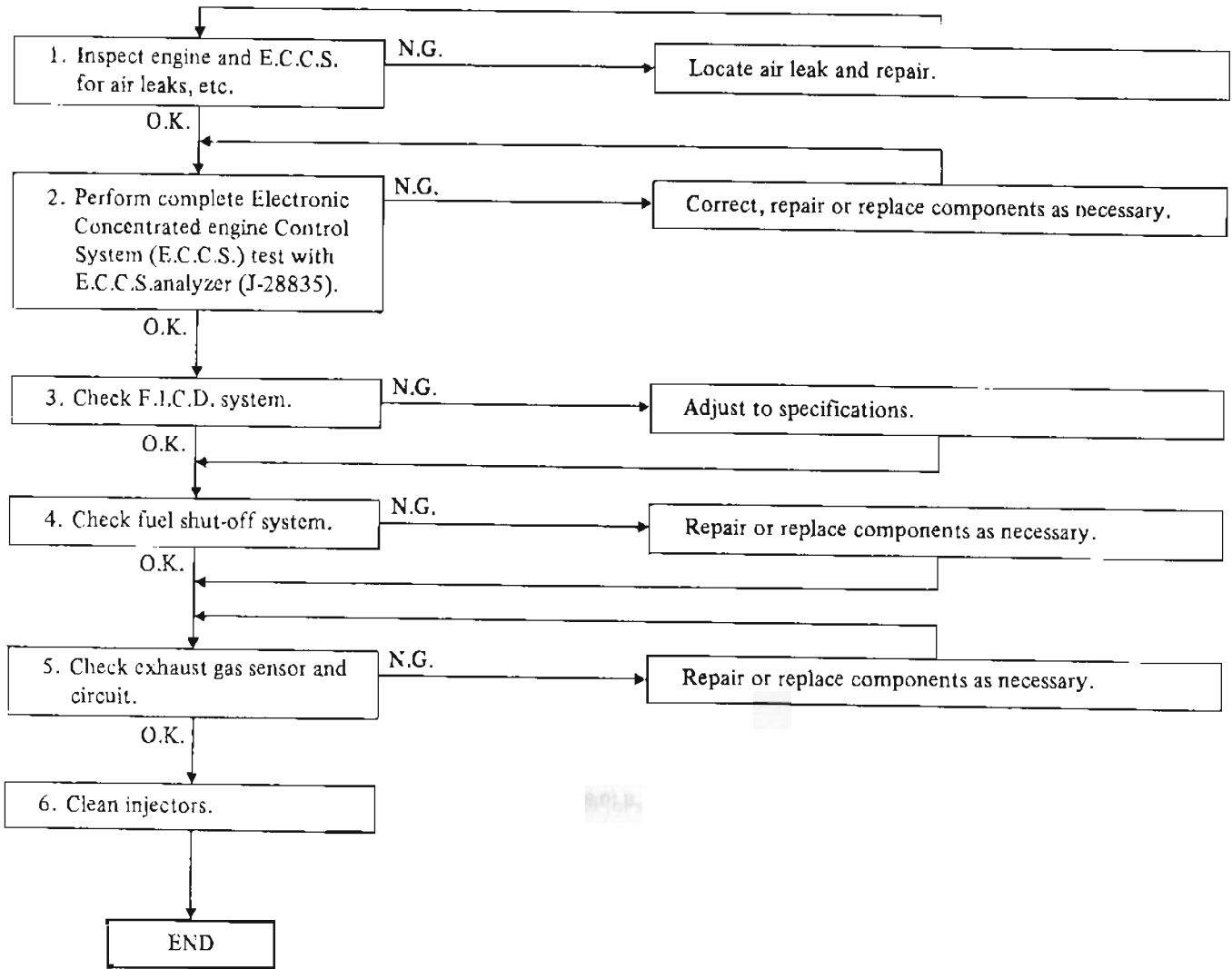
DIAGNOSTIC PROCEDURE FOR PROBLEMS

ENGINE STARTABILITY (Hard start, no start, hard restart, no restart, etc.)



DIAGNOSTIC PROCEDURE FOR PROBLEMS

ENGINE STALL



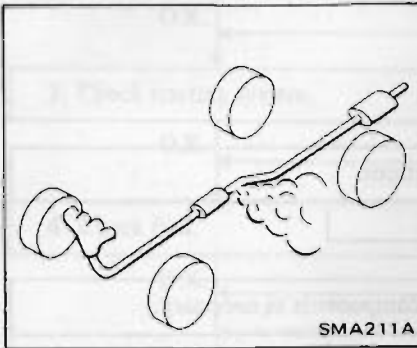
For diagnostic procedures for excessive oil consumption, overheating, noisy engine, refer to DIAGNOSTIC PROCEDURE FOR E.F.I. ENGINE.

CHASSIS AND BODY MAINTENANCE

EXHAUST SYSTEMS

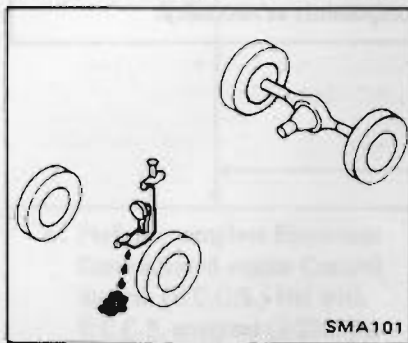
INSPECTING EXHAUST SYSTEMS

Visually check the exhaust pipes, muffler, and hangers for proper attachment, leaks, cracks, chafing, abrasion, deterioration, etc.



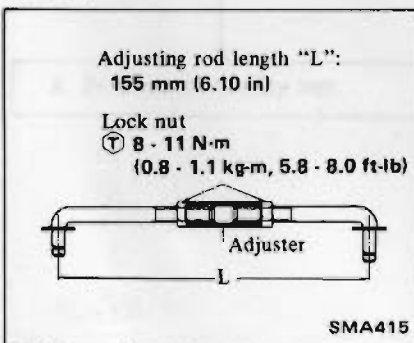
CLUTCH

CHECKING CLUTCH FLUID LEAKS



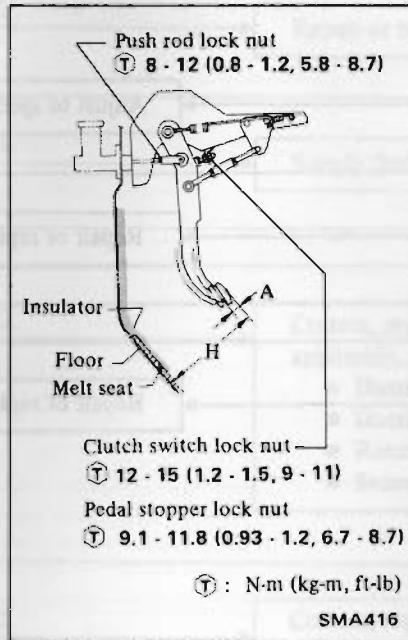
ADJUSTING CLUTCH PEDAL HEIGHT AND FREE PLAY

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 204 mm (8.03 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 201 mm (7.91 in) and that push rod is not pushed more than free play.

- Pedal height "H":
201 mm (7.91 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):

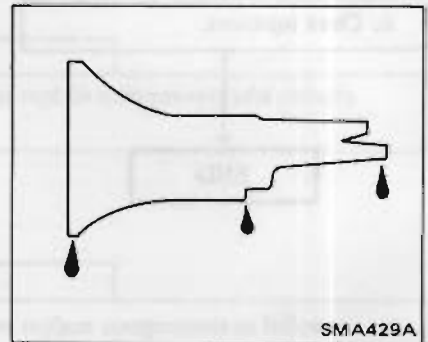
- Models equipped with A.S.C.D.
15.7 N (1.6 kg, 3.5 lb)
- Models not equipped with A.S.C.D.
18.6 N (1.9 kg, 4.2 lb)

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

MANUAL TRANSMISSION

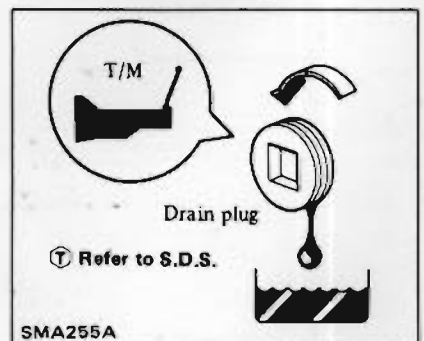
INSPECTING MANUAL TRANSMISSION OIL

Visually inspect for signs of leakage.

