MAINTENANCE

SECTION MA

CONTENTS

CONTENTS (Cont'd)

Supplemental Restraint System (SRS) “AIR BAG” (4WD models)

The Supplemental Restraint System “Air Bag”, used along with a seat belt, helps to reduce the risk or severity of injury to the driver in a frontal collision. The Supplemental Restraint System consists of air bag module (located in the center of the steering wheel), a diagnosis sensor unit, warning lamp, wiring harness and spiral cable. Information necessary to service the system safely is included in the **RS section** of this Service Manual.

WARNING:

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN dealer.**
- **Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system.**
- **Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses are covered with yellow insulation either just before the harness connectors or for the complete harness, for easy identification.**

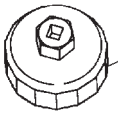
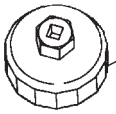
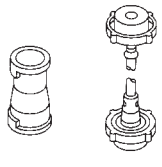
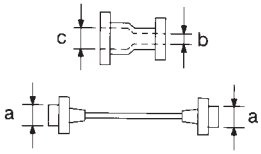
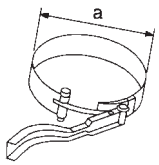
Supplemental Restraint System (SRS) “AIR BAG” (2WD models)

The Supplemental Restraint System “Air Bag”, used along with a seat belt, helps to reduce the risk or severity of injury to the driver in a frontal collision. The Supplemental Restraint System consists of an air bag module (located in the center of the steering wheel), a diagnosis sensor unit, warning lamp, wiring harness and spiral cable. Information necessary to service the system safely is included in the **RS section** of this Service Manual.

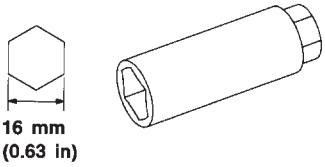
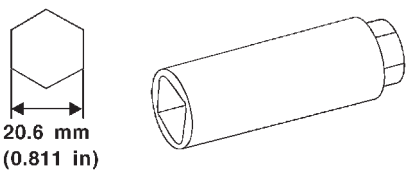
WARNING:

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN dealer.**
- **Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system.**
- **Do not use electrical test equipment on any circuit related to the SRS.**

Special Service Tools

Tool number Tool name	Description	Engine application			
		KA	NA	Z	QD, TD
KV10106001 Oil filter wrench	 15 faces, inner span: 92.5 mm (3.642 in) (Face to opposite corner) NT690 Removing oil filter	—	—	X	X
KV10105901 Oil filter cap wrench	 15 faces, inner span: 80 mm (3.15 in) (Face to opposite corner) NT689	X	X	—	—
EG17650301 Radiator cap tester adapter	  **a: 28 (1.10) dia.** **b: 31.4 (1.236) dia.** **c: 41.3 (1.626) dia.** Unit: mm (in) NT564	X	X	X	X
KV10113600 Fuel filter wrench	 Removing fuel filter **a: Max. 100 mm (3.94 in) dia.** NT553	—	—	—	X

Commercial Service Tools

Tool name	Description	Engine application			
		KA	NA	Z	QD, TD
Spark plug wrench	 **16 mm (0.63 in)** Wrench with a magnet to hold spark plug NT047	X	—	—	—
Spark plug wrench	 **20.6 mm (0.811 in)** Wrench with a magnet to hold spark plug NT691	—	X	X	—

Shown below are Pre-delivery Inspection Items required for the new vehicle. It is recommended that necessary items other than those listed here be added, paying due regard to the conditions in each country.

Perform applicable items on each model. Consult text of this section for specifications.

UNDER HOOD — engine off

- ☐ Radiator coolant level and coolant hose connections for leaks
- ☐ Battery fluid level, specific gravity and conditions of battery terminals
- ☐ Drive belts tension
- ☐ Fuel filter for water or dusts, and fuel lines and connections for leaks
- ☐ Engine oil level and oil leaks
- ☐ Clutch and brake reservoir fluid level and fluid lines for leaks
- ☐ Windshield and rear window washer and headlamp cleaner reservoir fluid level
- ☐ Power steering reservoir fluid level and hose connections for leaks

ON INSIDE AND OUTSIDE

- ☐ Remove front spring/strut spacer (If applicable)
- ☐ Operation of all instruments, gauges, lights and accessories
- ☐ Operation of horn(s), wiper and washer
- ☐ Steering lock for operation
- ☐ Check air conditioner for gas leaks
- ☐ Front and rear seats, and seat belts for operation
- ☐ All moldings, trims and fittings for fit and alignment
- ☐ All windows for operation and alignment
- ☐ Hood, trunk lid, door panels for fit and alignment
- ☐ Latches, keys and locks for operation
- ☐ Weatherstrips for adhesion and fit
- ☐ Headlamp aiming
- ☐ Tighten wheel nuts (Inc. inner nuts if applicable)
- ☐ Tire pressure (Inc. spare tire)
- ☐ Check front wheels for toe-in
- ☐ Install clock/voltmeter/room lamp fuse (If applicable)
- ☒ Install deodorizing filter to air purifier (If applicable)
- ☒ Remove wiper blade protectors (If applicable)

UNDER BODY

- ☐ Manual transmission/transaxle gear oil, transfer fluid and differential gear oil level
- ☐ Brake and fuel lines and oil/fluid reservoirs for leaks
- ☐ Tighten bolts and nuts of steering linkage and gear box, suspension, propeller shafts and drive shafts
- ☒ Tighten rear body bolts and nuts (Models with wooden bed only)

ROAD TEST

- ☐ Clutch operation
- ☐ Parking brake operation
- ☐ Service brake operation
- ☒ Automatic transmission/transaxle shift timing and kickdown
- ☐ Steering control and returnability
- ☐ Engine performance
- ☐ Squeaks and rattles

ENGINE OPERATING AND HOT

- ☐ Adjust idle mixture and speed (and ignition timing*1)
- ☐ Automatic transmission/transaxle fluid level
- ☐ Engine idling and stop knob operation (Diesel only)

FINAL INSPECTION

- ☐ Install necessary parts (outside mirror, wheel covers, seat belts, mat, carpet or mud flaps)
- ☐ Inspect for interior and exterior metal and paint damage
- ☐ Check for spare tire, jack, tools (wheel chock), and literature
- ☐ Wash, clean interior and exterior

*1: Not required on models with a direct ignition system

☒ : Not applicable to this model.

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 dealers do them.

Item	Reference pages
OUTSIDE THE VEHICLE The maintenance items listed here should be performed from time to time, unless otherwise specified.	
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.	—
Windshield wiper blades Check for cracks or wear if they do not wipe properly.	—
Doors and engine hood Check that all doors, the engine hood, the trunk lid and back door operate properly. Also ensure that all latches lock securely. Lubricate hinges, latches, rollers and links if necessary. Make sure that the secondary latch keeps the hood from opening when the primary latch is released. When driving in areas using road salt or other corrosive materials, check for lubrication frequently.	MA-57
Tire rotation Tires should be rotated every 10,000 km (6,000 miles) for 2WD models and every 5,000 km (3,000 miles) for 4WD models.	MA-53
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.	—
Warning lights and chimes Make sure that all warning lights and chimes are operating properly.	—
Steering wheel Check for change in the steering conditions, such as excessive free play, hard steering or strange noises. **Free play: Less than 35 mm (1.38 in)**	—
Seat belts Check that all parts of the seat belt system (e.g. buckles, anchors, adjusters and retractors) operate properly and smoothly, and are installed securely. Check the belt webbing for cuts, fraying, wear or damage.	MA-58
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.	MA-15, 24, 33, 43
Engine oil level Check the level after parking the vehicle on a level spot and turning off the engine.	MA-18, 28, 37, 42
Brake and clutch fluid level Make sure that the brake and clutch fluid levels are between the “MAX” and “MIN” lines on the reservoir.	MA-51, 54
Battery Check the fluid level in each cell. It should be between the “MAX” and “MIN” lines.	—

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

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

Engine and Emission Control Maintenance

DIESEL ENGINE

Abbreviations: I = Inspect and correct or replace as necessary, R= Replace, A = Adjust, C = Clean, D = Drain water and inspect.

MAINTENANCE OPERATION		MAINTENANCE INTERVAL									Reference page	
Perform at the specified months or mileage whichever comes first.	**Months**	**—**	**6**	**12**	**18**	**24**	**30**	**36**	**42**	**48**		
	km x 1,000	1	10	20	30	40	50	60	70	80		
	(Miles x 1,000)	(0.6)	(6)	(12)	(18)	(24)	(30)	(36)	(42)	(48)		
Engine compartment and under vehicle											QD	TD
Torque of manifolds & exhaust tube nuts		I									MA-41	MA-41
Drive belts		I		I		I		I		I	MA-41	MA-41
Intake & exhaust valve clearance		A		A		A		A		A	MA-41	MA-41
Engine oil (Use API CC or CD oil)★		Replace every 5,000 km (3,000 miles) or 3 months									MA-42	MA-42
Engine oil filter★			R	R	R	R	R	R	R	R	MA-42	MA-42
Engine anti-freeze coolant (Ethylene glycol base)						R				R	MA-43	MA-43
Engine coolant (Soft water)*1			R	R	R	R	R	R	R	R	MA-43	MA-43
Cooling system				I		I		I		I	MA-44	MA-44
Air cleaner filter (Dry paper type)★			C	C	C	R	C	C	C	R	MA-47	MA-47
Air cleaner filter (Viscous paper type)★						R				R	MA-47	MA-47
Cyclone pre-air cleaner★			I	I	I	I	I	I	I	I	MA-47	MA-47
Fuel filter			D	D	D	R	D	D	D	R	MA-45	MA-45
Fuel lines						I				I	MA-46	MA-46
Injection nozzles*2											MA-48	MA-48
Idling speed		I		I		I		I		I	MA-48	MA-48

NOTE: Maintenance items with "★" should be performed more frequently according to "Maintenance Under Severe Driving Conditions".

*1: Models bound for non-emission regulation area

*2: If engine power decreases, black exhaust smoke is emitted or engine noise increases, check and, if necessary, adjust the fuel injection nozzle's starting pressure and the fuel spray pattern.

Engine and Emission Control Maintenance (Cont'd)

GASOLINE ENGINE

Abbreviations: I = Inspect and correct or replace as necessary, R = Replace, A = Adjust, C = Clean.

MAINTENANCE OPERATION		MAINTENANCE INTERVAL									
Perform at the specified months or mileage whichever comes first.	**Months**	**—**	**6**	**12**	**18**	**24**	**30**	**36**	**42**	**48**	Reference page
	km x 1,000	1	10	20	30	40	50	60	70	80	
	(Miles x 1,000)	(0.6)	(6)	(12)	(18)	(24)	(30)	(36)	(42)	(48)	
Engine compartment and under vehicle											KA / NA / Z
Torque of manifolds & exhaust tube nuts & carburetor fixing nuts*2		I									— / MA-22 / MA-32
Intake & exhaust valve clearance*3				A		A		A		A	— / MA-22 / MA-32
Drive belts		I*2		I*2		I		I*2		I	MA-14 / MA-23 / MA-33
Engine oil (Use API SE, SF, SG or SH oil)★			R	R	R	R	R	R	R	R	MA-18 / MA-28 / MA-37
Engine oil filter★			R	R	R	R	R	R	R	R	MA-18 / MA-28 / MA-38
Engine anti-freeze coolant (Ethylene glycol base)						R				R	MA-15 / MA-24 / MA-33
Engine coolant (Soft water)*1			R	R	R	R	R	R	R	R	MA-15 / MA-24 / MA-33
Cooling system				I		I		I		I	MA-16 / MA-25 / MA-35
Fuel filter★						R				R	MA-17 / MA-26 / MA-36
Fuel lines						I				I	MA-17 / MA-26 / MA-36
Air cleaner filter (Dry paper type)★*1			C	C	C	R	C	C	C	R	— / MA-27 / MA-37
Air cleaner filter (Viscous paper type)★						R				R	MA-17 / MA-26 / MA-36
Cyclone pre-air cleaner★			I	I	I	I	I	I	I	I	— / MA-27 / MA-37
Positive crankcase ventilation (PCV) system*2				I*1		I		I*1		I	MA-20 / MA-30 / MA-40
PCV filter★						R				R	MA-20 / MA-27 / MA-37
Spark plugs	(KA24E)		I*2	I*2	I*2	R	I*2	I*2	I*2	R	MA-19 / — / —
	(NA20S & Z24S)		I	R	I	R	I	R	I	R	— / MA-29 / MA-39
Ignition wires						I				I	MA-20 / MA-30 / MA-39
Carburetor idle rpm & mixture ratio		I*1	I*1	I	I*1	I	I*1	I	I*1	I	— / EC-180 / EC-225
Ignition timing			A*1	A	A*1	A	A*1	A	A*1	A	— / EC-180 / EC-225
Vacuum hoses & connections*2				I		I		I		I	MA-20 / MA-30 / MA-40
Heated oxygen sensor						I				I	MA-21 / — / —
Vapor lines						I				I	MA-20 / MA-31 / MA-40

NOTE: Maintenance items with "★" should be performed more frequently according to "Maintenance Under Severe Driving Conditions".

*1: Models bound for non-emission regulation area
*2: Models without three way catalyst
*3: For three way catalyst models, periodic maintenance is not required. However, if valve noise increases, check valve clearance.

Chassis and Body Maintenance

Abbreviations: I = Inspect and correct or replace as necessary, R = Replace, T = Tighten, L = Lubricate.

MAINTENANCE OPERATION		MAINTENANCE INTERVAL									
Perform at the specified months or mileage whichever comes first.	**Months**	**—**	**6**	**12**	**18**	**24**	**30**	**36**	**42**	**48**	Reference page
	km x 1,000	1	10	20	30	40	50	60	70	80	
	(Miles x 1,000)	(0.6)	(6)	(12)	(18)	(24)	(30)	(36)	(42)	(48)	
Underhood and under vehicle											
Brake, clutch & steering gear fluid level & leaks			I	I	I	I	I	I	I	I	MA-51, 54, 56
Brake fluid★						R				R	MA-54
Brake booster vacuum hoses, connections & check valve						I				I	MA-54
Power steering fluid & lines			I*1	I	I*1	I	I*1	I	I*1	I	MA-56
Brake, clutch & exhaust systems			I	I	I	I	I	I	I	I	MA-51, 54
Manual transmission (For level and leaks)*3			I	I	I	I	I	I	I	I	MA-51
Transfer fluid & differential gear oil (For level and leaks)			I	I	I	R	I	I	I	R	MA-51, 52
Steering gear box & linkage, axle & suspension parts, propeller shafts★		I	I	I	I	I	I	I	I	I	MA-52, 56
Body mountings		T		T		T		T		T	BT-23, 26
Outside and inside											
Wheel alignment, if necessary, rotate & balance wheels				I		I		I		I	MA-53 FA-8
Brake pads, disc & other brake components★			I	I	I	I	I	I	I	I	MA-55
Brake linings, drums & other brake components★				I		I		I		I	MA-55
Front wheel bearing grease (4x2)						I				I	FA-6
Front wheel bearing grease (4x4)★				I		R		I		R	FA-6
Locks, hinges & hood latch★			L	L	L	L	L	L	L	L	MA-57
Seat belts, buckles, retractors, anchors & adjuster				I		I		I		I	MA-58
Foot brake, parking brake & clutch (for free play stroke & operation)			I	I	I	I	I	I	I	I	BR-12, 32, 78 CL-6
Air bag system*2											

NOTE: Maintenance items with "★" should be performed more frequently according to "Maintenance Under Severe Driving Conditions".

*1: Models bound for non-emission regulation area
*2: Inspect at the first 10 years, and then every 2 years.
*3: Replace oil at 100,000 km (60,000 miles)

Maintenance Under Severe Driving Conditions

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

Severe driving conditions

A — Driving under dusty conditions
B — Driving repeatedly short distances
C — Towing a trailer or caravan
D — Extensive idling
E — Driving in extremely adverse weather conditions or in areas where ambient temperatures are either extremely low or extremely high
F — Driving in high humidity areas or in mountainous areas
G — Driving in areas using salt or other corrosive materials
H — Driving on rough and/or muddy roads or in the desert
I — Driving with frequent use of braking or in mountainous areas
J — Frequent driving in water

Maintenance operation: Check = Check and correct or replace as necessary.