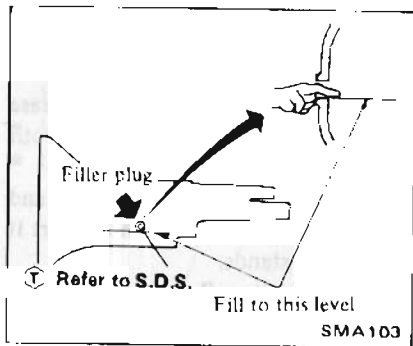
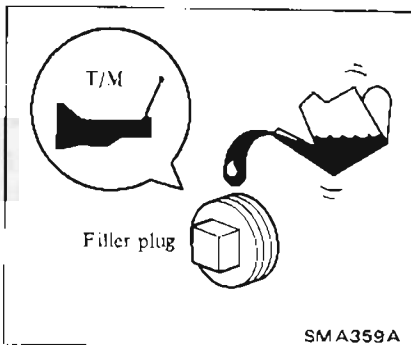


REPLACING MANUAL TRANSMISSION OIL

1. Drain oil completely.



2. Refill transmission and check oil level.



Never start engine while checking oil level.

Oil capacity:

FS5W71B

2.0 Liters

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

FS5R90A

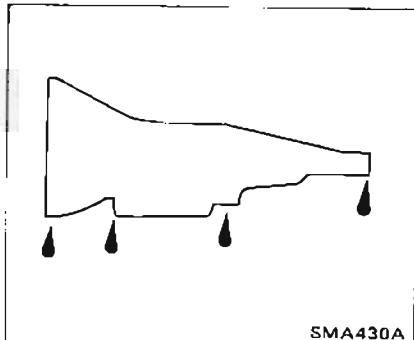
1.9 Liters

(4 US pt, 3-3/8 Imp pt)

AUTOMATIC TRANSMISSION

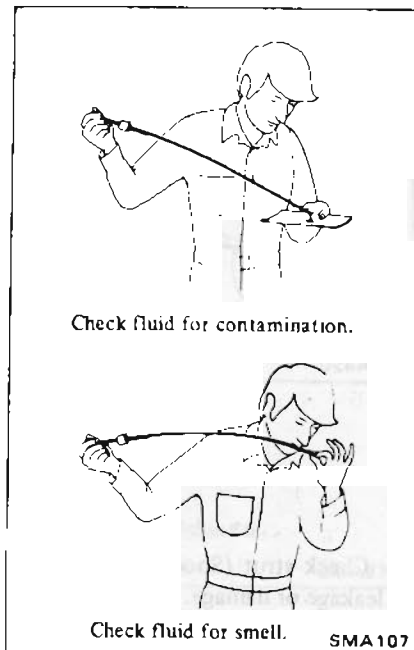
INSPECTING AUTOMATIC TRANSMISSION FLUID

Visually inspect for signs of leakage.



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.



CHECKING AUTOMATIC TRANSMISSION FLUID LEVEL

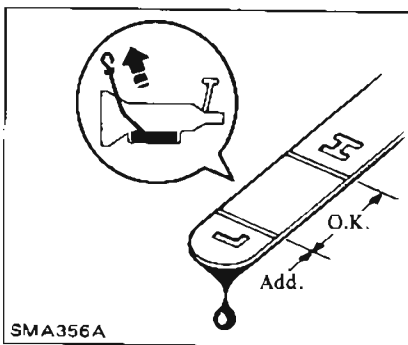
Check under following conditions

(1) Place selector lever in "P" (PARK) position and idle engine.

(2) Maintain fluid temperature at 50 to 80°C (122 to 176°F).

Add fluid, if necessary.

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



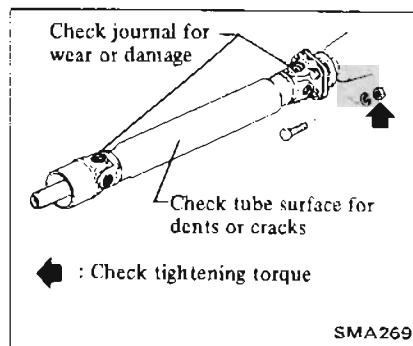
REPLACING AUTOMATIC TRANSMISSION FLUID

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

PROPELLER SHAFT AND DIFFERENTIAL CARRIER

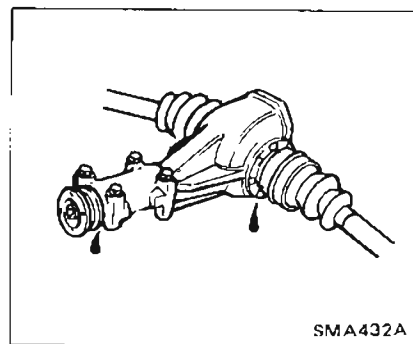
INSPECTING PROPELLER SHAFT

Check the propeller shaft(s) for damage, looseness and grease leakage.



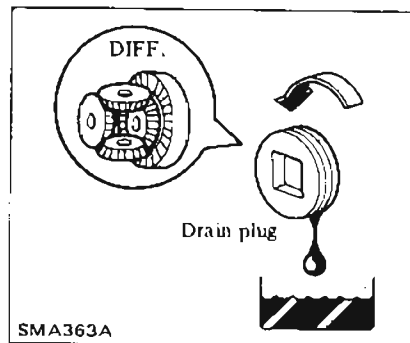
INSPECTING DIFFERENTIAL GEAR OIL

Visually inspect for signs of leakage.

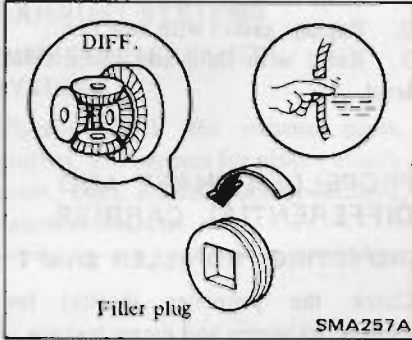


REPLACING DIFFERENTIAL GEAR OIL

1. Drain oil completely.



2. Refill differential carrier and check oil level.



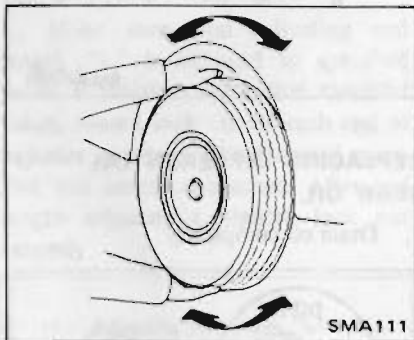
- R200**
1.3 Liters
(2-3/4 US pt, 2-1/4 Imp pt)
- R180**
1.0 Liters
(2-1/8 US pt, 1-3/4 Imp pt)

FRONT AXLE AND FRONT SUSPENSION

INSPECTING FRONT AXLE AND SUSPENSION PARTS

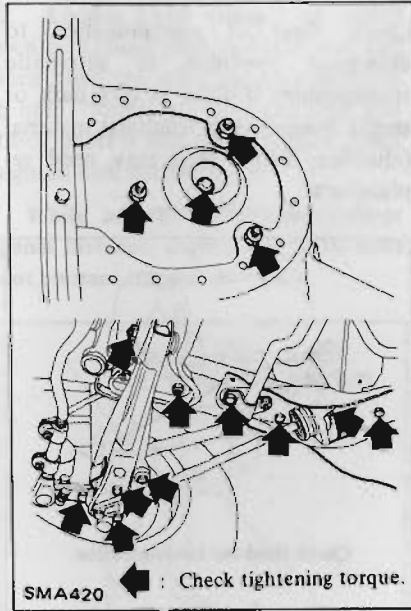
Check for damage, looseness and leakage of oil or grease.

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 G1).
2. Shake each front wheel by holding upper and lower surfaces of tires as shown.

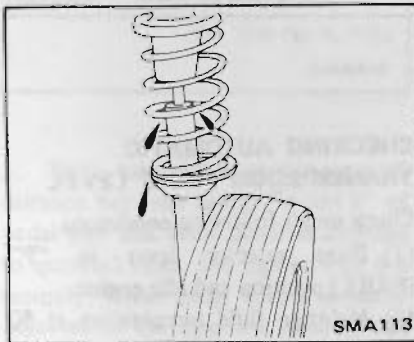


3. Check suspension parts for looseness, wear, or damage. Retighten all loose nuts and bolts to the specified torque. Refer to section FA for tightening torque.

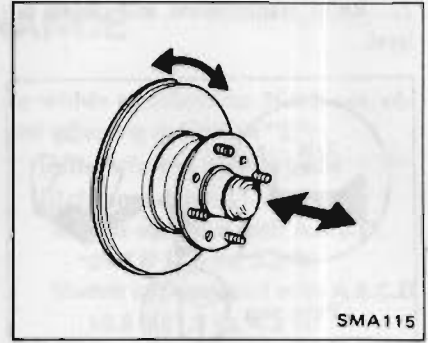
Replace all worn parts as described under Front Suspension (section FA).



4. Check strut (Shock absorber) for oil leakage or 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).



INSPECTING FRONT WHEEL BEARING GREASE

Check for grease leakage around grease seals, axial end play and smooth turning.

1. Block rear wheel with chocks and raise front of car, and then support it with safety stands.

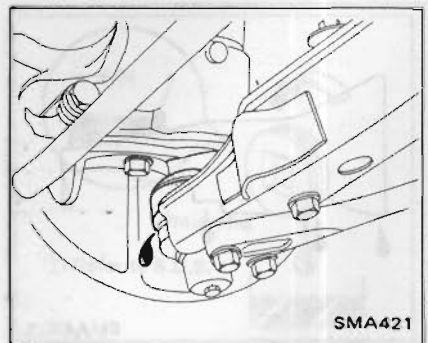
Refer to Lifting Points and Towing (section G1).

2. Remove wheel and tire.
3. Check for grease leakage from front wheel bearing grease seals by observing 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).

INSPECTING STEERING LINKAGE BALL JOINT & SUSPENSION BALL JOINT

Check the ball joints for damage, looseness and grease leakage.

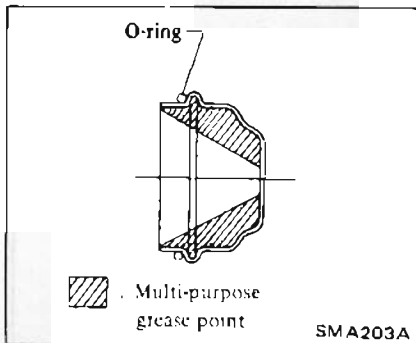


ADJUSTING WHEEL BEARING PRELOAD

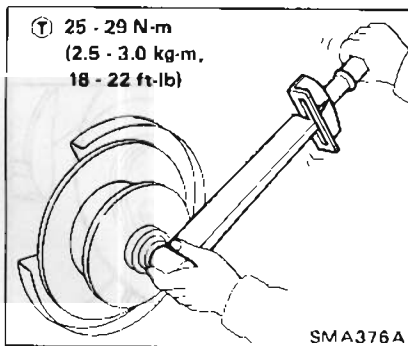
After wheel bearing has been replaced or front axle has been reassembled be sure to adjust wheel bearing preload as described below.

1. Before adjustment, thoroughly clean all parts to prevent possible entry of dirt.
2. Apply recommended multi-purpose grease sparingly to the following parts.

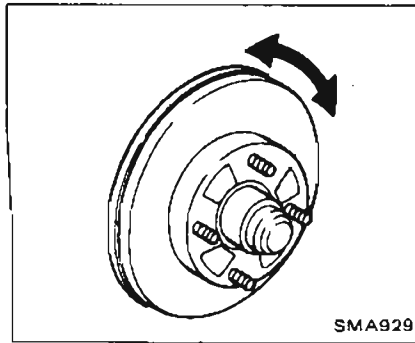
- Threaded portion of spindle.
- Contact surface between wheel bearing washer and outer wheel bearing.
- Hub cap and O-ring.
- Grease seal lip.



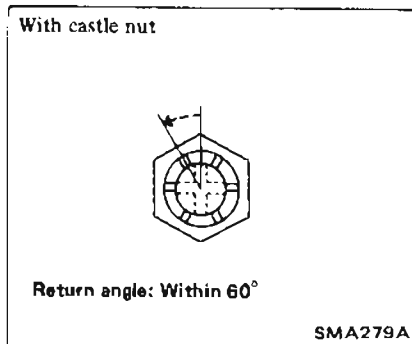
3. Tighten wheel bearing nut.



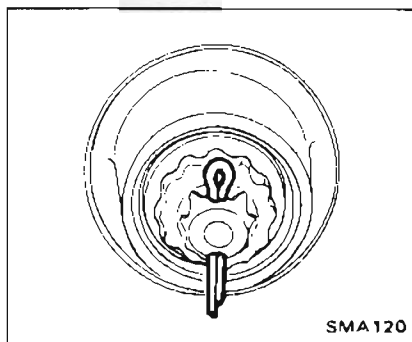
4. Turn wheel hub several times in both directions to seat wheel bearing correctly.



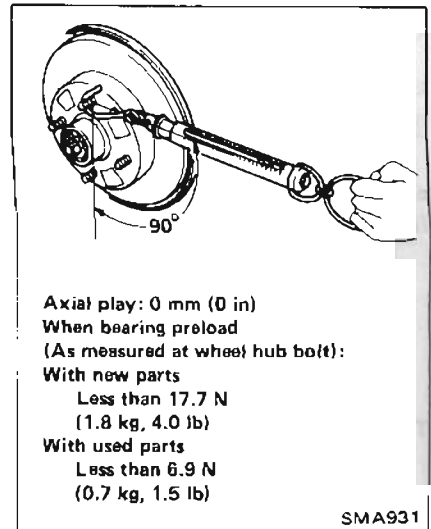
5. Again tighten wheel bearing nut.
6. Turn back wheel bearing nut with in 60°.



7. Fit adjusting cap and new cotter pin.

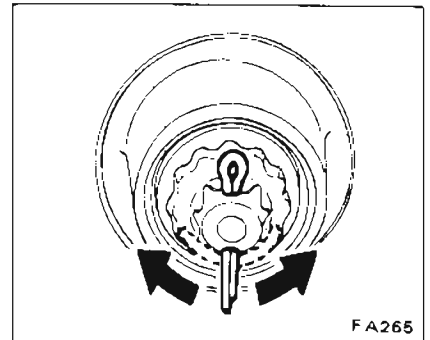


8. Measure wheel bearing preload and axial play.



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 (when not loaded)
- Repair or replace the damaged portion or parts.

Camber, caster and kingpin inclination

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

If camber, caster or kingpin inclination alignment is not within specifications, check pertinent parts.

Repair or replace as necessary.

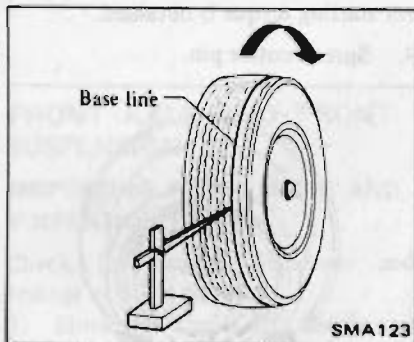
Camber, caster and kingpin inclination:

Refer to S.D.S.

Toe-in

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

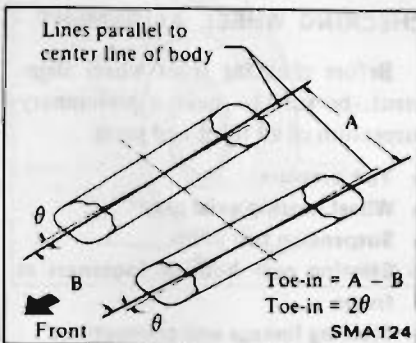
1. Raise front of car and mark a base line across the tread of left and right wheels.



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):

1 - 3 mm (0.04 - 0.12 in)

6' - 16' (On both sides)

Side slip (Reference data):

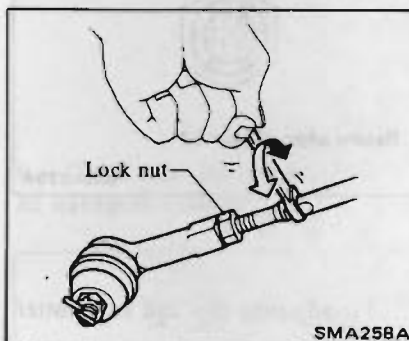
Out 3 mm - In 3 mm/m

(Out 0.036 in - In 0.036 in/ft)

"Unladen"

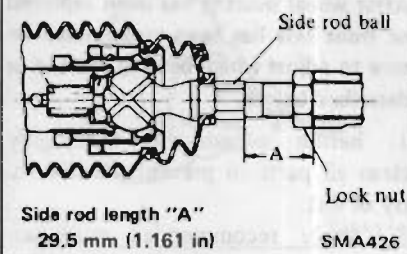
- Fuel tank, radiator and engine oil tank all full.
- Spare tire, jack, hand tools, mats in position.
- All tires inflated to specified pressure.
- All accumulation of mud, dirt and road deposits removed from chassis and underbody.

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

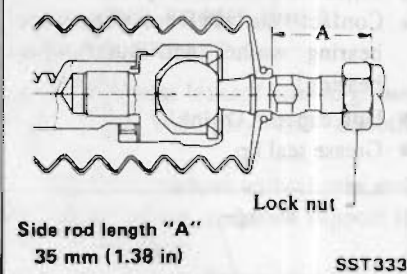


- a. Loosen lock nuts and turn left and right side rod bars equally.
 - b. The side rod bars have right-handed threads, and should be turned as viewed from outside, clockwise to increase, or counterclockwise to decrease, toe-in.
- If side rods have been disassembled, set side rod length to specified value "A" before reassembling.
 - Make sure that side rod bars are screwed into side rods more than 25 mm (0.98 in).

Manual steering models



Power steering models

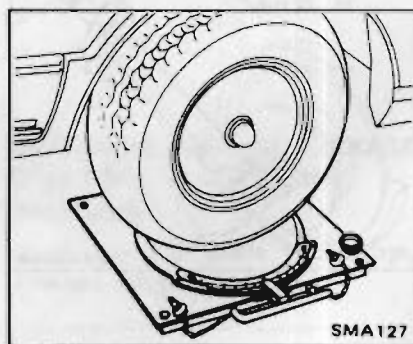


After correct toe-in is obtained, tighten side rod lock nuts.