Driving condition										Maintenance item		Maintenance operation	Maintenance interval	Reference page
A	B	C	D	.	.	.	.	.	.	Engine oil & oil filter				
											Gasoline engine	Replace	Every 3 months or 5,000 km (3,000 miles)	MA-18, 28, 37
											Diesel engine	Replace	More frequently	MA-42
A	.	.	.	.	.	.	.	.	.	Air cleaner filter				
											Dry paper type	Clean	More frequently	MA-27, 37, 47
											Viscous paper type	Replace		MA-17, 26, 36, 47
											Cyclone pre-air cleaner	Check		MA-27, 37, 47
											Positive crankcase ventilation filter	Replace		MA-20, 27, 37
A	.	.	.	E	.	.	.	.	.	Fuel filter		Replace	Every 20,000 km (12,000 miles) or 12 months	MA-17, 26, 36
.	.	.	.	.	F	.	.	.	.	Brake fluid		Replace		MA-54
.	.	.	.	.	.	G	H	.	.	Steering gear & linkage, axle & suspension parts & propeller shaft & front drive shafts		Check	Every 10,000 km (6,000 miles) or 6 months	MA-52, 56 FA-6, RA-5
A	.	C	.	.	.	G	H	I	.	Brake pads, discs & other brake components		Check	Every 5,000 km (3,000 miles) or 3 months	MA-55
.	.	.	.	.	.	G	.	.	.	Lock, hinges & hood latch		Lubricate		MA-57
.	.	.	.	.	.	.	.	.	J	Front wheel bearing grease & free-running hub grease (4×4)		Check		FA-6
A	.	C	.	.	.	G	H	I	.	Brake linings, drums & other brake components		Check	Every 6 months or 10,000 km (6,000 miles)	MA-55

Maintenance Under Severe Driving Conditions (Cont'd)

Maintenance for off-road driving (4x4 only)

Whenever you drive off-road through sand, mud or water as deep as the wheel hub, more frequent maintenance may be required of the following items:

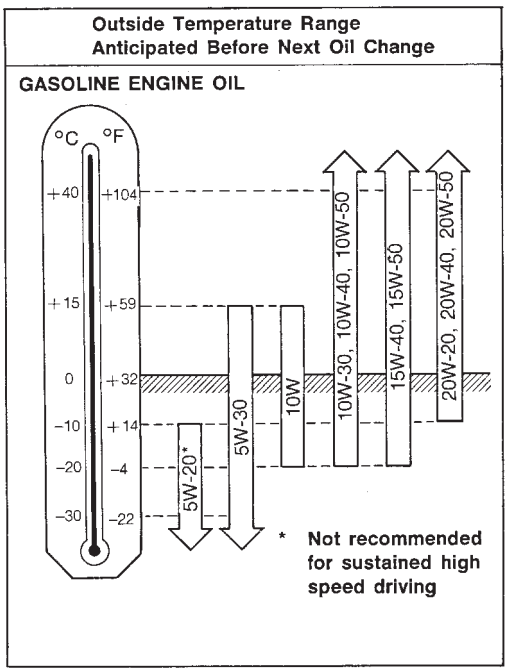
- ▲ Brake pads and discs
- ▲ Brake lining and drums
- ▲ Brake lines and hoses
- ▲ Wheel bearing grease and free-running hub grease
- ▲ Differential, transmission and transfer oil
- ▲ Steering linkage
- ▲ Propeller shafts and front drive shafts
- ▲ Air cleaner filter
- ▲ Clutch housing (Check water entry. Refer to MA-51.)

Fluids and Lubricants

		Capacity (Approximate)		Recommended Fluids/Lubricants
		Liter	Imp measure	
Engine oil (Refill)				
With oil filter				
	NA20S	3.8	3-3/8 qt	Gasoline engine: API SE, SF, SG or SH*1 Diesel engine: API CC or CD*1
	Z24S	2WD 3.8 4WD 4.3	3-3/8 qt 3-3/4 qt	
	KA24E	2WD 3.9 4WD 4.1	3-3/8 qt 3-5/8 qt	
	TD27	7.2	6-3/8 qt	
	QD32	7.9	7 qt	
Without oil filter				
	NA20S	3.4	3 qt	
	Z24S	2WD 3.3 4WD 3.8	2-7/8 qt 3-3/8 qt	
	KA24E	2WD 3.5 4WD 3.7	3-1/8 qt 3-1/4 qt	
	TD27	6.5	5-3/4 qt	
	QD32	7.2	6-3/8 qt	
Cooling system (With reservoir)				
	NA20S	6.8	6 qt	Anti-freeze coolant (Ethylene glycol base) or soft water
	Z24S	With A/C 8.9 Without A/C 8.7	7-7/8 qt 7-5/8 qt	
	KA24E	6.7	5-7/8 qt	
	TD27	9.5	8-3/8 qt	
	QD32	9.4, 10.2*4	8-1/4 qt, 9 qt*4	
Manual transmission gear oil	FS5R30A	4WD 5.1	9 pt	API GL-4*1
	FS5W71C	2WD 2.0 4WD 4.9	3-1/2 pt 8-5/8 pt	
Transfer fluid	TX10A	2.2	2 qt	Nissan Matic “D” or Equivalent Automatic Transmission Fluid*2 or API GL-4*1
Differential gear oil				
Front:	R180A	1.3	2-1/4 pt	Standard differential gear: API GL-5*1 Limited-slip differential (LSD) gear: Gear Oil Hypoid LSD (Part No.: KLD31-14002) or equivalent*3
Rear:	C200	1.3	2-1/4 pt	
	H233B	2.8	4-7/8 pt	
Power steering fluid		—	—	Type DEXRON™IIE, DEXRON™III or equivalent
Brake and clutch fluid		—	—	DOT 3 (US FMVSS No. 116)
Propeller shaft grease		—	—	NLGI No. 2 (Molybdenum disulphide lithium soap base)
Multi-purpose grease		—	—	NLGI No. 2 (Lithium soap base)

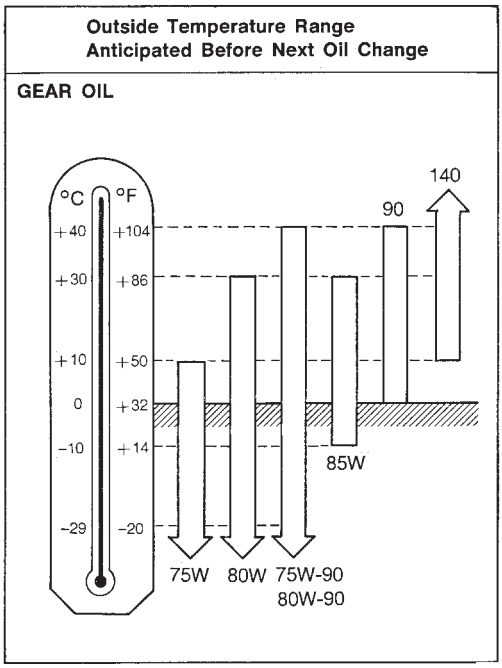
*1: For further details, see “SAE Viscosity Number”.
*2: Contact a NISSAN dealership for more information regarding suitable fluid, including recommended brand(s) of DEXRON™III/MERCON™ Automatic Transmission Fluid.
*3: API GL-5, SAE 140 and 10% volume of LSD Friction Modifier (Part No.: 38469-C6000) is an equivalent.
*4: For Australia or models with air conditioner.

SAE Viscosity Number



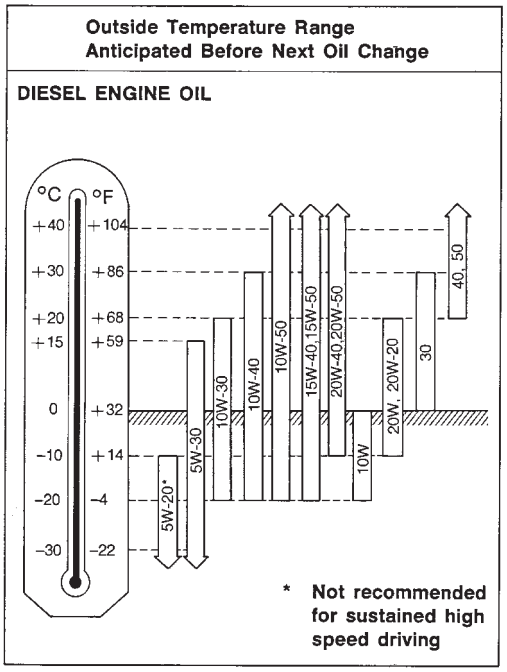
TI0005

- **For warm and cold areas: 10W-30 is preferable for ambient temperatures above −20°C (−4°F).**
- **For hot areas: 20W-20, 20W-40 and 20W-50 are suitable.**



TI0003

- **For warm and cold areas: 75W-90 for transfer and 80W-90 for differential are preferable.**
- **For hot areas: 90 is suitable for ambient temperatures below 40°C (104°F).**
- **For all areas: 75W-90 for transmission is preferable.**



TI0006

- **For cold areas: 10W-30 is preferable.**
- **For hot and warm areas: 20W-40 and 20W-50 are suitable.**

Anti-freeze Coolant Mixture Ratio

The engine cooling system is filled at the factory with a high-quality, year-round, anti-freeze coolant solution. The anti-freeze solution contains rust and corrosion inhibitors. Therefore, additional cooling system additives are not necessary.

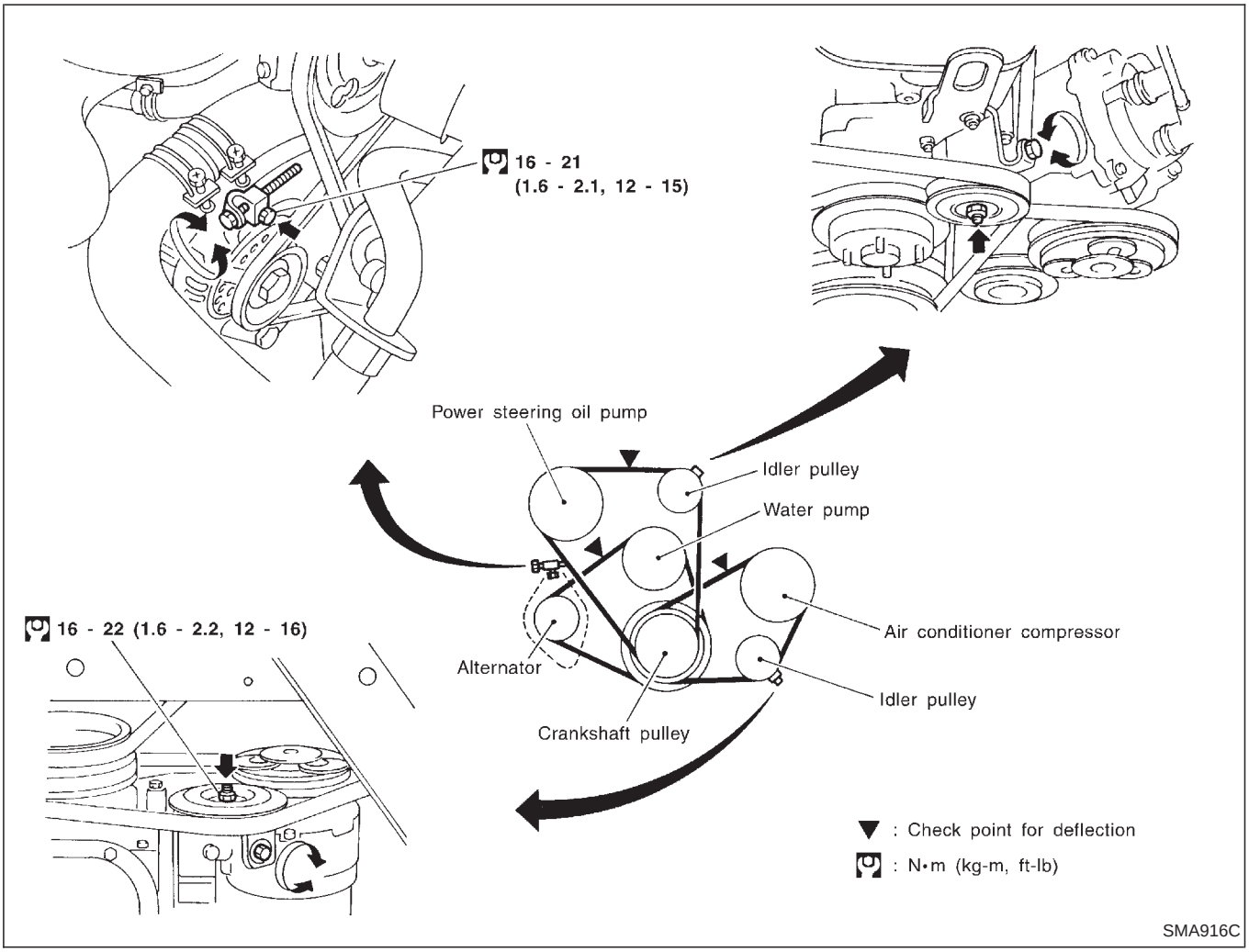
CAUTION:

When adding or replacing coolant, be sure to use only an ethylene glycol anti-freeze with the proper mixture ratio. See the following examples:

Outside temperature down to		Anti-freeze	Soft water
°C	°F		
−15	5	30%	70%
−35	−30	50%	50%

The use of other types of coolant solutions may damage your cooling system.

Checking Drive Belts



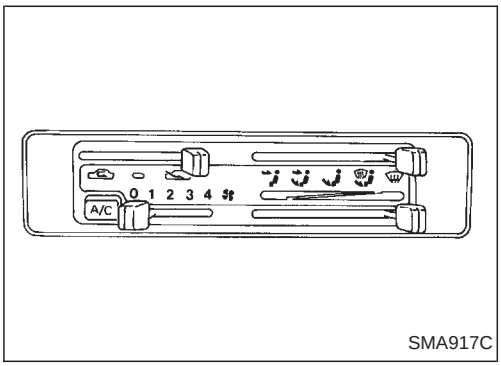
1. Inspect for cracks, fraying, wear or oil. If necessary, replace with a new one.
2. Inspect drive belt deflections by pushing midway between pulleys.

Adjust if belt deflections exceed the limit.
Belt deflection:

Unit: mm (in)

	Used belt deflection		Deflection of new belt
	Limit	Deflection after adjustment	
Alternator	17 (0.67)	10 - 12 (0.39 - 0.47)	8 - 10 (0.31 - 0.39)
Air conditioner compressor	16 (0.63)	10 - 12 (0.39 - 0.47)	8 - 10 (0.31 - 0.39)
Power steering oil pump	15 (0.59)	9 - 11 (0.35 - 0.43)	7 - 9 (0.28 - 0.35)
Applied pushing force	98 N (10 kg, 22 lb)		

Inspect drive belt deflections when engine is cold.



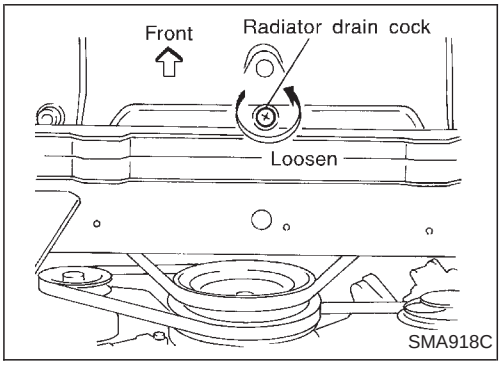
SMA917C

Changing Engine Coolant

WARNING:

To avoid being scalded, never change the coolant when the engine is hot.

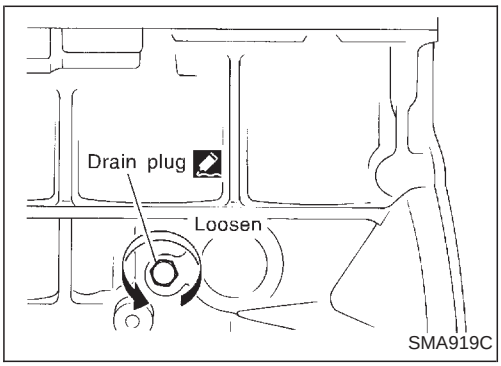
1. Move heater “TEMP” control lever all the way to “HOT” position.



SMA918C

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

Be careful not to allow coolant to contact drive belts.



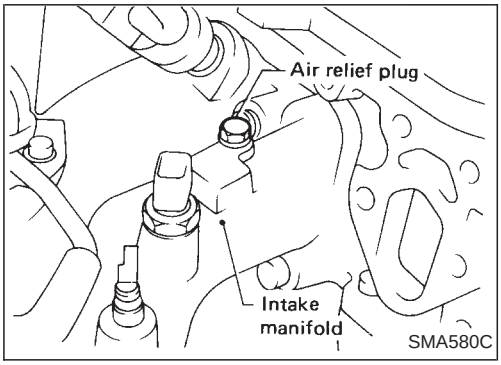
SMA919C

3. Remove cylinder block drain plug.
4. Close drain cock and tighten drain plug securely.

- **Apply sealant to the thread of drain plug.**

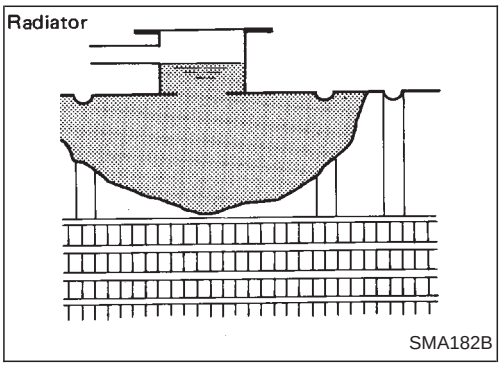
: 34 - 44 N·m
(3.5 - 4.5 kg-m, 25 - 33 ft-lb)

5. Open air relief plug.
6. Fill radiator with water and close air relief plug and radiator cap.
7. Run engine and warm it up sufficiently.
8. Race engine 2 or 3 times under no-load.
9. Stop engine and wait until it cools down.
10. Repeat step 2 through step 9 until clear water begins to drain from radiator.
11. Drain water.



SMA580C

Changing Engine Coolant (Cont'd)

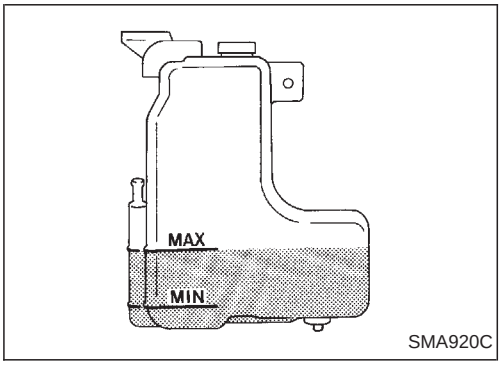


12. Open radiator cap and air relief plug.
13. Fill radiator with coolant up to specified level.
    Follow instructions attached to anti-freeze container for mixing ratio of anti-freeze to water.

For coolant mixture ratio, refer to MA-13.

Unit: ℓ (Imp qt)

	Coolant capacity:	
	2WD	4WD
Without reservoir tank	6.1 (5-3/8)	
Reservoir tank	0.6 (1/2)	



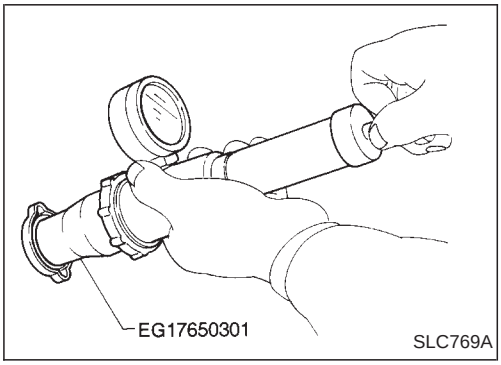
Pour coolant through coolant filler neck slowly to allow air in system to escape.

14. Close air relief plug.
15. Remove reservoir tank, drain coolant, then clean reservoir tank.
16. Install reservoir tank and fill it with coolant up to "MAX" level and then install radiator cap.
17. Run engine and warm it up sufficiently.
18. Race engine 2 or 3 times under no-load.
19. Stop engine and cool it down, then add coolant as necessary.

Checking Cooling System

CHECKING HOSES

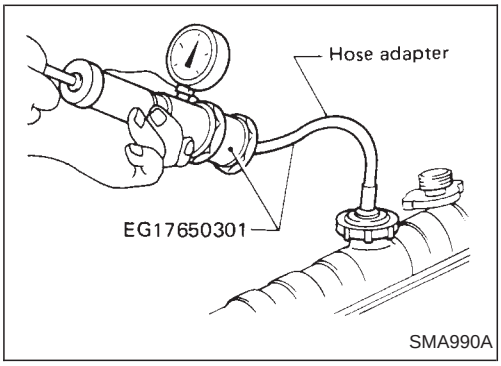
Check hoses for proper attachment, leaks, cracks, damage, loose connections, chafing and deterioration.



CHECKING RADIATOR CAP

Apply pressure to radiator cap by means of a cap tester to see if it is satisfactory.

Radiator cap relief pressure:
78 - 98 kPa
(0.78 - 1.0 bar, 0.8 - 1.0 kg/cm^2, 11 - 14 psi)

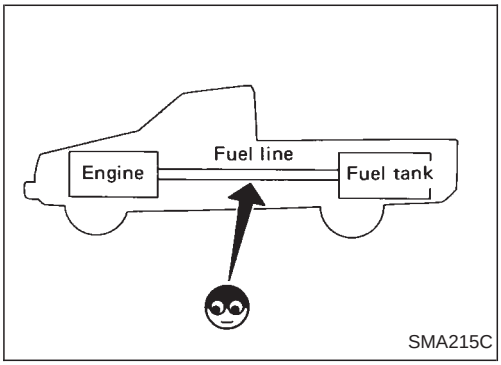


CHECKING COOLING SYSTEM FOR LEAKS

Apply pressure to the cooling system with cap tester to check for leakage.

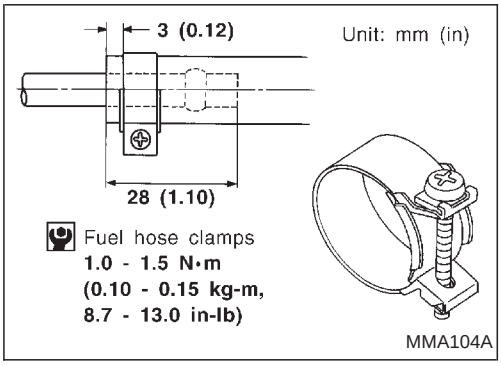
Testing pressure:
157 kPa (1.57 bar, 1.6 kg/cm^2, 23 psi)

CAUTION:
Higher pressure than the specified value may cause damage to the radiator.

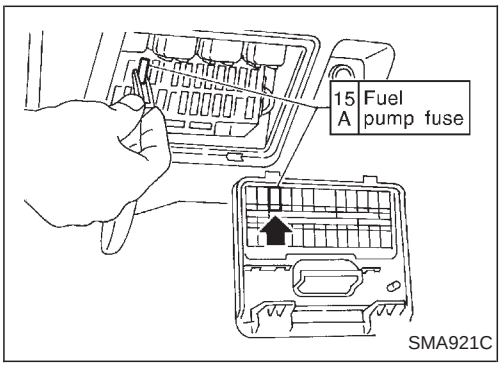


Checking Fuel Lines

Inspect fuel lines and tank for improper attachment and for leaks, cracks, damage, loose connections, chafing and deterioration.
If necessary, repair or replace malfunctioning parts.



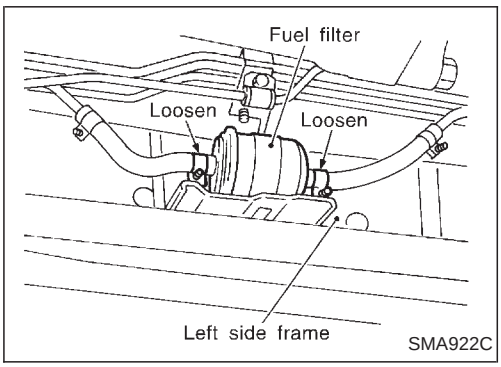
CAUTION:
Tighten high-pressure rubber hose clamp so that clamp end is 3 mm (0.12 in) from hose end.
Tightening torque specifications are the same for all rubber hose clamps.
Ensure that screw does not contact adjacent parts.



Changing Fuel Filter

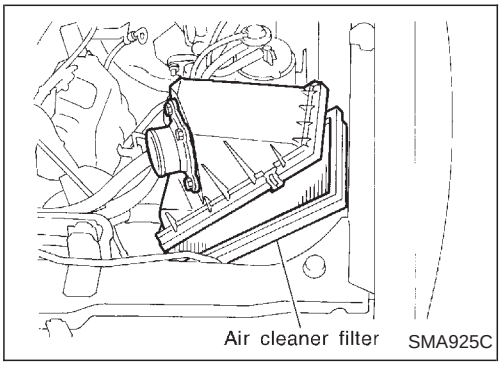
WARNING:
Before removing fuel filter, release fuel pressure from fuel line.

1. Remove fuse for fuel pump.
2. Start engine.
3. After engine stalls, crank engine two or three times to make sure that fuel pressure is released.
4. Turn ignition switch OFF and install fuse for fuel pump.



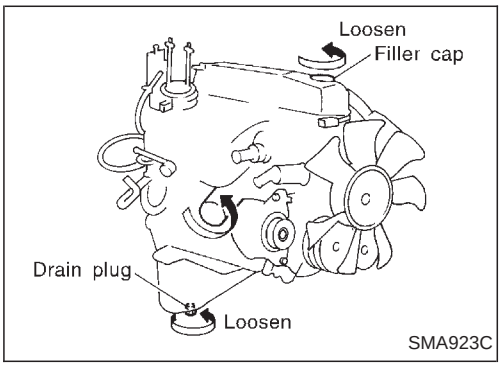
5. Loosen fuel hose clamps.
6. Replace fuel filter.

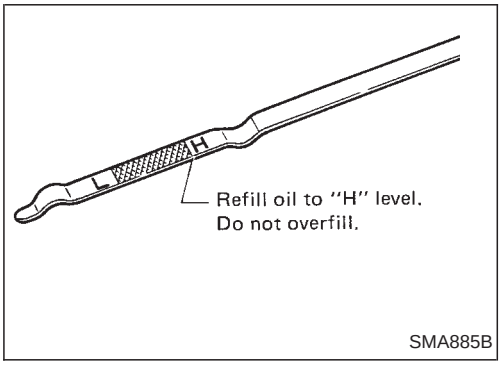
- **Be careful not to spill fuel or engine compartment. Place a shop towel to absorb fuel.**
- **Use a high-pressure type fuel filter. Do not use a synthetic resinous fuel filter.**
- **When tightening fuel hose clamps, refer to “Checking Fuel Lines”, MA-17.**



Changing Air Cleaner Filter (Viscous paper type)

The viscous paper type filter does not need cleaning between renewals.





Changing Engine Oil

WARNING:

- **Be careful not to burn yourself, as the engine oil is hot.**
- **Prolonged and repeated contact with used engine oil may cause skin cancer; try to avoid direct skin contact with used oil. If skin contact is made, wash thoroughly with soap or hand cleaner as soon as possible.**

1. Warm up engine, and check for oil leakage from engine components.
2. Remove drain plug and oil filler cap.
3. Drain oil and refill with new engine oil.

Oil grade: API SE, SF, SG or SH
Viscosity: See "RECOMMENDED FLUIDS AND LUBRICANTS", MA-11.
Refill oil capacity (Approximately):

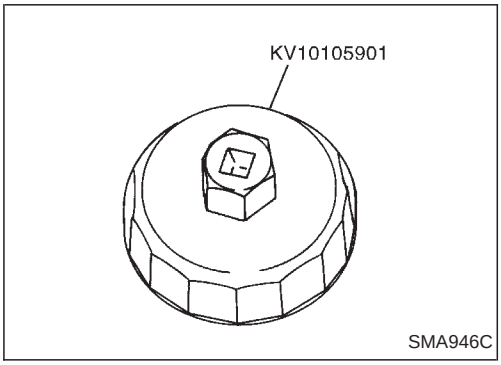
Unit: ℓ (Imp qt)

	2WD	4WD
With oil filter change	3.9 (3-3/8)	4.1 (3-5/8)
Without oil filter change	3.5 (3-1/8)	3.7 (3-1/4)

CAUTION:

- **Be sure to clean drain plug and install with new washer.**
  Drain plug:
  : 29 - 39 N·m (3.0 - 4.0 kg-m, 22 - 29 ft-lb)
- **Use recommended engine oil.**
- **The refill capacity changes depending on the oil temperature and drain time, use these values as a reference and be certain to check with the dipstick when changing the oil.**

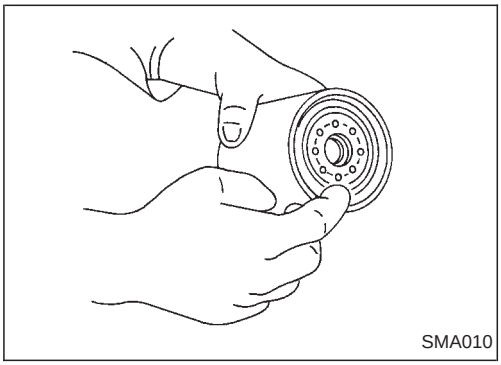
4. Check oil level.
5. Start engine and check area around drain plug and oil filter for oil leakage.
6. Run engine for a few minutes, then turn it off. After several minutes, check oil level.



Changing Oil Filter

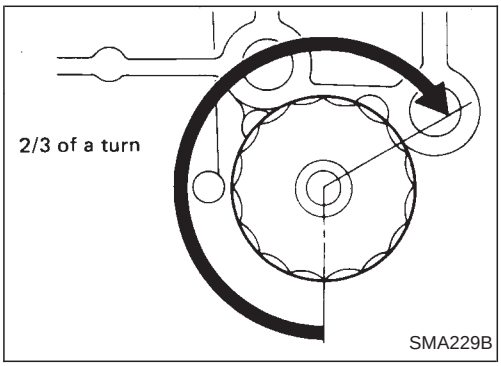
1. Remove oil filter with a suitable tool.

WARNING:
Be careful not to burn yourself, as the engine and the engine oil are hot.



2. Before installing a new oil filter, clean the oil filter mounting surface on cylinder block, and coat the rubber seal of oil filter with a little engine oil.

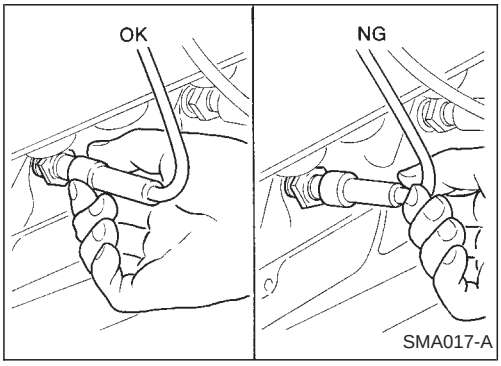
Changing Oil Filter (Cont'd)



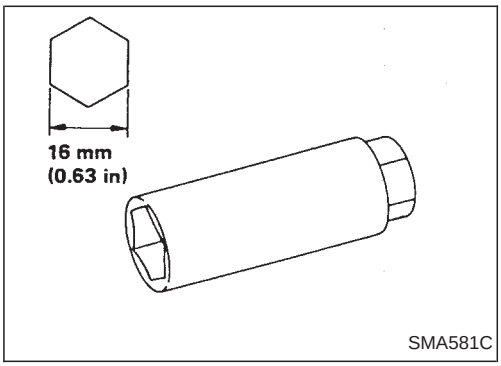
3. Screw in the oil filter until a slight resistance is felt, then tighten additionally more than 2/3 turn.
4. Add engine oil.

Refer to "Changing Engine Oil", MA-18.

Checking and Changing Spark Plugs



1. Disconnect ignition wires from spark plugs at boot. Do not pull on the wire.



2. Remove spark plugs with spark plug wrench.
3. Clean plugs in sand blast cleaner.
4. Check insulator for cracks or chips, gasket for damage or deterioration and electrode for wear and burning. If they are excessively worn away, replace with new spark plugs.

Spark plug:

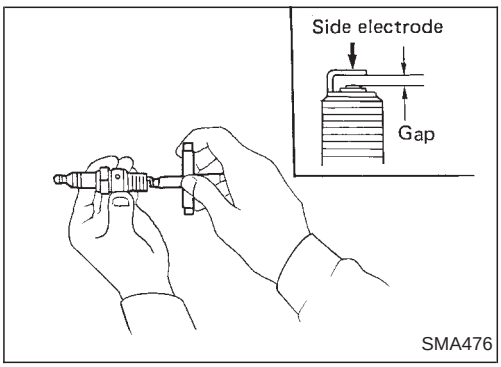
Make	NGK
Standard type	ZFR5E-11
Hot type	ZFR4E-11
Cold type	ZFR6E-11

Use standard type spark plug for normal condition.
The hot type spark plug is suitable when fouling occurs with the standard type spark plug under conditions such as:

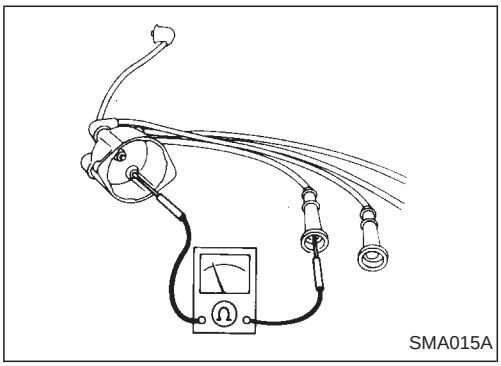
- frequent engine starts
- low ambient temperatures

The cold type spark plug is suitable when spark knock occurs with the standard type spark plug under conditions such as:

- extended highway driving
- frequent high engine revolution

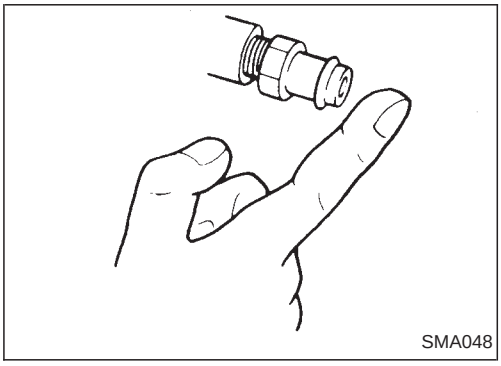


5. Check spark plug gap.
   Gap: 1.0 - 1.1 mm (0.039 - 0.043 in)
6. Install spark plugs. Reconnect ignition wires according to numbers indicated on them.
   Spark plug:
   : 20 - 29 N·m
   (2.0 - 3.0 kg-m, 14 - 22 ft-lb)


SMA015A

Checking Ignition Wires

1. Check the high tension wires for cracks, damage, burned terminals and for proper fit.
2. Measure the resistance of the high tension wires, by shaking them and checking for intermittent breaks.
   Resistance: Less than 12.2 kΩ/m (3.72 kΩ/ft)


SMA048

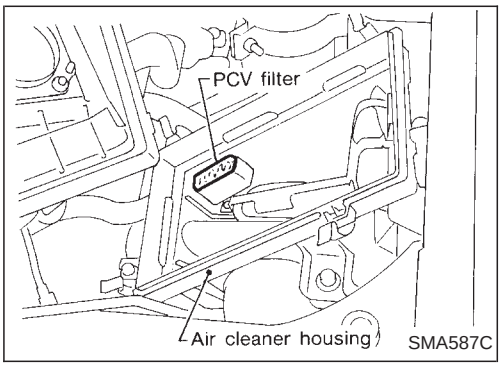
Checking Positive Crankcase Ventilation (PCV) System

CHECKING PCV VALVE

With engine running at idle, remove ventilation hose from PCV valve; if valve is working properly, a hissing noise will be heard as air passes through it and a strong vacuum should be felt immediately when a finger is placed over valve inlet.