Ⓣ: 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 fully rotate steering wheel to the right and left; measure turning angle on inner wheel.

If turning angle is not within specifications, check rack stroke.

Front wheel turning angle

• **Toe-out turns**

(When inner wheel is 20°)

Outer wheel

RP15L: 18.7°

IPRP15L: 18.1°

• **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°

Rack stroke (each side)

RP15L: 66.4 mm (2.614 in)

IPRP15L: 66.4 mm (2.614 in)

REAR AXLE AND REAR SUSPENSION

INSPECTING REAR AXLE AND SUSPENSION PARTS

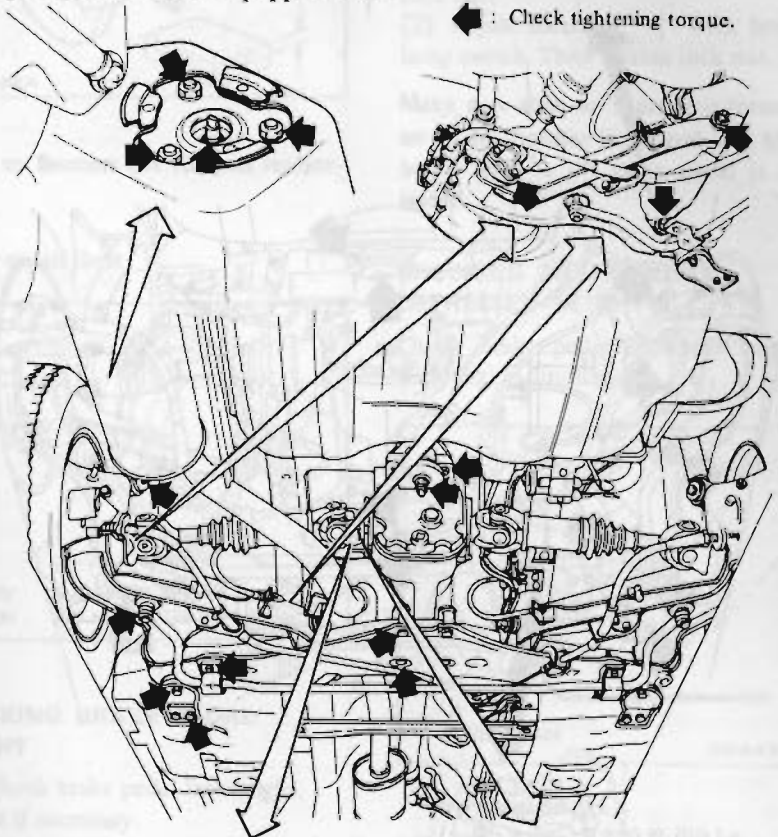
Check for damage, looseness and leakage of oil or grease.

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).

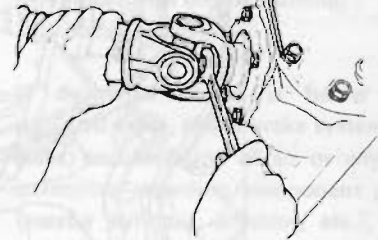
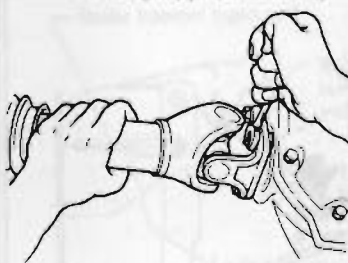
Except tripod drive shaft equipped model

◀ : Check tightening torque.

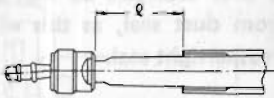


Side flange type (R200 diff.)

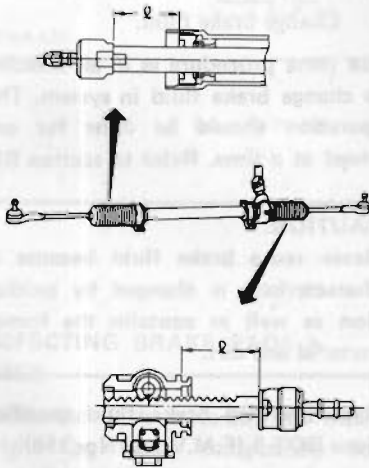
Side yoke type (R180 diff.)



RP15L



IPRP15L

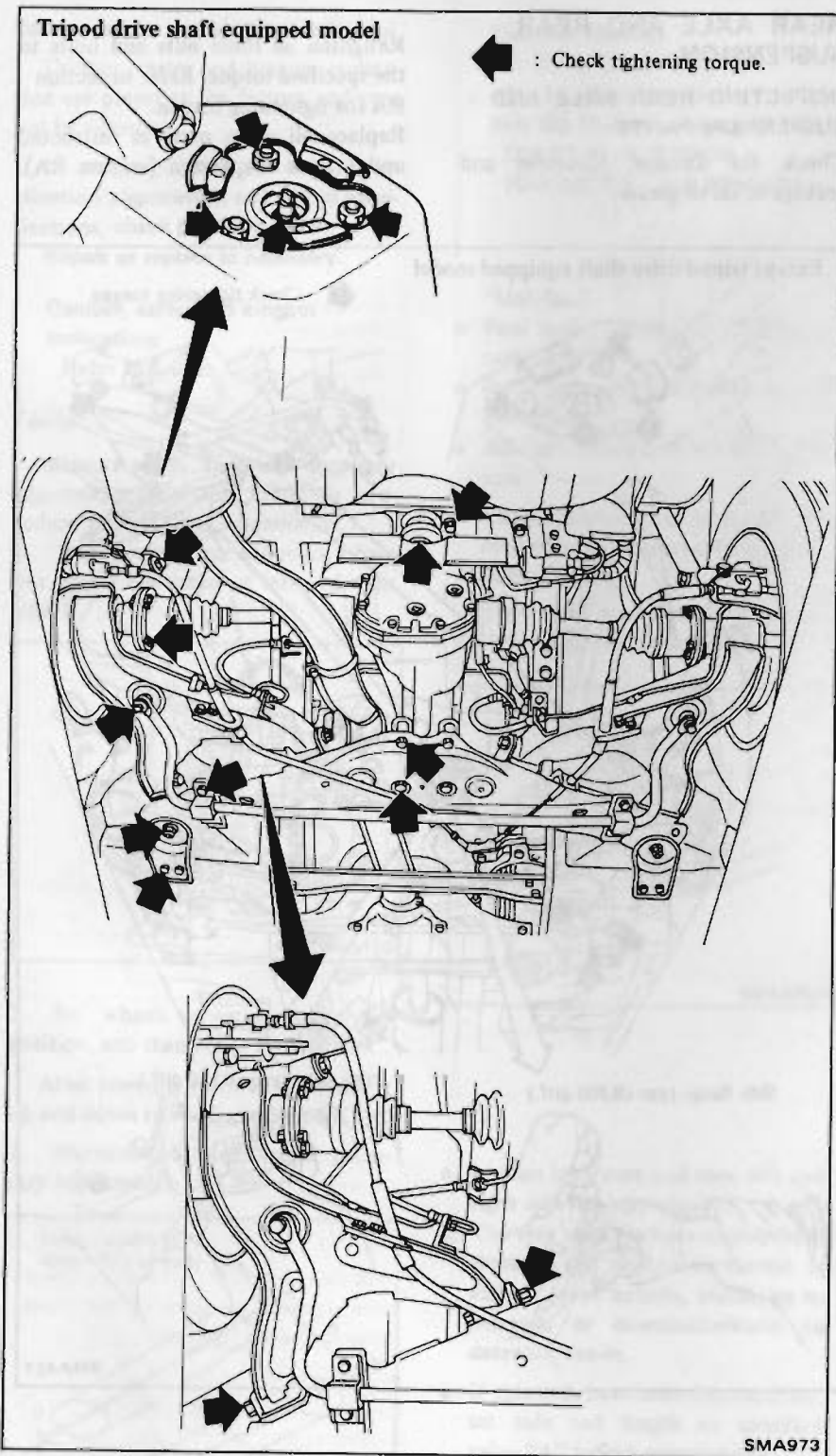


SMA775

SMA427

Tripod drive shaft equipped model

← : Check tightening torque.

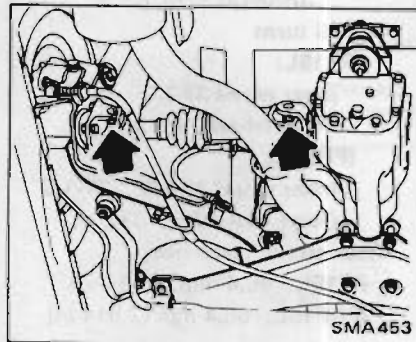


LUBRICATING REAR AXLE DRIVE SHAFT JOINTS
(Except tripod drive shaft)

Check the joints for damage, looseness

and grease leakage. 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

REPLACING BRAKE FLUID

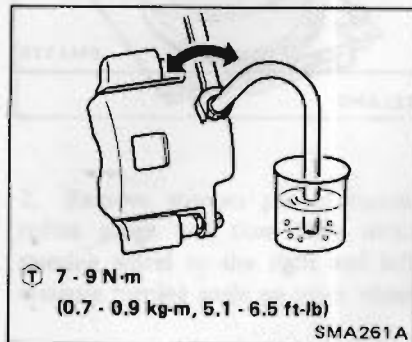
1. Change brake fluid.

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 oxidization as well as contains the foreign material and dirt.

Recommended brake fluid specifications DOT 3 (F.M.V.S.S. No. 116)

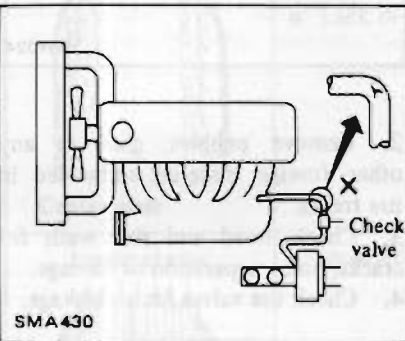
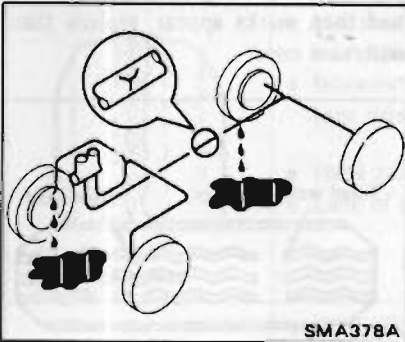


Ⓜ 7 - 9 N·m
(0.7 - 0.9 kg·m, 5.1 - 6.5 ft·lb)

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

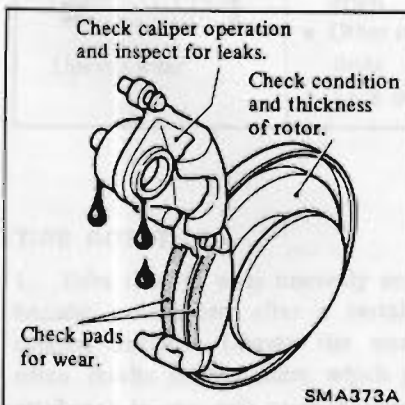
INSPECTING BRAKE LINES & HOSES

Check the brake lines and hoses (including brake booster vacuum hoses, connections & check valve) for proper attachment, leaks, cracks, chafing, abrasion, deterioration, etc.

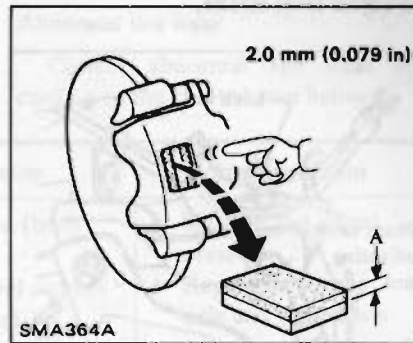


INSPECTING BRAKE PADS & DISCS

Check the parts including the other neighboring brake components for wear, deterioration and leaks.

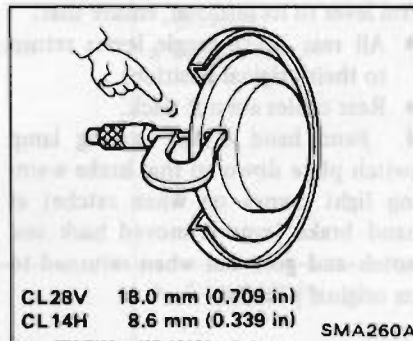


Pad wear limit



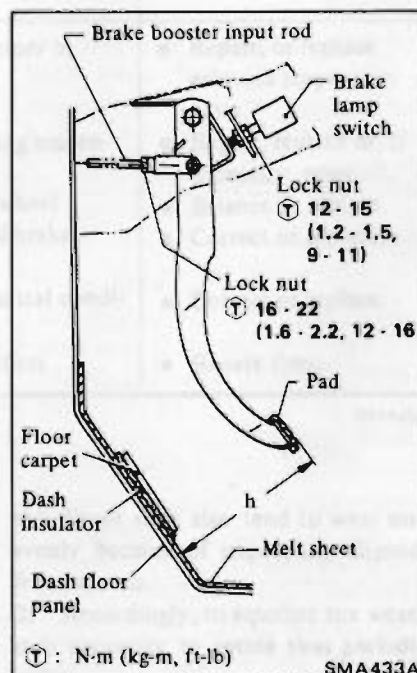
Refer to Section BR for pad replacement.

Rotor repair limit



CHECKING BRAKE PEDAL HEIGHT

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



Pedal height "h"

Refer to S.D.S.

Clearance "C" between pedal stopper rubber and threaded end of brake lamp switch:

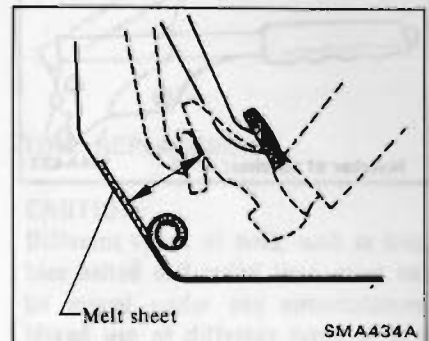
0 - 1 mm (0 - 0.04 in)

- (1) Adjust pedal free height with brake booster input rod. Then tighten lock nut.
- (2) Adjust clearance "C" with brake lamp switch. Then tighten lock nut.

Make sure that no depressing force is on brake booster input rod and that brake lamp is off when pedal is released.

CHECKING BRAKE PEDAL DEPRESSED HEIGHT

Check brake pedal depressed height with engine running.



Depressed height

[Under force of 490 N (50 kg, 110 lb) with engine running]:

Refer to S.D.S.

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.

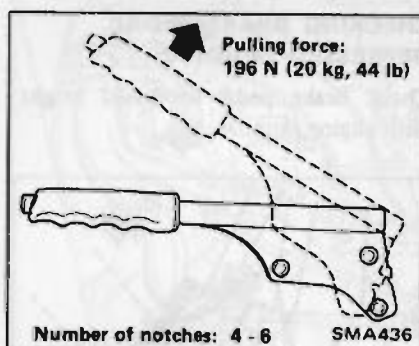
CHECKING BRAKE BOOSTER FUNCTION

1. Park the vehicle on a level surface and set the parking brake.
2. With the engine stopped, depress the brake pedal several times to make sure that the pedal travel distance does not change. Then, while depressing the brake pedal, start the engine. At this time, the pedal should go down a little.

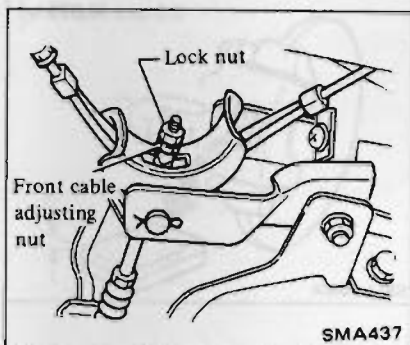
- Depress the brake pedal while running the engine. With the brake pedal depressed, stop the engine. Keeping the pedal depressed for about 30 seconds, make sure that the depressed pedal height does not change.
- Run the engine for a minute and then stop it. Depress the brake pedal several times and make sure that the pedal travel distance decreases gradually with each depression.

CHECKING PARKING BRAKE

- Pull lever with specified amount of force.



- Adjust front cable adjusting nut to adjust lever stroke.



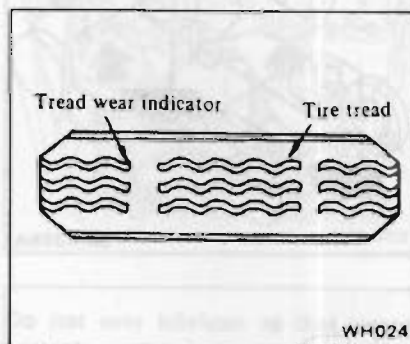
- After returning parking brake control lever to its position, ensure that:
 - All rear brake toggle levers return to their original positions.
 - Rear cables are not slack.
- Bend hand brake warning lamp switch plate down so that brake warning light comes on when ratchet at hand brake lever is moved back one notch and goes out when returned to its original position.

WHEEL AND TIRE

CHECKING TIRE CONDITION

Tire condition

- 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.



- Remove pebbles, glass or any other foreign material embedded in tire treads.
- Check tread and side walls for cracks, holes, separation or damage.
- Check tire valves for air leakage.