CHECKING VENTILATION HOSES

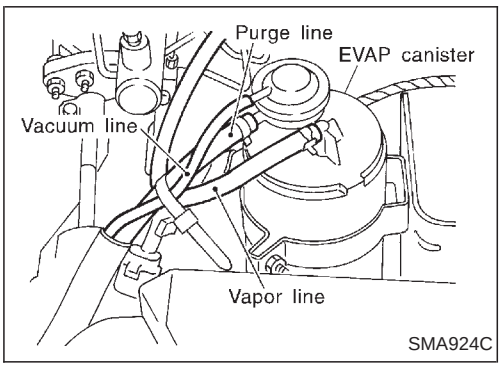
1. Check hoses and hose connections for leaks.
2. Disconnect all hoses and clean with compressed air. If any hose cannot be freed of obstructions, replace.



SMA587C

Changing Positive Crankcase Ventilation (PCV) Filter

Remove air cleaner cover and take out PCV filter located inside air cleaner cover. Then install new PCV filter.



SMA924C

Checking Vacuum Hoses and Connections

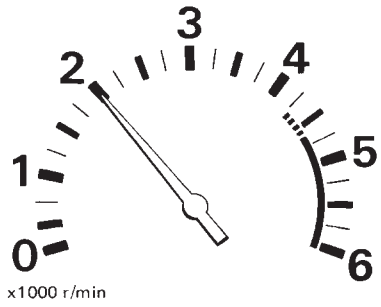
Check vacuum hoses for improper attachment and for leaks, cracks, damage, loose connections, chafing and deterioration.
Refer to Vacuum Hose Drawing in ENGINE AND EMISSION CONTROL OVERALL SYSTEM in EC section.

Checking Vapor Lines

1. Visually inspect vapor lines for improper attachment and for cracks, damage, loose connections, chafing and deterioration.
2. Inspect vacuum relief valve of fuel tank filler cap for clogging, sticking, etc.

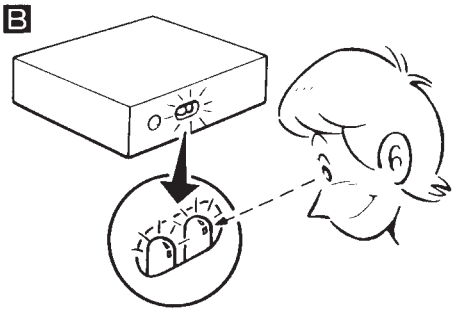
Refer to EVAPORATIVE EMISSION CONTROL SYSTEM INSPECTION in EC section.

A



SMA406B

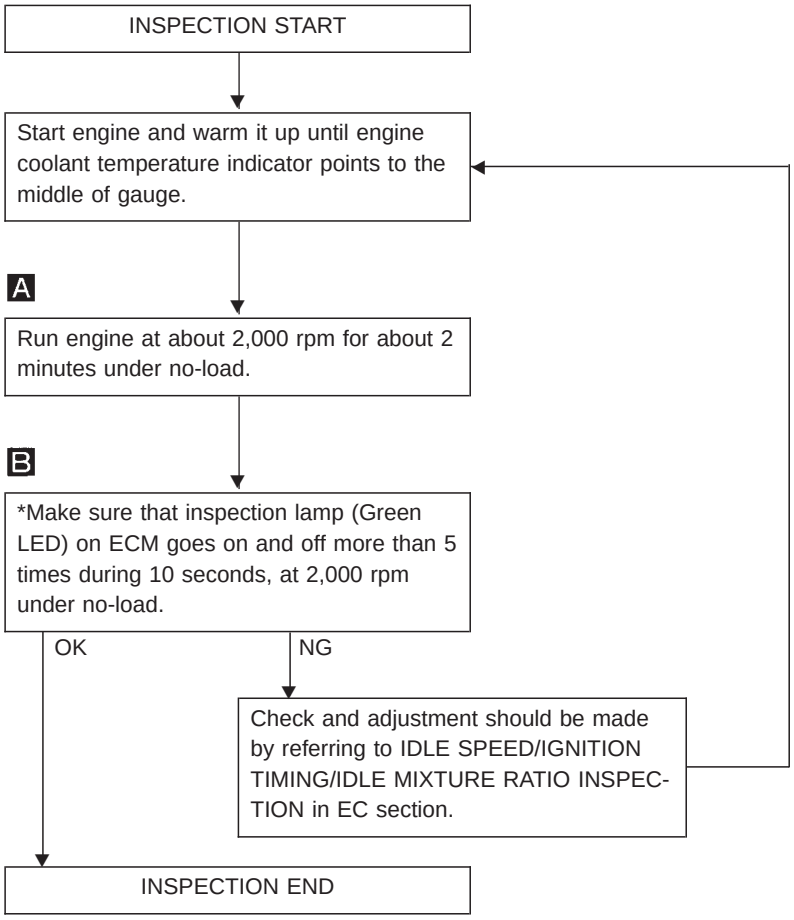
B



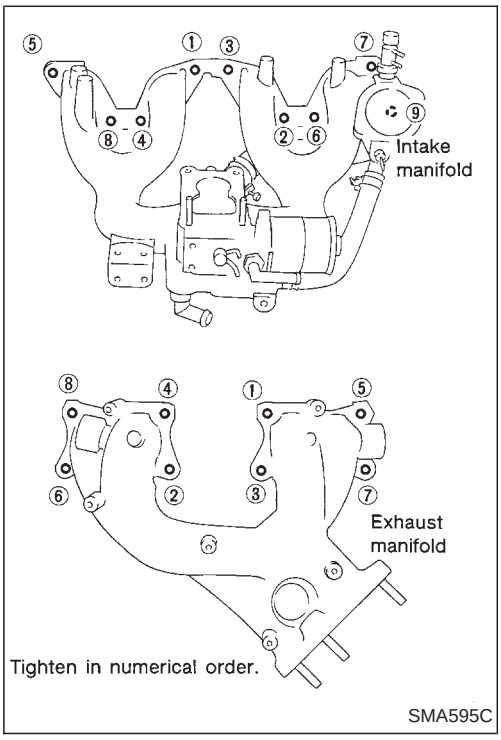
SEF292H

Checking Heated Oxygen Sensor

Checking procedure



* ● Make sure that diagnostic mode is mode I or mode II.
● Make sure that diagnostic mode selector is turned fully counterclockwise.
Refer to Self-diagnosis in EC section.



Checking Tightening Torque

- **Checking should be performed while engine is cold.**

Manifold bolts and nuts:

Intake manifold

: 16 - 21 N·m
(1.6 - 2.1 kg-m, 12 - 15 ft-lb)

Exhaust manifold

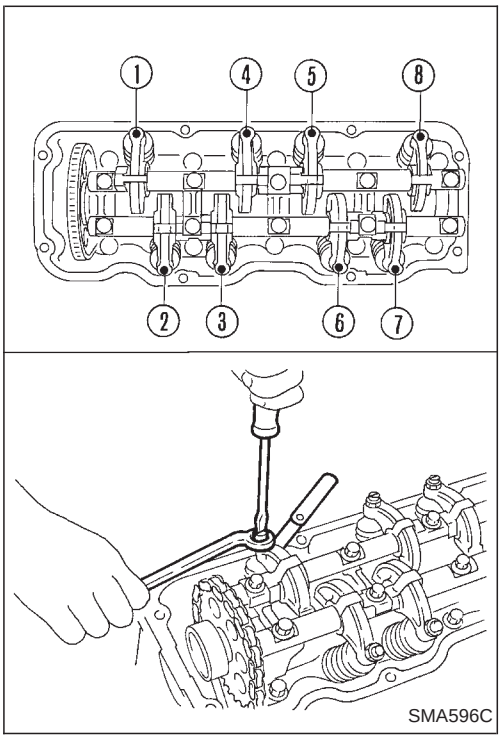
: 20 - 24 N·m
(2.0 - 2.4 kg-m, 14 - 17 ft-lb)

Exhaust tube nuts:

: 51 - 65 N·m
(5.2 - 6.6 kg-m, 38 - 48 ft-lb)

Carburetor bolts:

: 21 - 26 N·m
(2.1 - 2.7 kg-m, 15 - 20 ft-lb)



Adjusting Intake and Exhaust Valve Clearance

Adjustment should be made while engine is warm but not running.

1. Set No. 1 cylinder at top dead center on its compression stroke, and adjust valve clearances ① , ② , ④ and ⑥ .
2. Set No. 4 cylinder at top dead center on its compression stroke, and adjust valve clearances ③ , ⑤ , ⑦ and ⑧ .

Valve clearance:

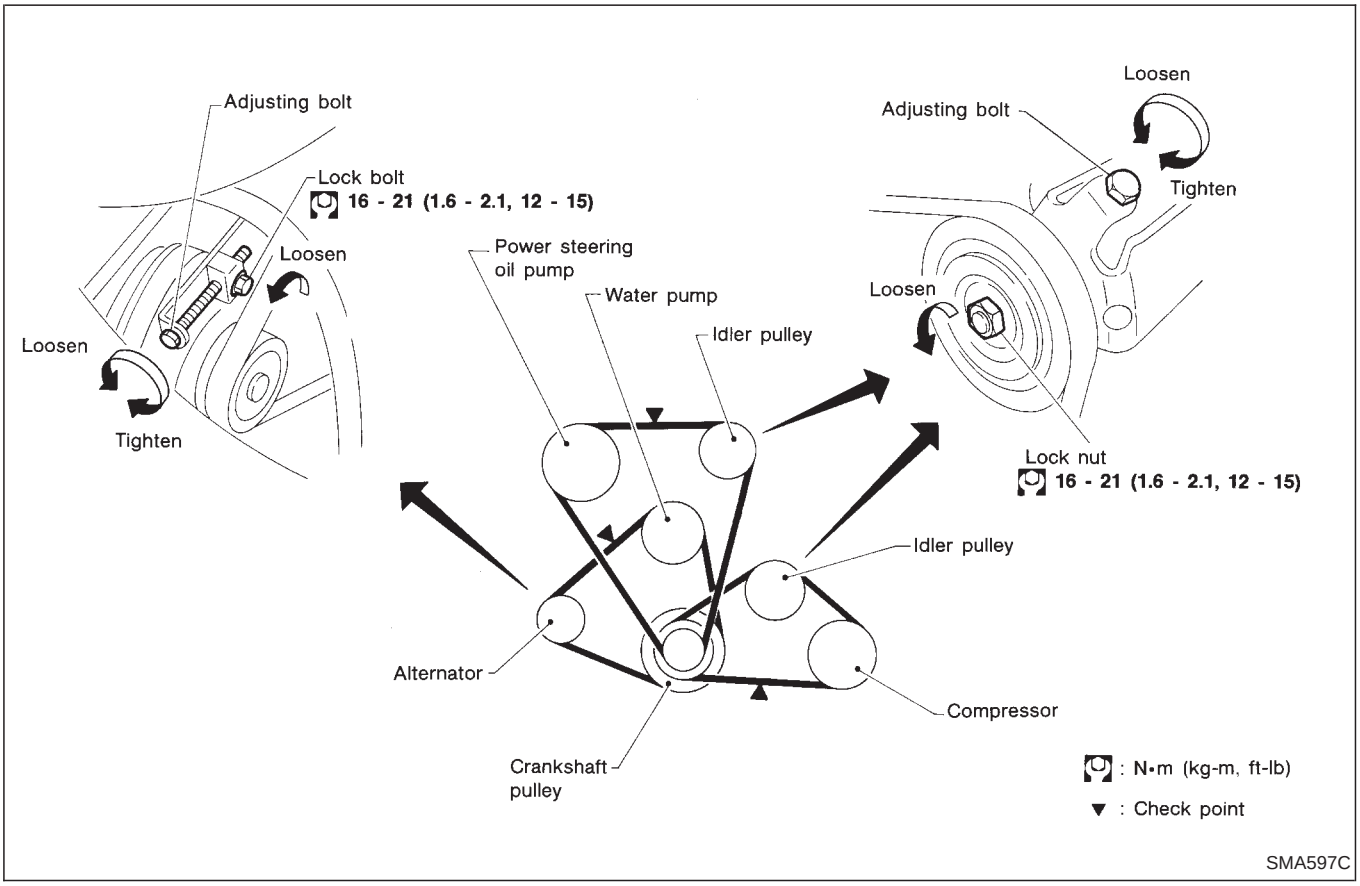
Intake ① , ④ , ⑤ and ⑧
0.30 mm (0.012 in)

Exhaust ② , ③ , ⑥ and ⑦
0.30 mm (0.012 in)

Adjusting screw lock nuts:

: 12 - 16 N·m (1.2 - 1.6 kg-m, 9 - 12 ft-lb)

Checking Drive Belts

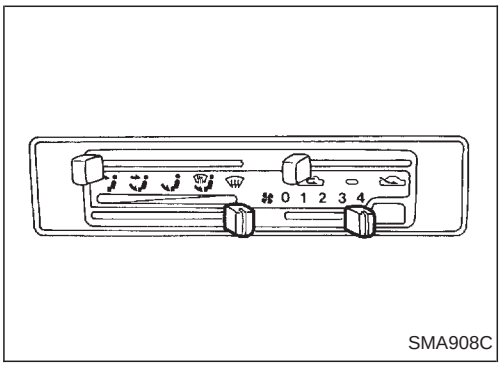


1. Inspect for cracks, fraying, wear or oil adhesion. If necessary, replace with a new one.
2. Inspect drive belt deflections by pushing on the belt midway between pulleys.

Inspect drive belt deflections when engine is cold.
Adjust if belt deflections exceed the limit.
Belt deflection:

Unit: mm (in)

	Used belt deflection		Deflection of new belt
	Limit	Deflection after adjustment	
Alternator	12 (0.47)	8 - 10 (0.31 - 0.39)	7 - 8 (0.28 - 0.31)
Power steering oil pump	16 (0.63)	10 - 12 (0.39 - 0.47)	8 - 10 (0.31 - 0.39)
Compressor	13 (0.51)	8 - 10 (0.31 - 0.39)	6 - 8 (0.24 - 0.31)
Applied pushing force	98 N (10 kg, 22 lb)		



Changing Engine Coolant

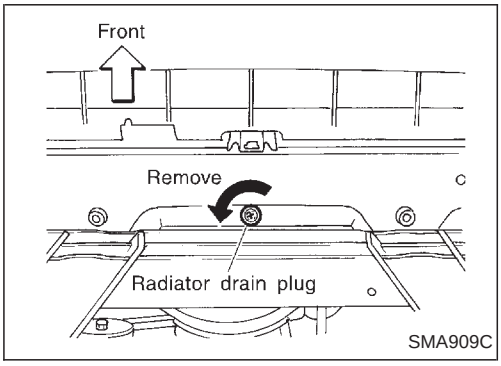
WARNING:

To avoid being scalded, never change the coolant when the engine is hot.

— DRAINING ENGINE COOLANT —

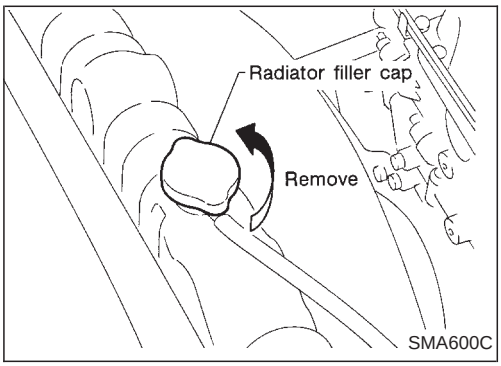
1. Move heater “TEMP” control lever all the way to “HOT”.

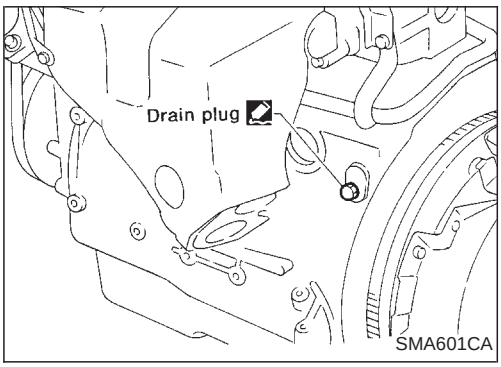
- **Make sure that air conditioner switch is “OFF”.**



2. Open radiator drain plug at the bottom of radiator, and remove radiator filler cap.
3. Remove reservoir tank, drain coolant, then clean reservoir tank. Install it temporarily.

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





4. Remove cylinder block drain plug.

— FLUSHING COOLING SYSTEM —

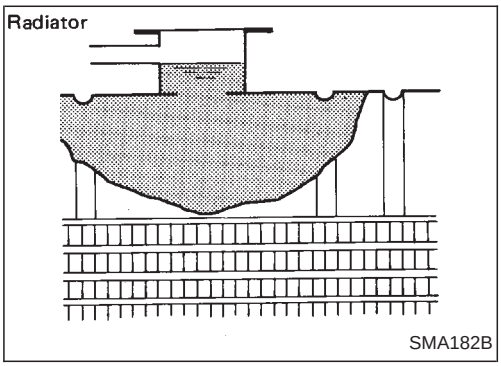
5. Install then tighten radiator drain plug and cylinder block drain plug securely.
6. Fill radiator and reservoir tank with water and reinstall radiator cap.
7. Warm up engine sufficiently, then race engine 2 or 3 times under no-load.
8. Stop engine and wait until it cools down.
9. Repeat steps 2 through 8 until clear water begins to drain from radiator.
10. Drain water.