Tire inflation

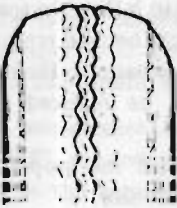
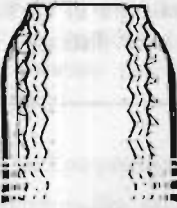


- Check tire pressure. If necessary, adjust it to the specified value indicated in the label attached to the car, also found in S.D.S.

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

SMA06B

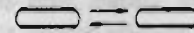
TIRE ROTATION

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.

Radial tires



4 WHEELS

WH206

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.

- 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.
- 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.

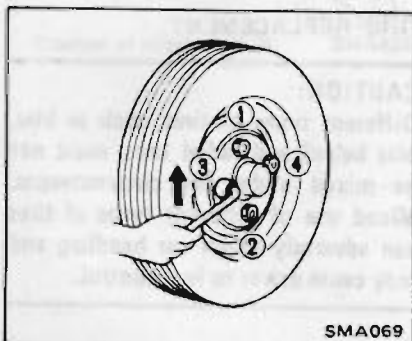
- c. It is recommended that new tires be installed in pairs on the same axle. When replacing only one tire, it should be paired with the most tread, to equalize braking traction.
- d. When replacing original tires with those tires of an optional recommended size and of different diameter, the speedometer must be recalibrated.

1. To replace a tire with a jack in a safe manner, refer to Lifting Points (Section G1) 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.

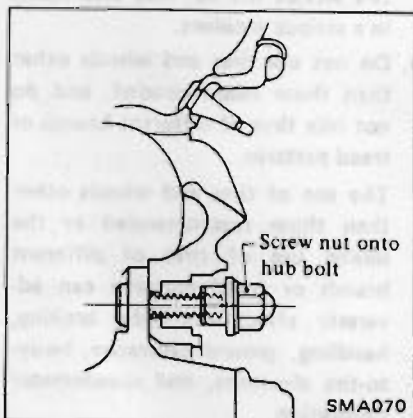
2. To install wheel, tighten wheel nuts in criss-cross fashion.



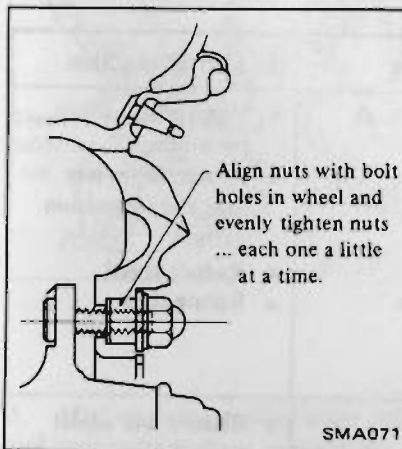
Aluminum wheel

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.



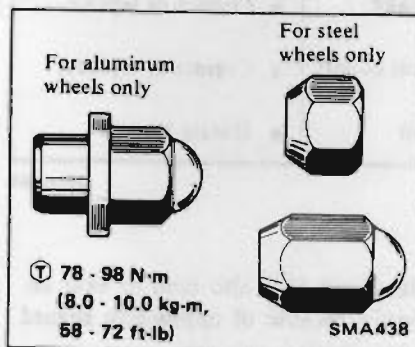
3. Tighten wheel nuts evenly with a wheel wrench in criss-cross fashion.

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 case 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°C (14°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.

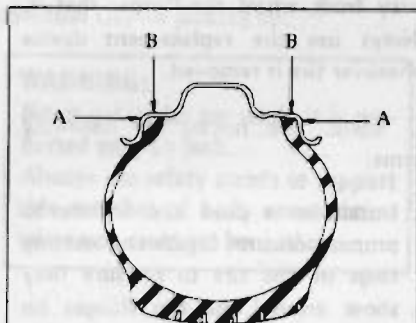
Steel wheel:

Wire brush, coarse steel wool, etc.

Aluminum wheel:

Neutral detergent, cloth, etc.

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



SMA399

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)

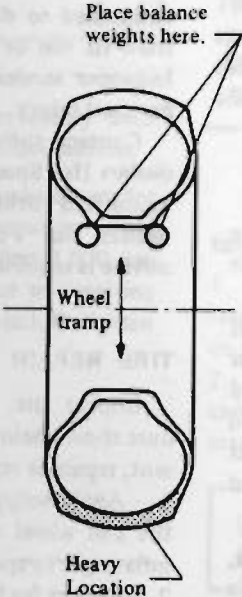
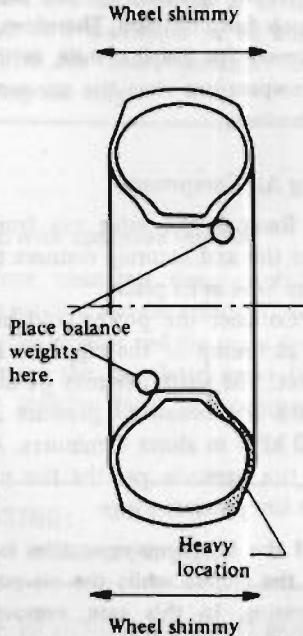
4. Replace wheel when any of the following problems occurs.

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

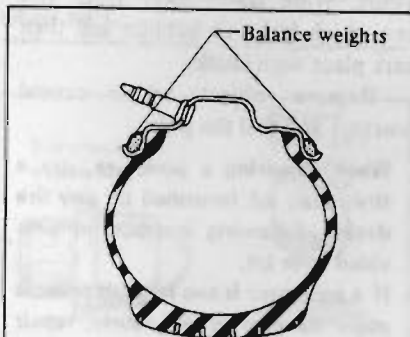
Balancing wheels

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 	Balance dynamically 

SMA075



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

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.

- 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.

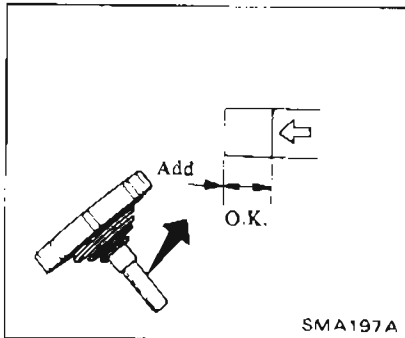
STEERING SYSTEM

CHECKING POWER STEERING FLUID LEVEL

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

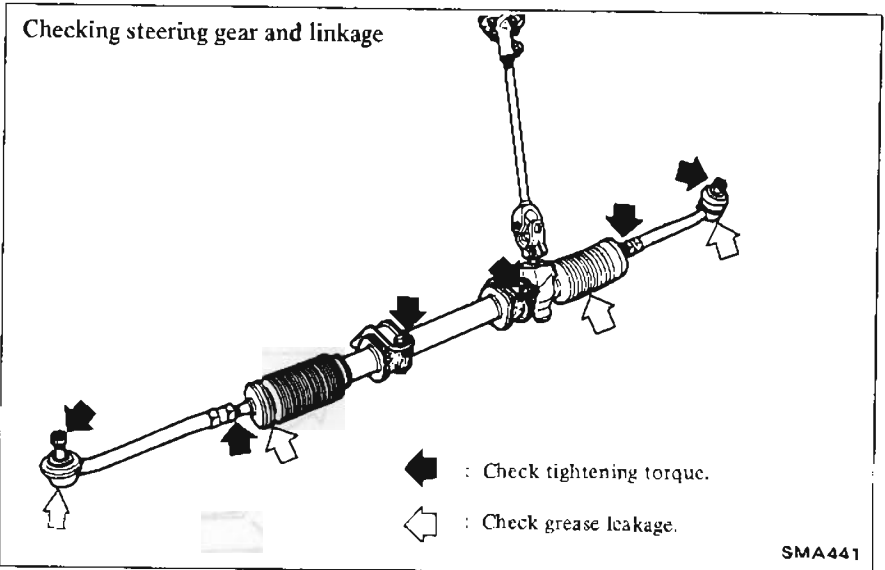
CAUTION:

Do not overfill.