— REFILLING ENGINE COOLANT —

- **Apply sealant to the thread of cylinder block drain plug.**
  : 34 - 44 N·m (3.5 - 4.5 kg-m, 25 - 33 ft-lb)

11. Install reservoir tank, radiator drain plug and cylinder block drain plug and retighten securely.
12. Fill radiator and reservoir tank with coolant up to specified level and install radiator cap.

Changing Engine Coolant (Cont'd)

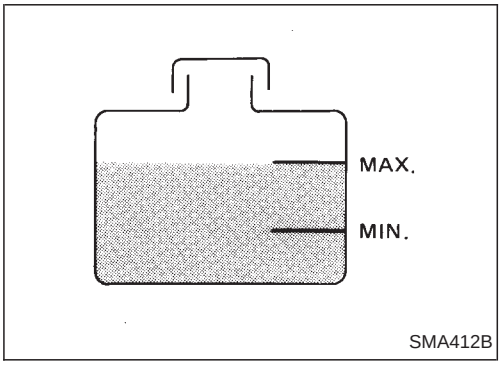


SMA182B

For coolant mixture ratio, refer to MA-13.
Coolant capacity:

Unit: ℓ (Imp qt)

With heater	6.2 (5-1/2)



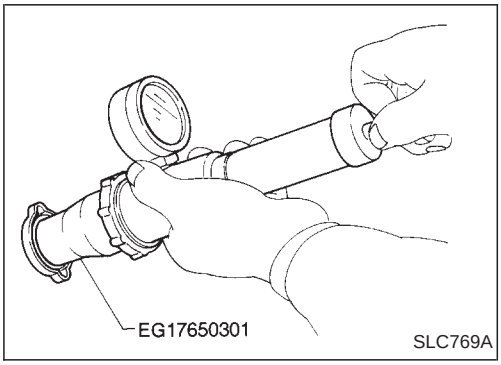
SMA412B

Reservoir tank capacity (for MAX level):
0.6 ℓ (1/2 Imp qt)
Pour coolant through coolant filler neck slowly to allow air in system to escape.

Checking Cooling System

CHECKING HOSES

Check hoses for proper attachment and for leaks, cracks, damage, loose connections, chafing and deterioration.

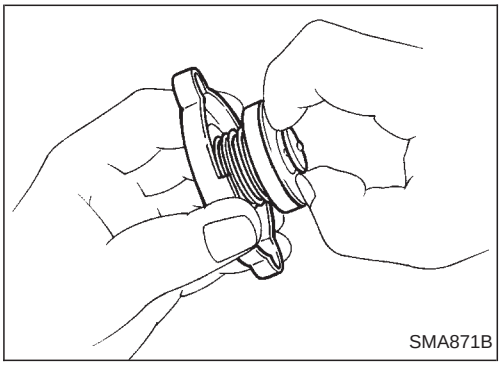


SLC769A

CHECKING RADIATOR CAP

Apply pressure to radiator cap with cap tester to see if it is satisfactory.

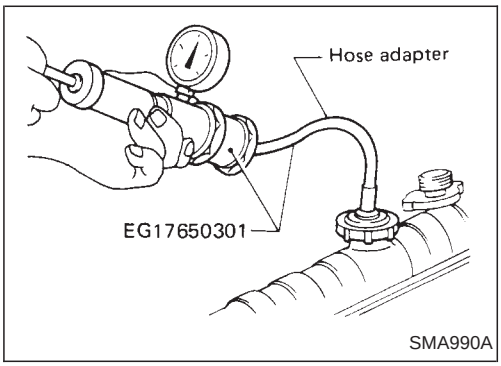
Radiator cap relief pressure:
Standard
78 - 98 kPa
(0.78 - 0.98 bar, 0.8 - 1.0 kg/cm^2, 11 - 14 psi)
Limit
59 - 98 kPa
(0.59 - 0.98 bar, 0.6 - 1.0 kg/cm^2, 9 - 14 psi)


SMA871B

Pull the negative-pressure valve to open it. Check that it closes completely when released.

Checking Cooling System (Cont'd)

CHECKING COOLING SYSTEM FOR LEAKS

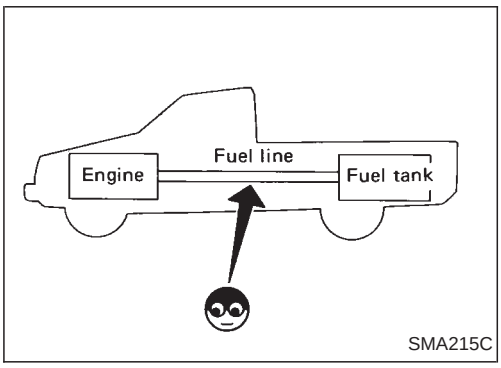


Apply pressure to the cooling system with cap tester to check for leakage.

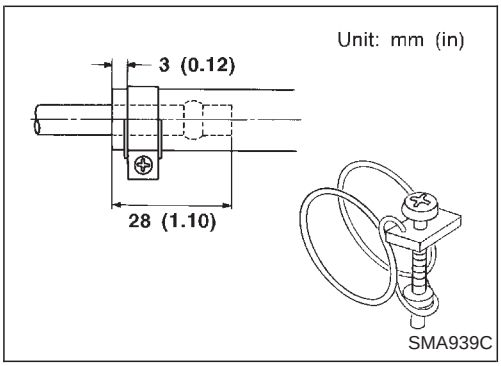
Testing pressure:
157 kPa (1.57 bar, 1.6 kg/cm^2, 23 psi)

CAUTION:
Higher pressure than the specified value may cause damage to radiator.

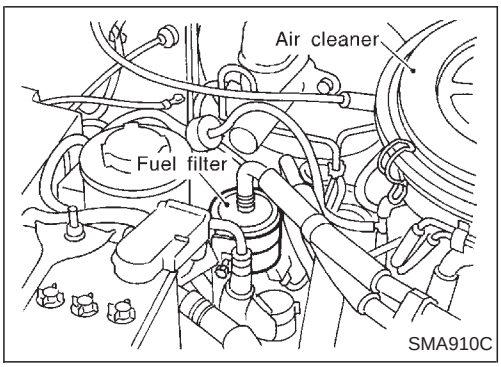
Checking Fuel Lines



Inspect fuel lines and tank for improper attachment, leaks, cracks, damage, chafing or deterioration.
If necessary, repair or replace.



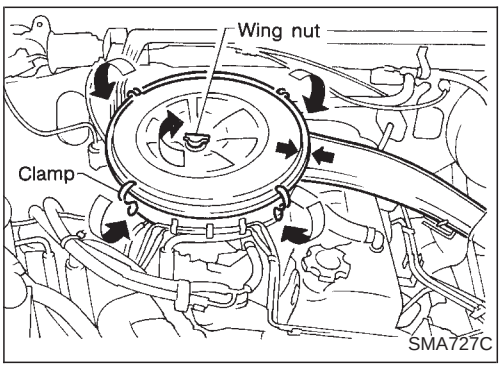
Changing Fuel Filter



1. Remove fuel filter from support bracket.
2. Loosen fuel hose clamps.
3. Replace fuel filter.

- **Be careful not to spill fuel over engine compartment. Place a shop towel to absorb fuel.**
- **Use a high-pressure type fuel filter. Do not use a synthetic resinous fuel filter.**
- **When tightening fuel hose clamps, refer to "Checking Fuel Lines".**

Changing Air Cleaner Filter

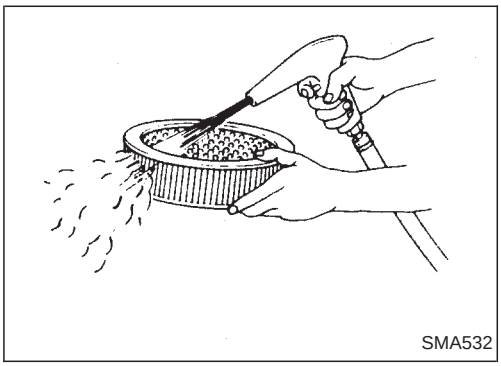


To properly tighten wing nuts, position clamps at four places and tighten wing nuts until they touch air cleaner. Then tighten them three more turns.

Viscous paper type

The viscous paper type filter does not need cleaning between replacement intervals.

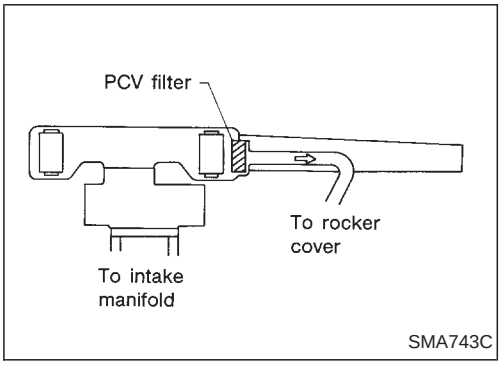
Changing Air Cleaner Filter (Cont'd)


SMA532

Dry paper type

It is necessary to clean the element or replace it at the recommended intervals, more often under dusty driving conditions.

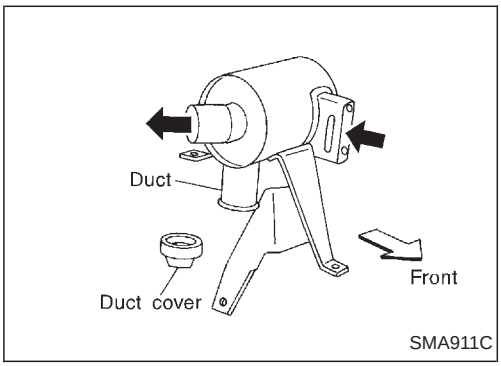
Positive Crankcase Ventilation (PCV) Filter Replacement



SMA743C

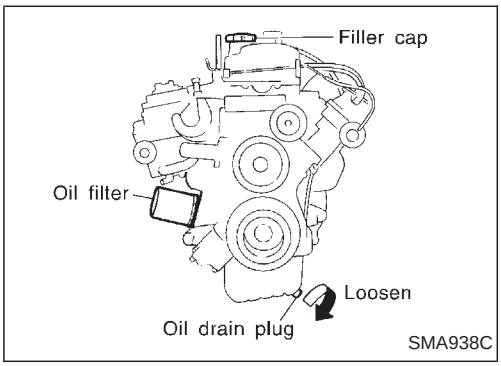
Remove air cleaner cover and replace PCV filter.

Checking Cyclone Pre-air Cleaner



SMA911C

Remove dust cover and check duct for dust clogging. Clean away any dust.



Changing Engine Oil

WARNING:

- **Be careful not to burn yourself, as the engine oil is hot.**
- **Prolonged and repeated contact with used engine oil may cause skin cancer; try to avoid direct skin contact with used oil. If skin contact is made, wash thoroughly with soap or hand cleaner as soon as possible.**

1. Warm up engine, and check for oil leakage from engine components.
2. Stop engine and wait for more than 10 minutes.
3. Remove drain plug and oil filler cap.
4. Drain oil and refill with new engine oil.

Oil specification and viscosity:

- **API SE, SF, SG or SH**
- **See "RECOMMENDED FLUIDS AND LUBRICANTS", MA-11.**

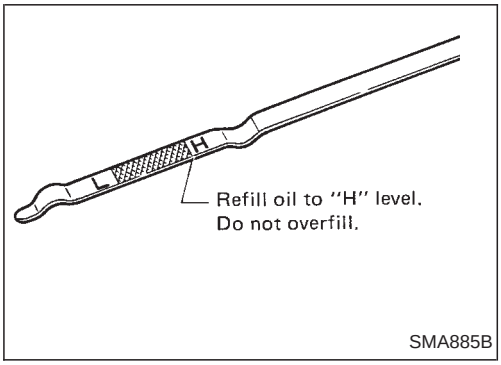
Refill oil capacity (Approximately):

Unit: liter (Imp qt)

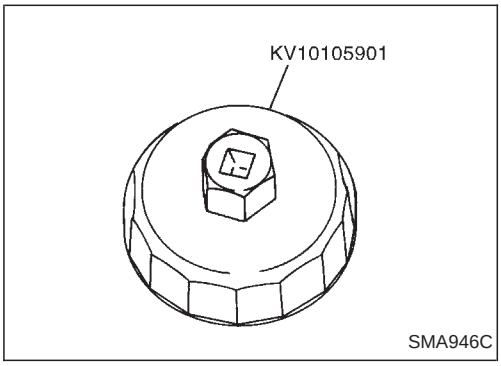
With oil filter change	3.8 (3-3/8)
Without oil filter change	3.4 (3)

CAUTION:

- **Be sure to clean drain plug and install with new washer.**
  Oil pan drain plug:
  : 29 - 39 N·m
  (3.0 - 4.0 kg-m, 22 - 29 ft-lb)
- **The refill capacity depends on the oil temperature and drain time; use the "Refill oil capacity" values as a reference and be certain to check with the dipstick when changing the oil.**



5. Check oil level.
6. Warm up engine and check area around drain plug and oil filter for oil leakage.
7. Stop engine and wait for more than 10 minutes.
8. Recheck oil level.



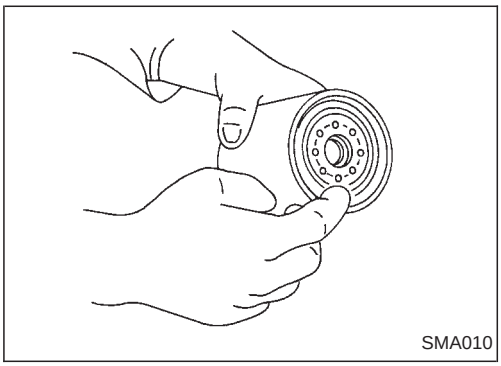
Changing Oil Filter

1. Remove oil filter with Tool.

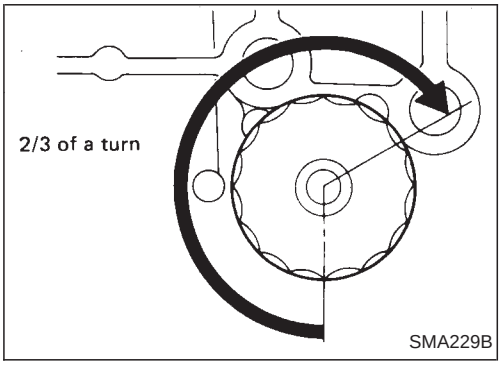
WARNING:

Be careful not to burn yourself, as the engine and the engine oil are hot.

Changing Oil Filter (Cont'd)


SMA010

2. Clean oil filter mounting surface on cylinder block. Coat rubber seal of new oil filter with engine oil.



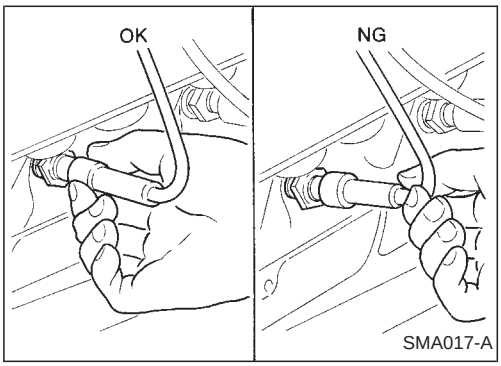
SMA229B

3. Screw in the oil filter until a slight resistance is felt, then tighten an additional 2/3 turn.
4. Add engine oil.

Refer to "Changing Engine Oil", MA-28.

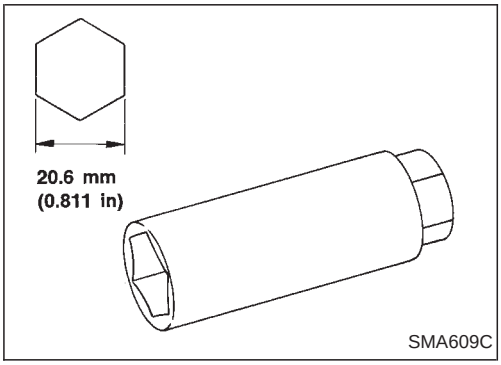
- **Clean excess oil from engine.**

Checking and Changing Spark Plugs



SMA017-A

1. Disconnect ignition wires from spark plugs at boot. Do not pull on the wire.



SMA609C

2. Remove spark plugs with spark plug wrench.
3. Clean plugs in sand blast cleaner.
4. Check insulator for cracks or chips, gasket for damage or deterioration and electrode for wear and burning. If they are excessively worn away, replace with new spark plugs.

Spark plug:

Make	NGK
Standard type	BPR5ES
Hot type	BPR4ES
Cold type	BPR6ES, BPR7ES

Use standard type spark plug for normal condition.

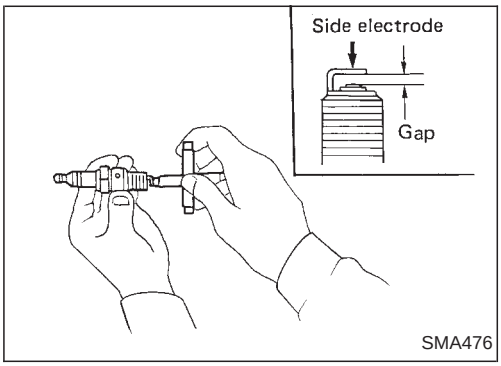
The hot type spark plug is suitable when fouling occurs with the standard type spark plug under conditions such as:

- frequent engine starts
- low ambient temperatures

The cold type spark plug is suitable when spark knock occurs with the standard type spark plug under conditions such as:

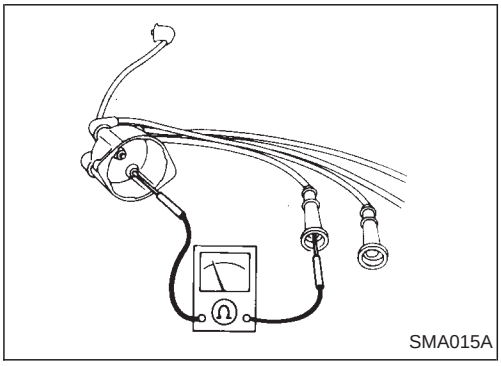
- extended highway driving
- frequent high engine revolution

Checking and Changing Spark Plugs (Cont'd)



5. Check spark plug gap.
   Gap: 0.8 - 0.9 mm (0.031 - 0.035 in)
6. Install spark plugs. Reconnect ignition wires according to nos. indicated on them.
   Spark plug:
   : 20 - 29 N·m (2 - 3 kg-m, 14 - 22 ft-lb)

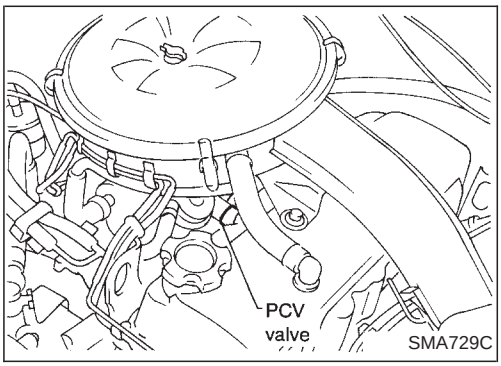
Checking Ignition Wires



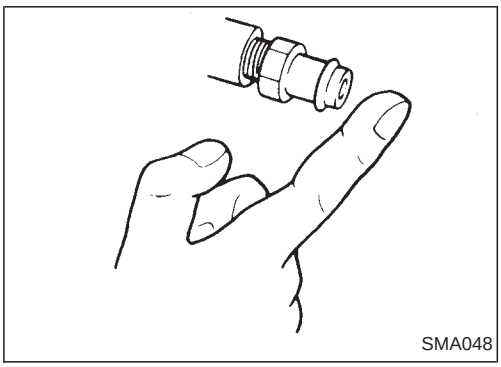
1. Inspect wires for cracks, damage, burned terminals and for improper fit.
2. Measure the resistance of wires and check for intermittent breaks.
   Resistance:
   9.6 - 22.4 kΩ/m (2.93 - 6.83 kΩ/ft)

If it exceeds the limit, replace the ignition wire with a new one.

Checking Positive Crankcase Ventilation (PCV) System



CHECKING PCV VALVE

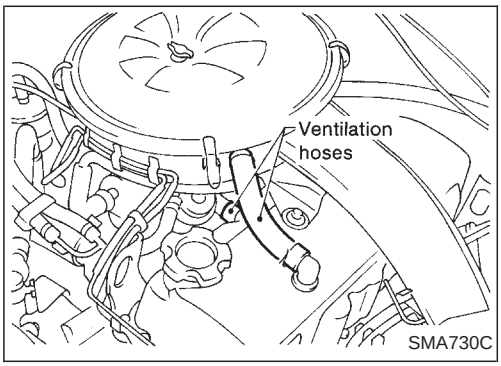


With engine running at idle, remove ventilation hose from PCV valve; if valve is working properly, a hissing noise will be heard as air passes through it and a strong vacuum should be felt immediately when a finger is placed over valve inlet.

Checking Vacuum Hoses and Connections

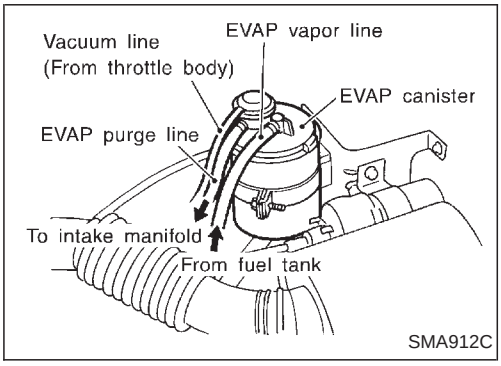
Check vacuum hoses for improper attachment and for leaks, cracks, damage, loose connections, chafing and deterioration.
Refer to EC section ("Vacuum Hose Drawing", "ENGINE AND EMISSION CONTROL SYSTEM").

Checking Vacuum Hoses and Connections (Cont'd)



CHECKING VENTILATION HOSES

1. Check hoses and hose connections for leaks.
2. Disconnect all hoses and clean with compressed air. If any hose cannot be freed of obstructions, replace.



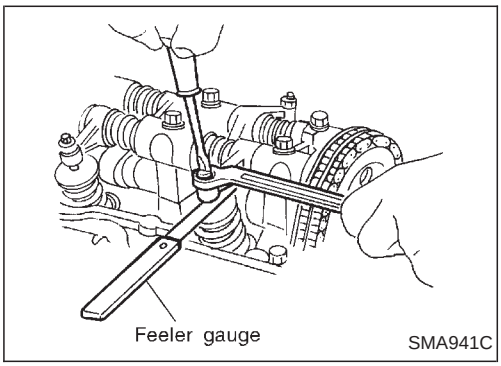
Checking Vapor Lines

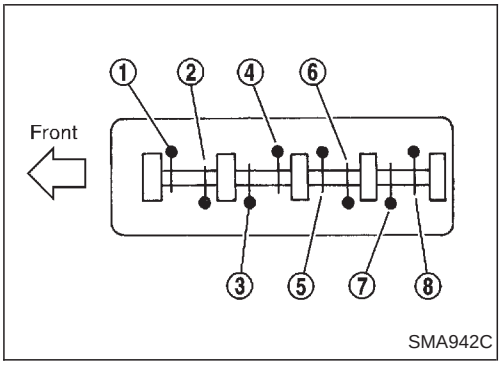
1. Visually inspect vapor lines for improper attachment and for cracks, damage, loose connections, chafing and deterioration.
2. Inspect fuel tank filler cap vacuum relief valve for clogging, sticking, etc.

Refer to EC section ("Inspection", "EVAPORATIVE EMISSION SYSTEM").

Checking Tightening Torque

- **Check while engine is cold.**
  - **Manifold nuts and bolts:**
    - **Intake manifold**
      : 16 - 21 N·m (1.6 - 2.1 kg-m, 12 - 15 ft-lb)
    - **Exhaust manifold**
      : 16 - 21 N·m (1.6 - 2.1 kg-m, 12 - 15 ft-lb)
  - **Exhaust tube nuts:**
    : 26 - 36 N·m (2.7 - 3.7 kg-m, 20 - 27 ft-lb)
  - **Carburetor nuts:**
    : 12 - 18 N·m (1.2 - 1.8 kg-m, 9 - 13 ft-lb)
- **For tightening order of intake manifold and exhaust manifold, refer to "OUTER COMPONENT PARTS" in EM section.**





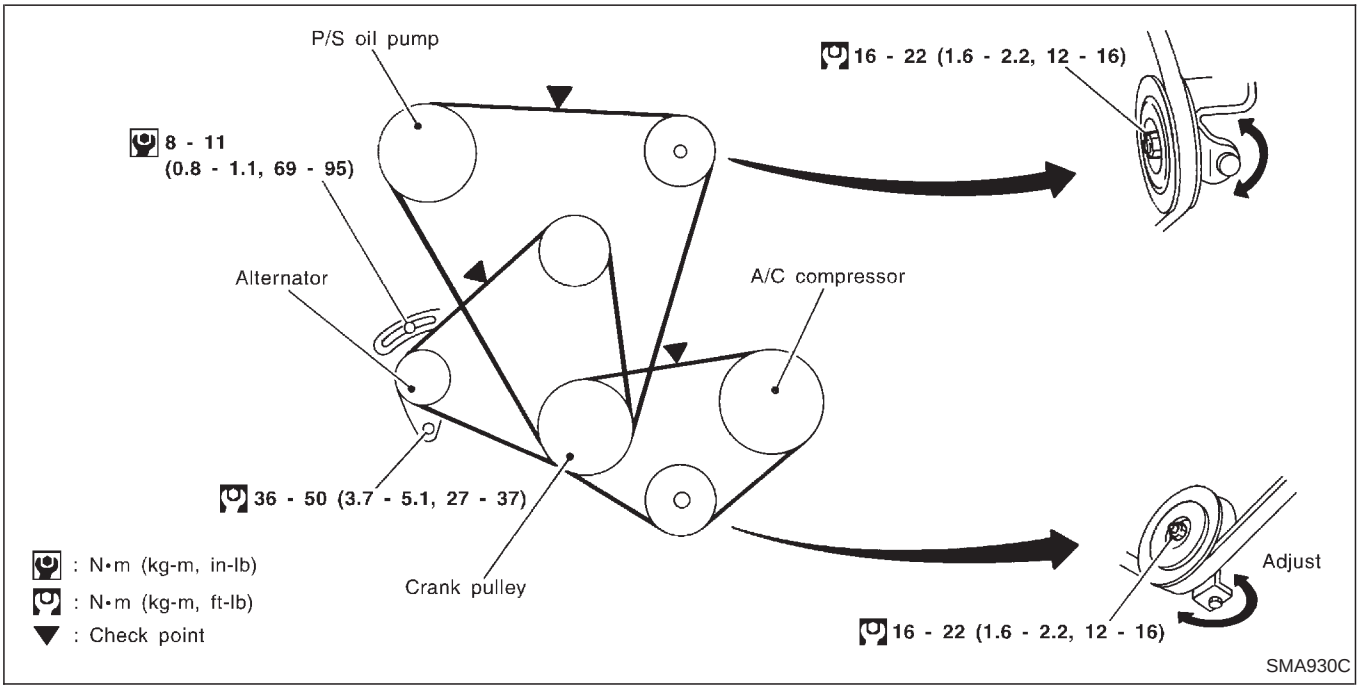
Adjusting Intake and Exhaust Valve Clearances

Adjustment should be made while engine is warm but not running.

1. Set No. 1 cylinder in top dead center on its compression stroke, and adjust valve clearance ① , ② , ④ and ⑥ .
2. Set No. 4 cylinder in top dead center on its compression stroke, and adjust valve clearance ③ , ⑤ , ⑦ and ⑧ .

Valve clearance:
Intake ① , ④ , ⑤ and ⑧
0.30 mm (0.012 in)
Exhaust ② , ③ , ⑥ and ⑦
0.30 mm (0.012 in)
Adjusting screw lock nuts:
: 16 - 22 N·m (1.6 - 2.2 kg-m, 12 - 16 ft-lb)

Checking Drive Belts

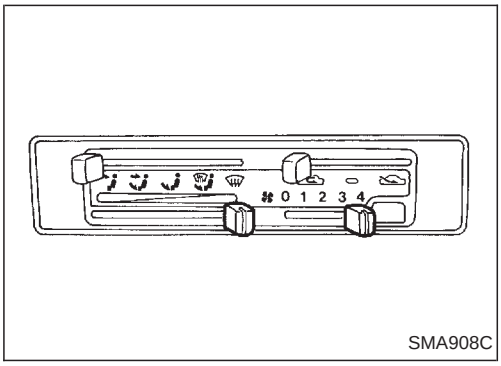


1. Check for cracks, fraying, wear and oil adhesion.
The belts should not touch the bottom of the pulley groove.
2. Check drive belt deflections by pushing midway between pulleys.
Inspect drive belt deflections when engine is cold.
Adjust if belt deflections exceed the limit.

Belt deflection:

Unit: mm (in)

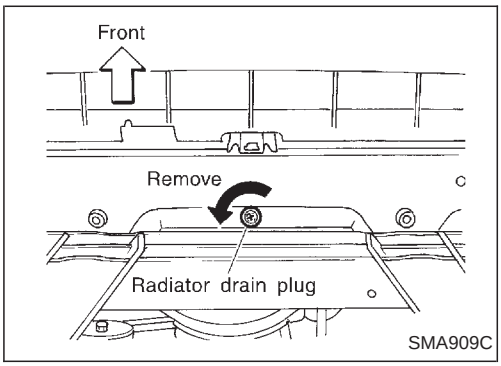
	Used belt deflection		Deflection of new belt
	Limit	Deflection after adjustment	
Alternator	16 (0.63)	10 - 13 (0.39 - 0.51)	8 - 11 (0.31 - 0.43)
A/C compressor	13 (0.51)	8 - 10 (0.31 - 0.39)	6 - 8 (0.24 - 0.31)
P/S oil pump	16 (0.63)	10 - 12 (0.39 - 0.47)	8 - 10 (0.31 - 0.39)
Applied pushing force	98 N (10 kg, 22 lb)		



Changing Engine Coolant

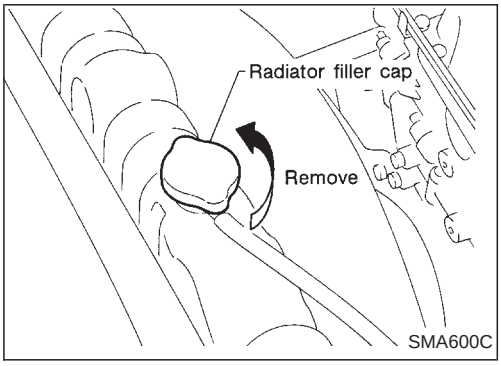
WARNING:
To avoid the danger of being scalded, never attempt to change the coolant when the engine is hot.
— DRAINING ENGINE COOLANT —
1. Set heater "TEMP" control lever all the way to "HOT" position.
- **Make sure that air conditioner switch is "OFF".**

Changing Engine Coolant (Cont'd)



2. Open drain cock at the bottom of radiator, and remove radiator filler cap.
3. Remove reservoir tank, drain coolant, then clean reservoir tank. Install it temporarily.

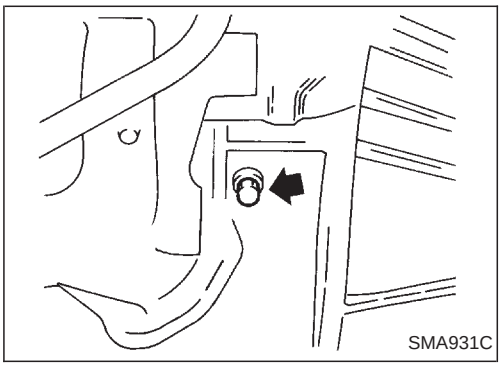
- **Be careful not to allow coolant to contact drive belts.**

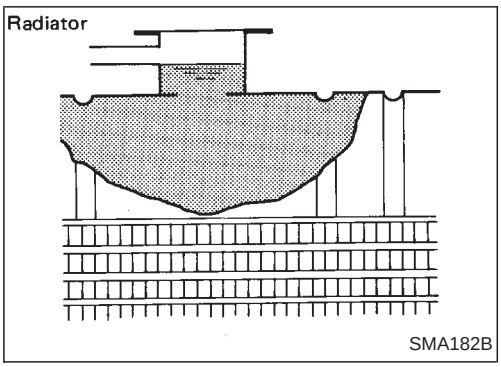


4. Remove cylinder block drain plug located at left rear of cylinder block.

— FLUSHING COOLING SYSTEM —

5. Install and then tighten radiator drain plug and cylinder block drain plug securely.
6. Fill radiator and reservoir tank with water and reinstall radiator cap.
7. Warm up engine sufficiently; then race engine 2 or 3 times under no-load.
8. Stop engine and wait until it cools down.
9. Repeat step 2 through step 8 until clear water begins to drain from radiator.
10. Drain water.





— REFILLING ENGINE COOLANT —

11. Install reservoir tank, radiator drain plug and cylinder block drain plug and retighten securely.

- **Apply sealant to the thread of cylinder block drain plug.**
  : 34 - 44 N·m (3.5 - 4.5 kg-m, 25 - 33 ft-lb)

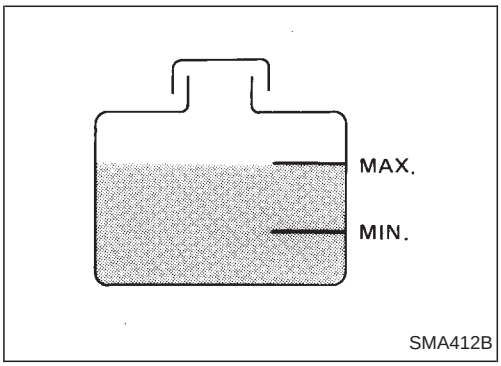
12. Fill radiator and reservoir tank with coolant up to specified level and install radiator cap.