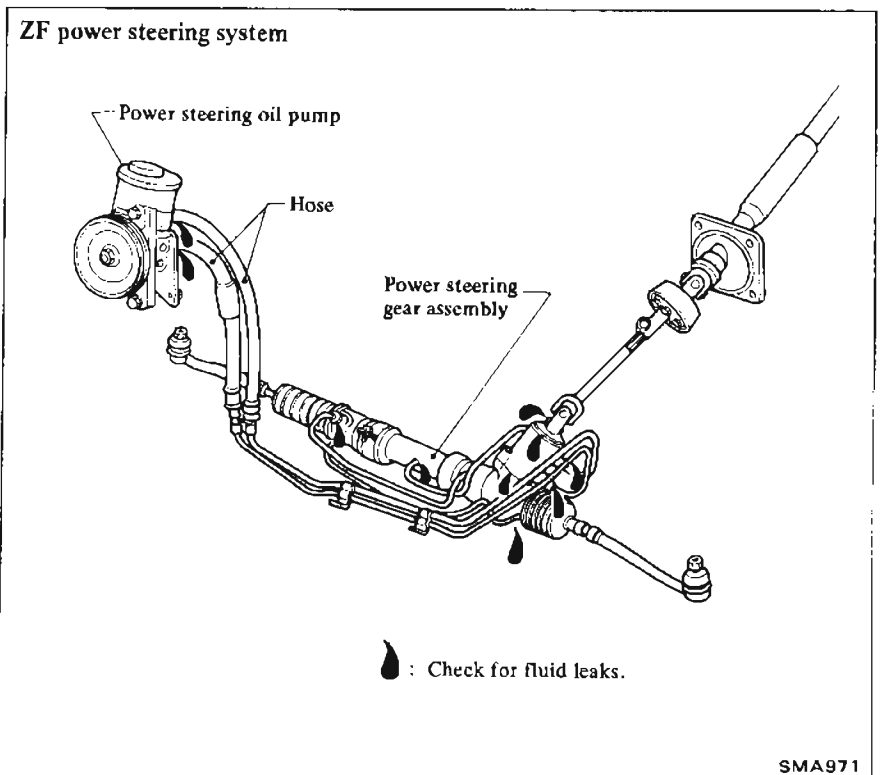
INSPECTING STEERING GEAR AND LINKAGE

Check for damage, looseness and leakage of oil or grease.



INSPECTING POWER STEERING LINES & HOSES

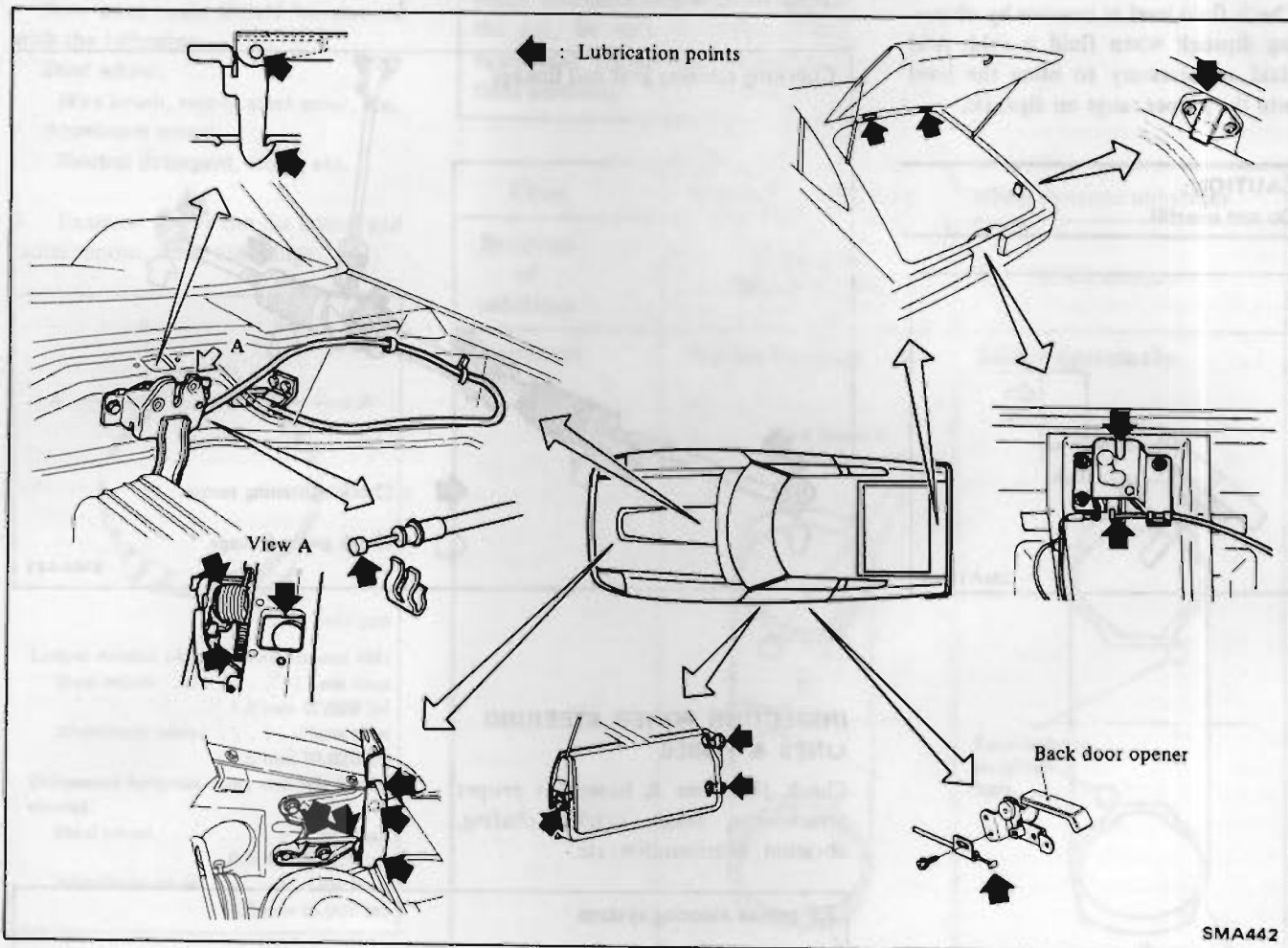
Check the lines & hoses for proper attachment, leaks, cracks, chafing, abrasion, deterioration, etc.



BODY

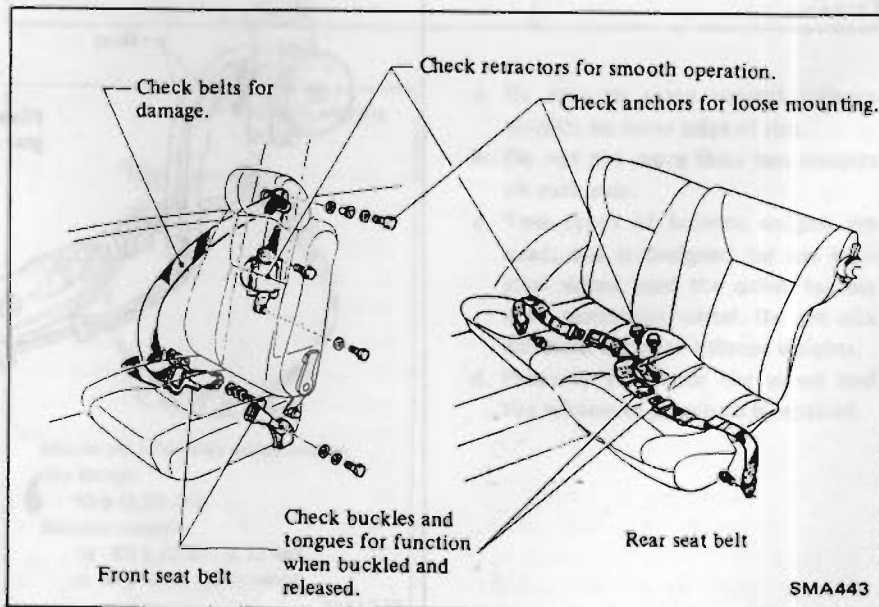
LUBRICATING LOCKS, HINGES AND HOOD LATCH

Lubricate all locks and hinges on all doors including trunk lid, back hatch and hood latch.



INSPECTING SEAT BELTS, BUCKLES, RETRACTORS, ANCHORS AND ADJUSTER

Check for damage, deterioration, proper functioning, smooth operation and loose mounting.

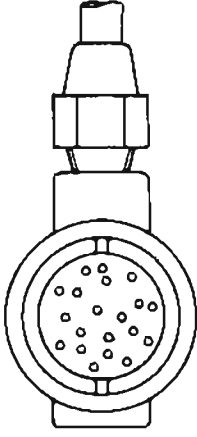
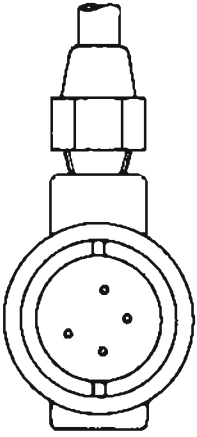
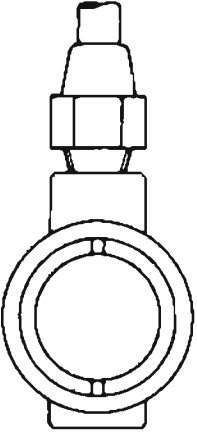


CHASSIS AND BODY MAINTENANCE

HEATER AND AIR CONDITIONER

CHECKING AIR CONDITIONER 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. Bubbles will disappear and something like mist will flow when refrigerant is nearly gone.  AC256	The bubbles are seen at intervals of 1 - 2 seconds.  AC257	Almost transparent. Bubbles may appear when engine speed is raised and lowered. No clear difference exists between these two conditions.  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.	Stop compressor immediately 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

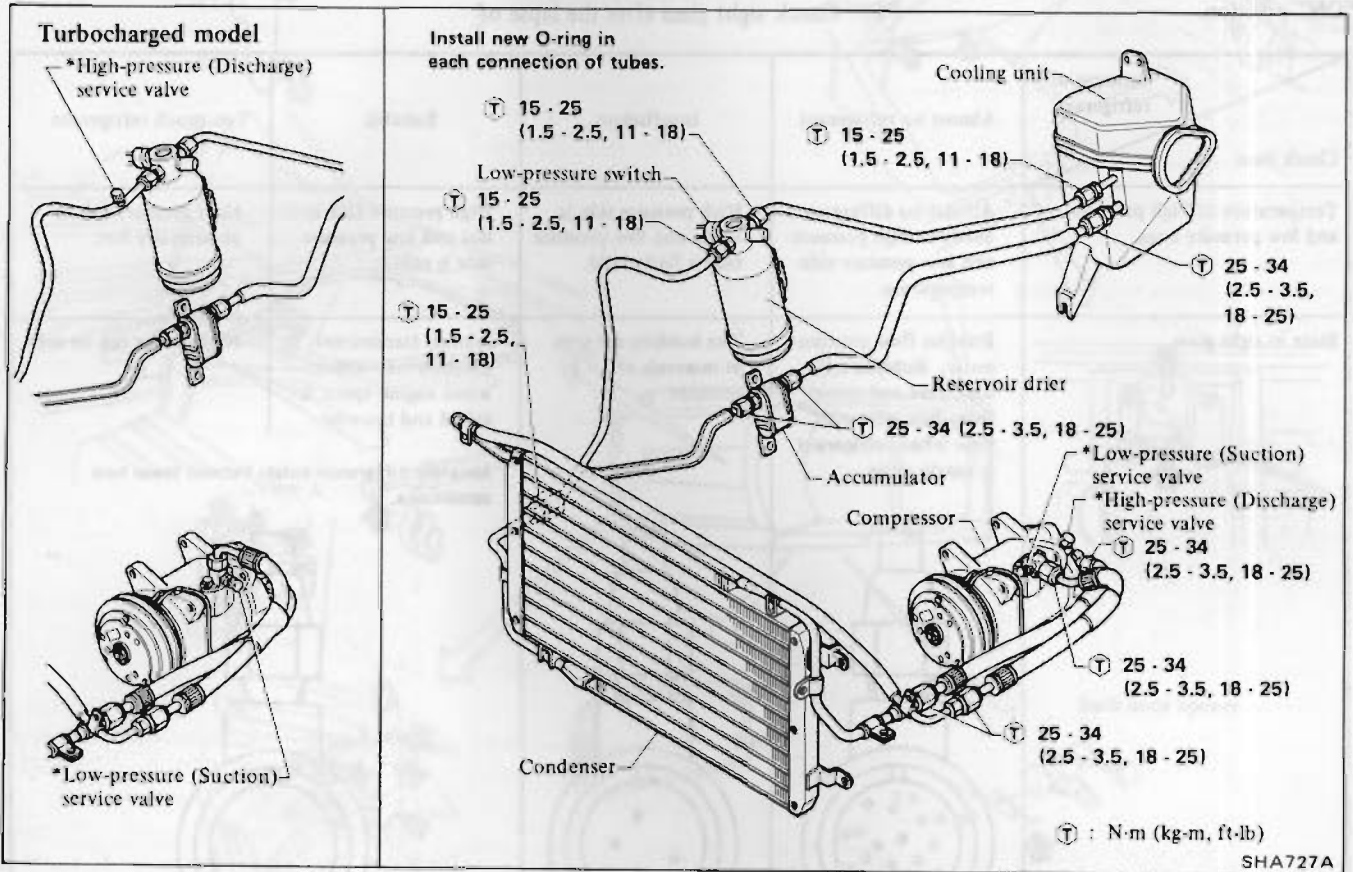
Refer to Engine Maintenance for inspection and adjustment.

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.

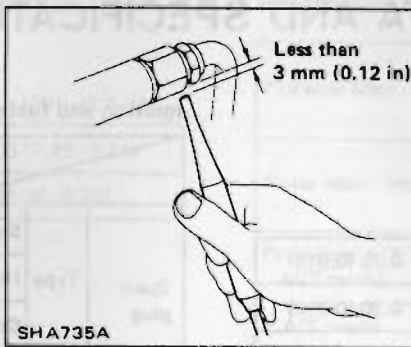


CHECKING REFRIGERANT LEAK

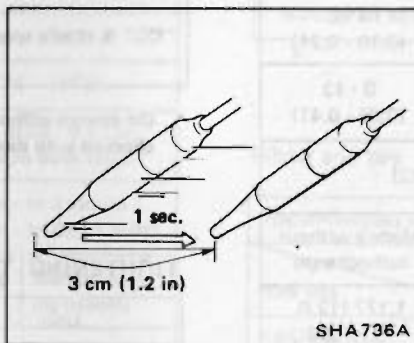
Conduct a leak test with electric leak detector whenever leakage of refrigerant is suspected and when conducting service operations which are accompanied by disassembly or loosening of connection fittings.

Electric leak-detector

The leak detector is a delicate device that detects small amounts of halogen. In order to use the device properly, read the manuals put out by each maker and perform the specified maintenance and inspections.



3. The detector requires a certain length of time to react to the gas. The moving speed of the probe must be maintained at less than 3 cm (1.2 in)/sec.



Measurement standard

If any reaction is noted using a detector having a nominal sensitivity of 15 to 25 g (0.53 to 0.88 oz)/year, that portion checked be found as leaking, and therefore must be repaired.

- The nominal sensitivity of the detector is determined under the assumption that all the leaking gas is collected by the detector. Accordingly, the quantity of gas actually leaking can amount to five to ten times the indicated value. Generally speaking, leakage of 150 to 200 g (5.29 to 7.05 oz) of refrigerant can cause insufficient cooling.
- Oil deposited during assembling must be wiped off before inspection. Refrigerant easily dissolves in oil, and the presence of oil can cause an error in measurement. This precaution is important when checking a used car for refrigerant leakage.

- If any trace of oil is noted at and around connection fittings, it is a sure indication that refrigerant is leaking.

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
 - Line connections
- (4) Evaporator housing
 - Inlet and outlet line connections
 - Expansion valve

If a gas leak is detected, proceed as follows:

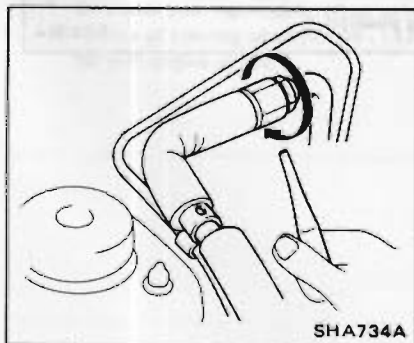
1. Check torque on the connection fitting and, if too loose, tighten to the proper torque. Refer to S.D.S. Check for gas leakage with a leak detector.
2. If leakage continues even after the fitting has been retightened, discharge refrigerant from system, disconnect the fittings, and check its seating 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.

General precautions for handling leak detector

1. The probe must be correctly aimed at the point to be checked. Each fitting must be checked around its entire periphery. Refrigerant gas is heavier than air, so the underside of the fitting must also be checked.



2. The probe must be held as close as possible to the checking point, within 3 mm (0.12 in) of the object.

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

ENGINE MAINTENANCE

INSPECTION AND ADJUSTMENT

Basic mechanical system

Valve clearance	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			
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)	
		Models with turbocharger	Models without turbocharger
Compression pressure	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.

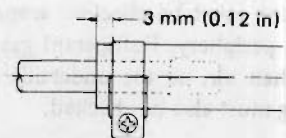
Ignition and fuel system

		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	24±3° B.T.D.C. /700±50	8±2° B.T.D.C. /700±100
	Automatic transmission models (in "D" position)	24±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 harness connector disconnected.

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

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

CHASSIS AND BODY MAINTENANCE

INSPECTION AND ADJUSTMENT

Clutch

Unit: mm (in)

Pedal height "H"	196 - 206 (7.72 - 8.11)
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		1 - 3 mm (0.04 - 0.12 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°)		18.1°	18.7°
Outer wheel			
Full turns*			
Inner wheel		32° - 36°	32° - 36°
Outer wheel		24-1/2° - 28-1/2°	24-1/2° - 28-1/2°

* 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		177 - 187 (6.97 - 7.36)
A/T model		186 - 196 (7.32 - 7.72)
Pedal depressed height [Under force of 490 N (50 kg, 110 lb) with engine running]		
M/T model		More than 78 (3.07)
A/T model		More than 88 (3.46)
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			
FS5W71B	25 - 34	2.5 - 3.5	18 - 25
FS5R90A	20 - 34	2.0 - 3.5	14 - 25
Differential carrier			
Drain and filler plugs	39 - 59	4 - 6	29 - 43
Front axle and front suspension			
Power steering models	14 - 17	1.4 - 1.7	10 - 12
Side rod lock nut			
Manual steering models	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	