For coolant mixture ratio, refer to MA-13.
Coolant capacity: (Reservoir tank excluded)

Unit: ℓ (Imp qt)

With A/C	8.9 (7-7/8)
Without A/C	8.7 (7-5/8)

Changing Engine Coolant (Cont'd)



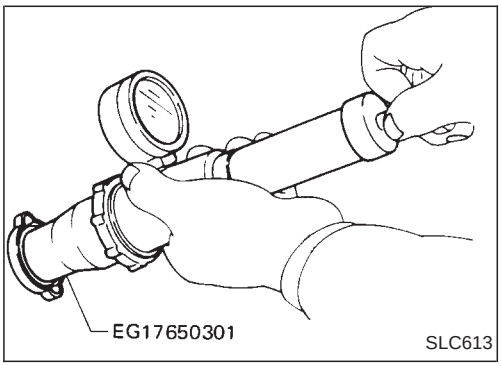
Reservoir tank capacity (for MAX level):
0.6 ℓ (1/2 Imp qt)

Pour coolant through coolant filler neck slowly to allow air in system to escape.

Checking Cooling System

CHECKING HOSES

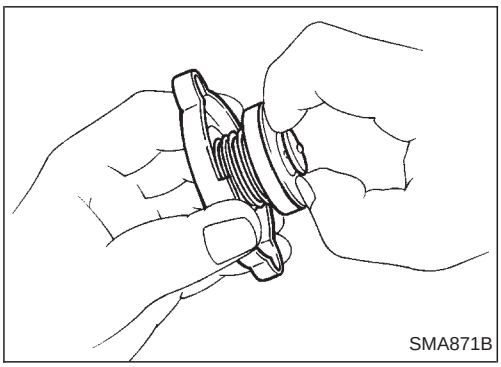
Check hoses for proper attachment, leaks, cracks, damage, loose connections, chafing and deterioration.



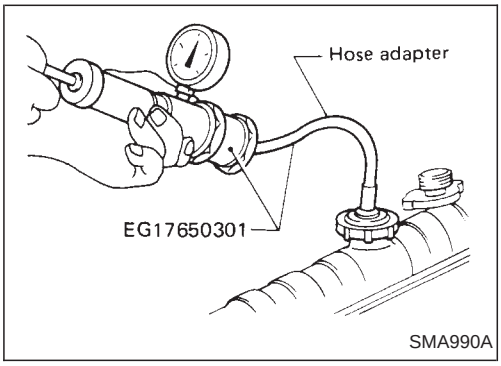
CHECKING RADIATOR CAP

Apply pressure to radiator cap by means of a cap tester to see if it is satisfactory.

Radiator cap relief pressure:
Standard
78 - 98 kPa
(0.78 - 0.98 bar, 0.8 - 1.0 kg/cm^2, 11 - 14 psi)
Limit
59 - 98 kPa
(0.59 - 0.98 bar, 0.6 - 1.0 kg/cm^2, 9 - 14 psi)



Pull the negative-pressure valve to open it. Check that it closes completely when released.

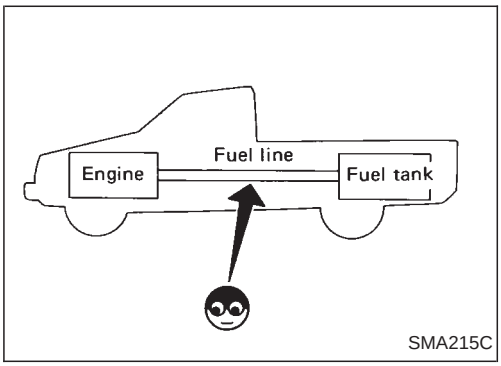


CHECKING COOLING SYSTEM FOR LEAKS

Apply pressure to the cooling system by means of a tester to check for leakage.

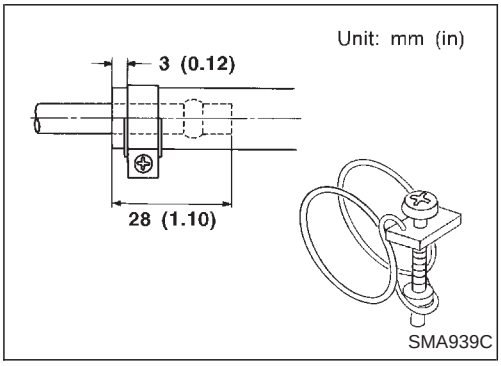
Testing pressure:
157 kPa (1.57 bar, 1.6 kg/cm^2, 23 psi)

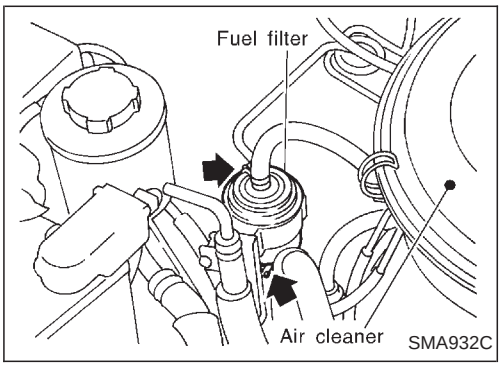
CAUTION:
Higher pressure than the specified value may cause damage to radiator.



Checking Fuel Lines

Inspect fuel lines and tank for improper attachment, leaks, cracks, damage, chafing or deterioration.
If necessary, repair or replace.

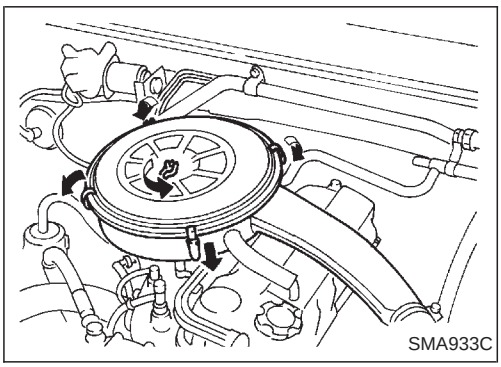




Changing Fuel Filter

1. Remove fuel filter from support bracket.
2. Loosen fuel hose clamps.
3. Replace fuel filter.

- **Be careful not to spill fuel over engine compartment. Place a shop towel to absorb fuel.**
- **Use a high-pressure type fuel filter. Do not use a synthetic resinous fuel filter.**
- **When tightening fuel hose clamps, refer to “Checking Fuel Lines”.**



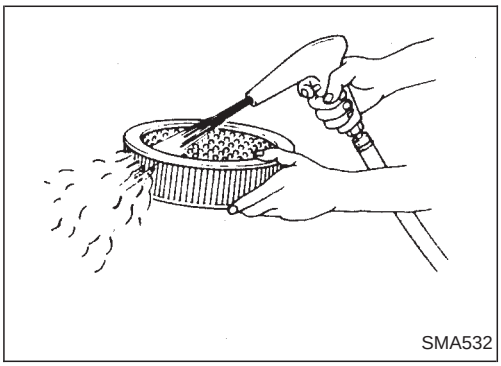
Changing Air Cleaner Filter

To properly tighten wing nuts, position clamps at four places and tighten wing nuts until they touch air cleaner. Then tighten them three more turns.

Viscous paper type

The viscous paper type filter does not need cleaning between replacement intervals.

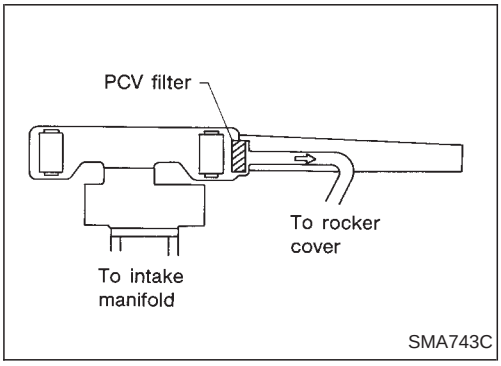
Changing Air Cleaner Filter (Cont'd)


SMA532

Dry paper type

It is necessary to clean the element or replace it at the recommended intervals, more often under dusty driving conditions.

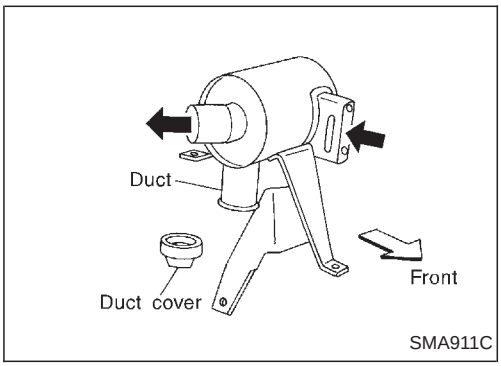
Positive Crankcase Ventilation (PCV) Filter Replacement



SMA743C

Remove air cleaner cover and replace PCV filter.

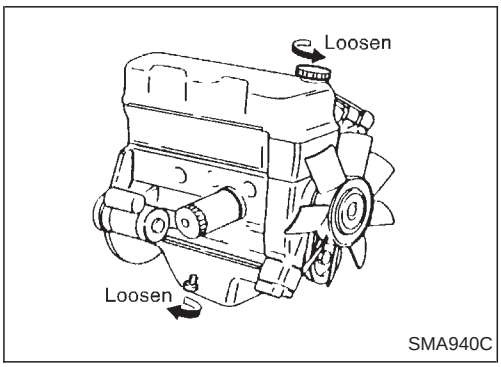
Checking Cyclone Pre-air Cleaner



SMA911C

Remove duct cover and check duct for dust clogging. Clean away any dust.

Changing Engine Oil



SMA940C

- **Be careful not to burn yourself, as the engine oil is hot.**
- **Prolonged and repeated contact with used engine oil may cause skin cancer; try to avoid direct skin contact with used oil. If skin contact is made, wash thoroughly with soap or hand cleaner as soon as possible.**

1. Warm up engine, and check for oil leakage from engine components.
2. Stop engine and wait more than 10 minutes.
3. Remove drain plug and oil filler cap.
4. Drain oil and refill with new engine oil.

Oil specification and viscosity:

- **API SE, SF, SG or SH**
- **See "RECOMMENDED FLUIDS AND LUBRICANTS", MA-11.**

Refill oil capacity (Approximately):

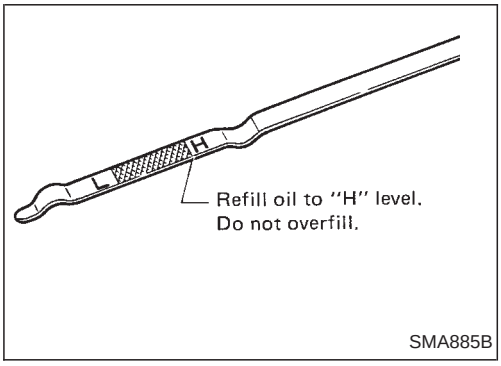
Unit: ℓ (Imp qt)

Model	With oil filter change	Without oil filter change
2WD	3.8 (3-3/8)	3.3 (2-7/8)
4WD	4.3 (3-3/4)	3.8 (3-3/8)

Changing Engine Oil (Cont'd)

CAUTION:

- **Be sure to clean drain plug and install with new washer.**
  Oil pan drain plug:
  : 29 - 39 N·m (3.0 - 4.0 kg-m, 22 - 29 ft-lb)
- **The refill capacity depends on the oil temperature and drain time. Use the "Refill oil capacity" values as a reference and be certain to check with the dipstick when changing the oil.**



SMA885B

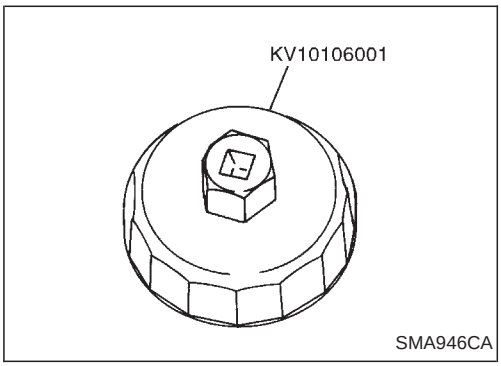
5. Warm up engine and check area around drain plug and oil filter for oil leakage.
6. Stop engine and wait more than 10 minutes.
7. Check oil level.

Changing Oil Filter

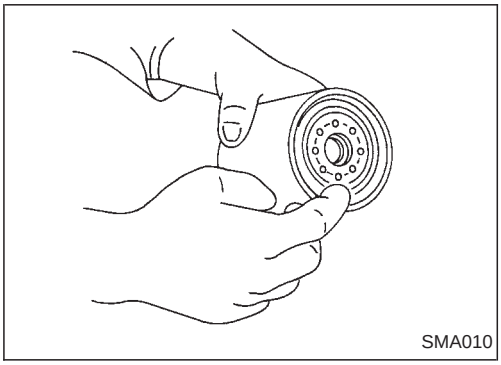
1. Remove oil filter with a suitable wrench.

WARNING:

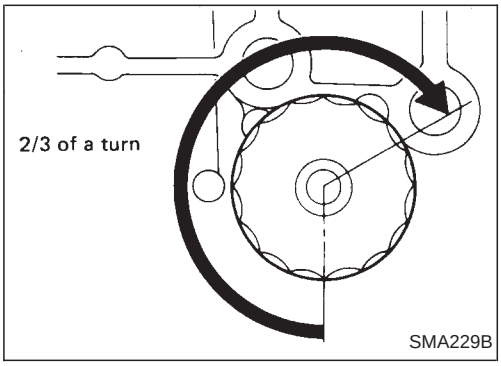
Be careful not to burn yourself, as the engine and the engine oil are hot.



SMA946CA


SMA010

2. Clean oil filter mounting surface on cylinder block. Coat rubber seal of new oil filter with engine oil.

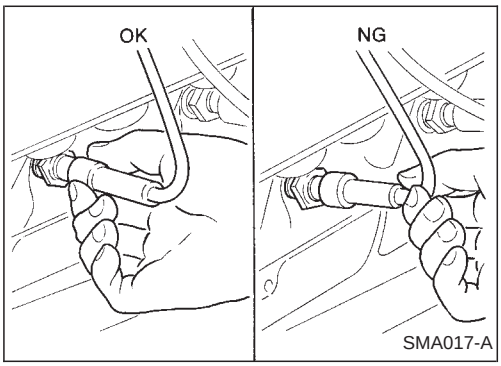


SMA229B

3. Screw in the oil filter until a slight resistance is felt, then tighten additionally more than 2/3 of a turn.
4. Add engine oil.

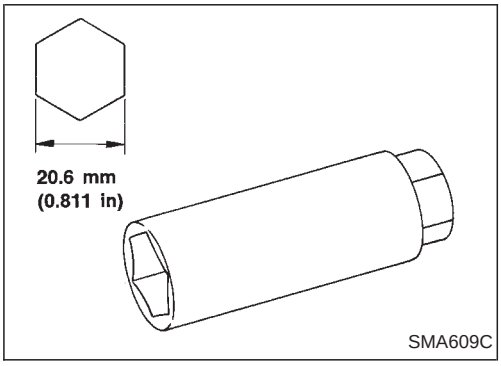
Refer to "Changing Engine Oil", MA-37.

- **Clean excess oil from engine.**



Checking and Replacing Spark Plugs

1. Remove air cleaner.
2. Disconnect spark plug wire at boot. Do not pull on the wire.



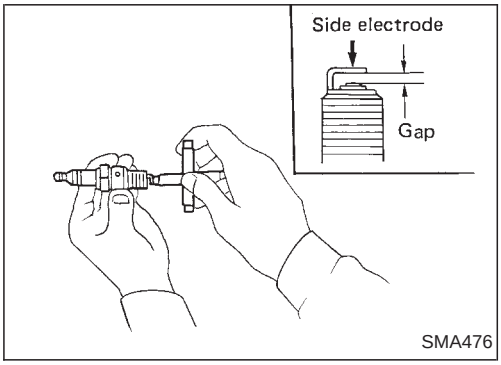
3. Remove spark plugs with spark plug wrench.
4. Clean plugs in sand blast cleaner.
5. Check insulator for cracks or chips, gasket for damage or deterioration and electrode for wear and burning. If they are excessively worn, replace with new spark plugs.

Spark plug:

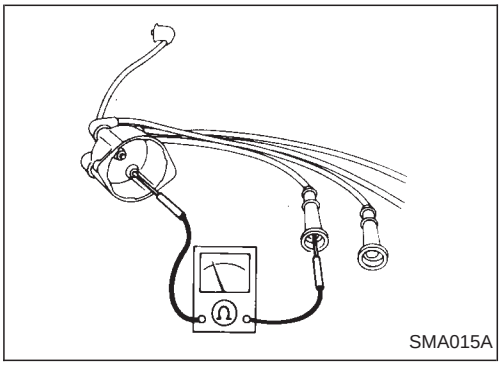
Make	NGK
Standard	BP6ES
Hot type	BP4ES, BP5ES
Cold type	BP7ES

Use standard type spark plug for normal condition.
The hot type spark plug is suitable when fouling occurs with the standard type spark plug under conditions such as:
- frequent engine starts
- low ambient temperatures

The cold type spark plug is suitable when spark knock occurs with the standard type spark plug under conditions such as:
- extended highway driving
- frequent high engine revolution

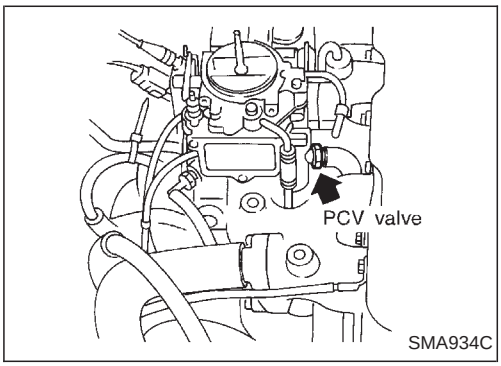


6. Check spark plug gap.
   Gap: 0.8 - 0.9 mm (0.031 - 0.035 in)
7. Install spark plugs. Reconnect high tension cables according to Nos. indicated on them.
   Spark plug:
   : 20 - 29 N·m (2.0 - 3.0 kg-m, 14 - 22 ft-lb)

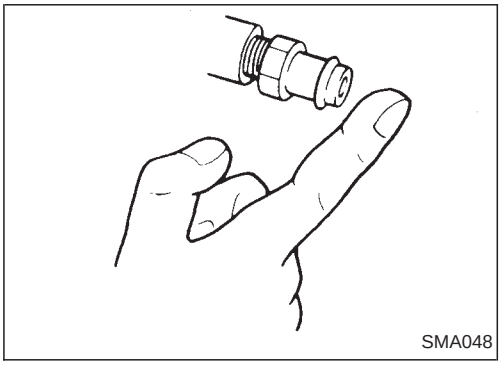


Checking Ignition Wires

1. Check the high tension wires for cracks, damage, burned terminals and proper fit.
2. Measure the resistance of the high tension wires, by shaking them and checking for intermittent breaks.
   Resistance: Less than 19 kΩ/m (5.8 kΩ/ft)
   If it exceeds the limit, replace the ignition wire with a new one.



Checking Positive Crankcase Ventilation (PCV) System



CHECKING PCV VALVE

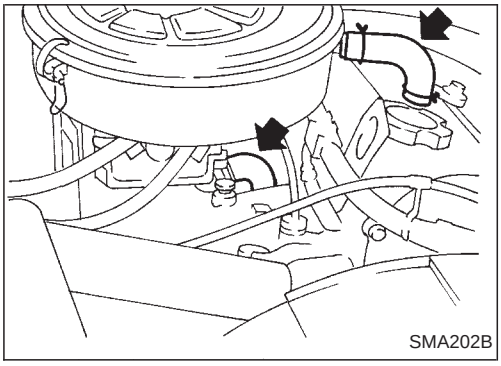
Disconnect hose and check PCV valve to see it is operating properly.

Finger is sucked into PCV valve when finger is put on PCV valve during idling.

Checking Vacuum Hoses and Connections

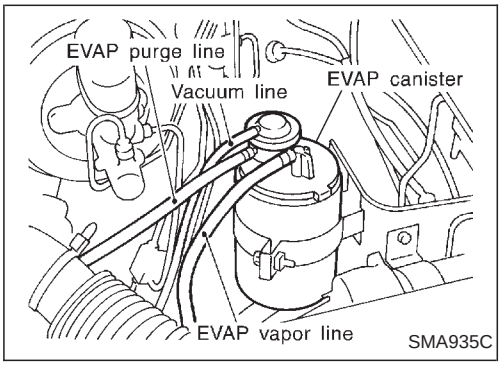
Check vacuum hoses for improper attachment and for leaks, cracks, damage, loose connections, chafing and deterioration.

Refer to EC section (“Vacuum Hose Drawing”, “ENGINE AND EMISSION CONTROL OVERALL SYSTEM”).



CHECKING VENTILATION HOSES

Check ventilation hoses for proper connection, cracks and damage.



Checking Vapor Lines

1. Visually inspect vapor lines for improper attachment and for cracks, damage, loose connections, chafing and deterioration.
2. Inspect fuel tank filler cap vacuum relief valve for clogging, sticking, etc.

Refer to EC section (“Inspection”, “EVAPORATIVE EMISSION SYSTEM”).

Checking Tightening Torque

Checking should be performed while engine is cold [approximately 20°C (68°F)].

Manifold bolts and nuts:

Intake

: 13 - 19 N·m (1.3 - 1.9 kg-m, 9 - 14 ft-lb)

Exhaust

: 25 - 29 N·m (2.5 - 3.0 kg-m, 18 - 22 ft-lb)

Exhaust tube nuts:

: 41.2 - 48.0 N·m (4.2 - 4.9 kg-m, 30 - 35 ft-lb)

Adjusting Intake and Exhaust Valve Clearance

Adjustment should be made while engine is warm but not running.

1. Set No. 1 cylinder in top dead center on its compression stroke, and adjust valve clearance ① , ② , ③ and ⑥ .
2. Set No. 4 cylinder at top dead center on its compression stroke, and adjust valve clearance ④ , ⑤ , ⑦ and ⑧ .

Valve clearance:

Intake ① , ③ , ⑤ and ⑦

0.30 - 0.40 mm (0.012 - 0.016 in)

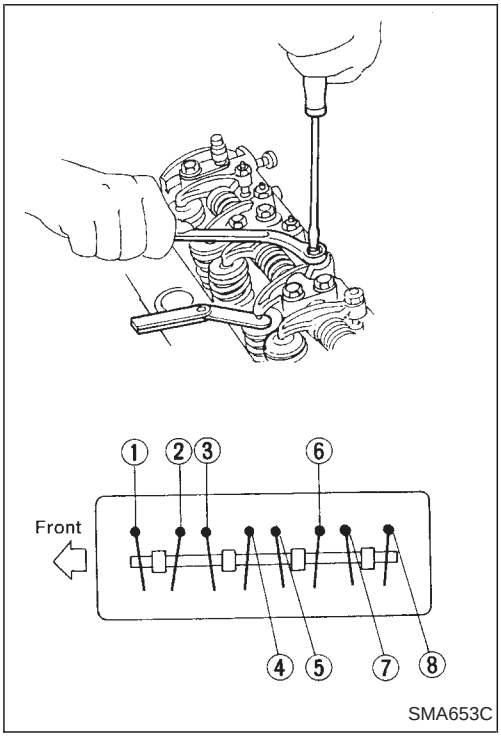
Exhaust ② , ④ , ⑥ and ⑧

0.30 - 0.40 mm (0.012 - 0.016 in)

Adjusting screw lock nuts:

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

- Tighten lock nuts, by fixing the adjusting screws using a minus driver.



SMA653C

Checking Drive Belt

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

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

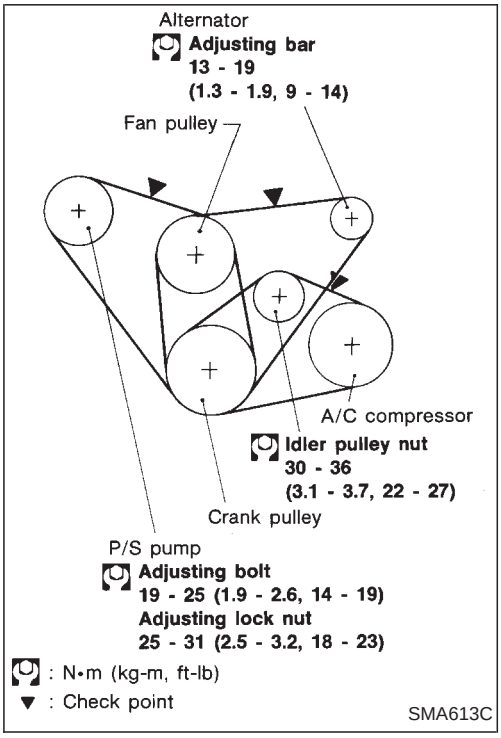
2. Check drive belt deflection by pushing on the belt midway between pulleys.

Adjust if belt deflections exceed the limit.

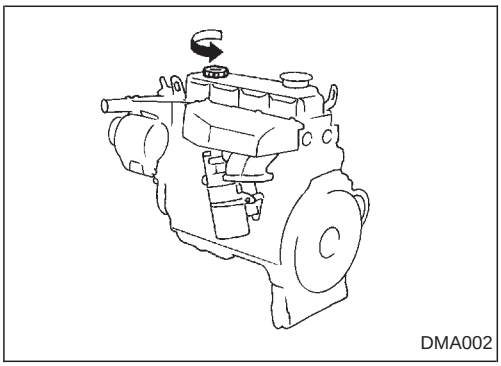
Unit: mm (in)

	Used belt deflection		Deflection of new belt
	Limit	Deflection after adjustment	
Alternator	20 (0.79)	11 - 13 (0.43 - 0.51)	9 - 11 (0.35 - 0.43)
Air conditioner compressor	12 (0.47)	6 - 7.5 (0.236 - 0.295)	5 - 6.5 (0.197 - 0.256)
Power steering oil pump	15 (0.59)	8 - 9.5 (0.315 - 0.374)	7 - 8.5 (0.276 - 0.335)
Applied pushing force	98 N (10 kg, 22 lb)		

Check drive belt deflections when engine is cold.



SMA613C


DMA002

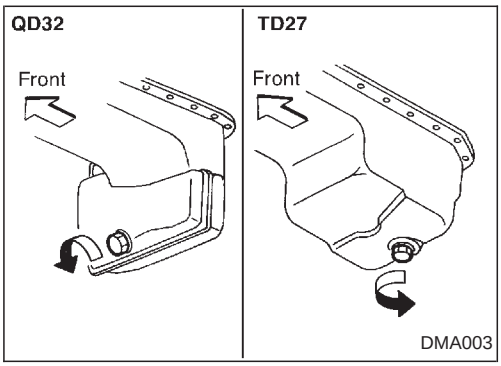
Changing Engine Oil

WARNING:

- **Be careful not to burn yourself, as engine oil is hot.**
- **Prolonged and repeated contact with used engine oil may cause skin cancer; try to avoid direct skin contact with used oil. If skin contact is made, wash thoroughly with soap or hand cleaner as soon as possible.**

1. Warm up engine, and check for oil leakage from engine components.
2. Remove oil filler cap and drain plug.
3. Drain oil and fill with new engine oil.

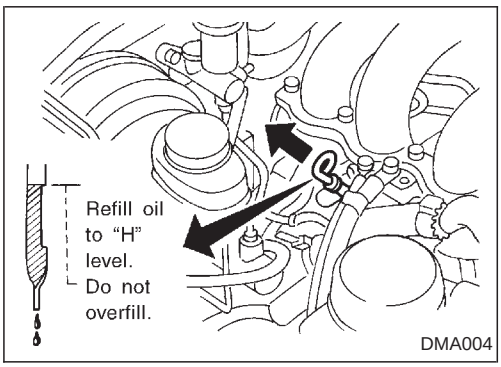
Oil grade: API CC or CD
Viscosity:
See "RECOMMENDED FLUIDS AND LUBRICANTS", MA-11.
Refill oil capacity (approximate):
Without oil filter change
TD27 6.5 ℓ (5-3/4 Imp qt)
QD32 7.2 ℓ (6-3/8 Imp qt)
With oil filter change
TD27 7.2 ℓ (6-3/8 Imp qt)
QD32 7.9 ℓ (7 Imp qt)



DMA003

CAUTION:

- **Be sure to clean and install oil pan drain plug with washer.**
  Drain plug:
  : 54 - 59 N·m (5.5 - 6.0 kg-m, 40 - 43 ft-lb)
- **The refill capacity changes depending on the oil temperature and drain time; use these valves as a reference and be certain to check with the dipstick when changing the oil.**



DMA004

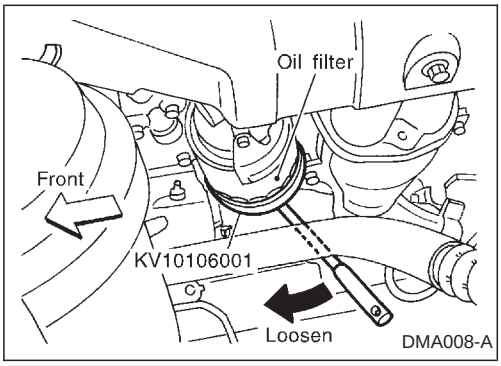
4. Check oil level.
5. Start engine. Check area around drain plug and oil filter for any sign of oil leakage.
6. Run engine for a few minutes, then turn it off. After several minutes check oil level.

Changing Engine Oil Filter

1. Remove oil filter with Tool.

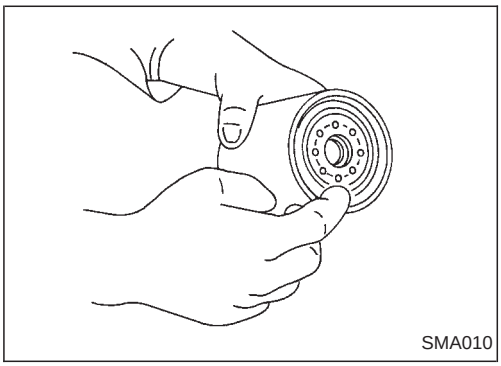
WARNING:

Be careful not to burn yourself, as the engine and engine oil are hot.



DMA008-A

Changing Engine Oil Filter (Cont'd)


SMA010

2. Clean oil filter mounting surface on cylinder block. Coat rubber seal of new oil filter with engine oil.
3. Screw in the oil filter until a slight resistance is felt, then tighten an additional 2/3 of a turn.
4. Add engine oil.

Refer to Changing Engine Oil.

- **Clean excess oil from engine.**

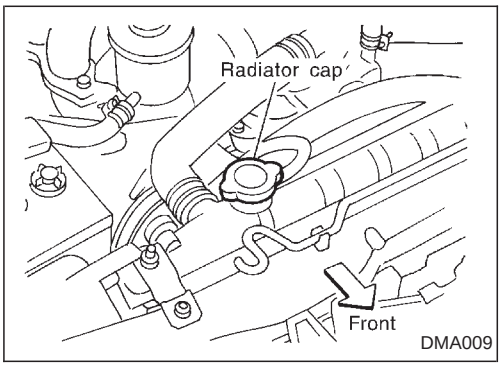
Changing Engine Coolant

WARNING:

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

—DRAINING ENGINE COOLANT—

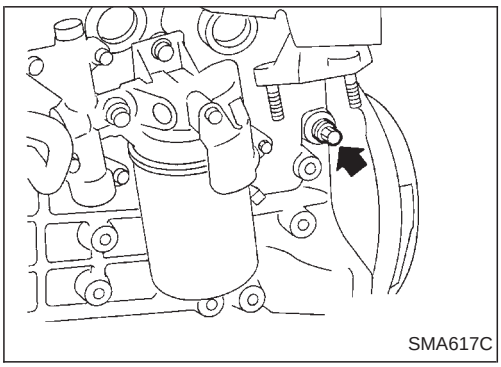
1. Move heater TEMP control knob all the way to HOT.
2. Open radiator drain plug at the bottom of radiator.



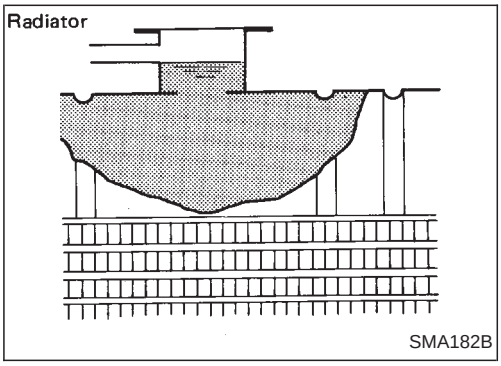
DMA009

3. Remove radiator filler cap.
   Remove reservoir tank, drain coolant, then clean reservoir tank. Install it temporarily.

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


SMA617C

4. Remove cylinder block drain plug located at left rear of cylinder block.
5. Drain coolant and install cylinder block drain plug and radiator drain plug.
6. Fill radiator with water and warm up engine.
7. Stop engine and wait until it cools down.
8. Repeat step 2 through step 7 two or three times.
9. Drain water.



SMA182B

—REFILLING ENGINE COOLANT—

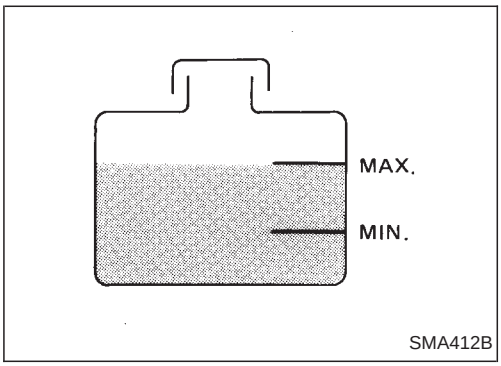
10. Install reservoir tank, radiator drain plug, and cylinder block drain plugs.

- **Apply sealant to the thread of cylinder block drain plug.**
  Cylinder block drain plug:
  : 54 - 64 N·m (5.5 - 6.5 kg-m, 40 - 47 ft-lb)

11. Fill radiator and reservoir tank with coolant up to the MAX level and install radiator cap.

For coolant mixture ratio, refer to MA-13.

Changing Engine Coolant (Cont'd)



Coolant capacity (With reservoir tank):
TD27 9.5 ℓ (8-3/8 Imp qt)
QD32 9.4 ℓ (8-1/4 Imp qt)
10.2 ℓ (9 Imp qt) for Australia or models with air conditioner
Reservoir tank capacity (for MAX level):
0.6 ℓ (1/2 Imp qt)

Pour coolant through coolant filler neck slowly to allow air in system to escape.

12. Warm up engine to normal operating temperature.
13. Run engine at 2,000 rpm for 10 seconds and return to idle speed.
- Repeat 2 or 3 times.

Watch coolant temperature gauge so as not to overheat the engine.

14. Stop engine and cool it down.
- Cool down using a fan to reduce the time.

15. Remove the radiator filler cap and check coolant level.
- If necessary, refill radiator up to filler neck with coolant.

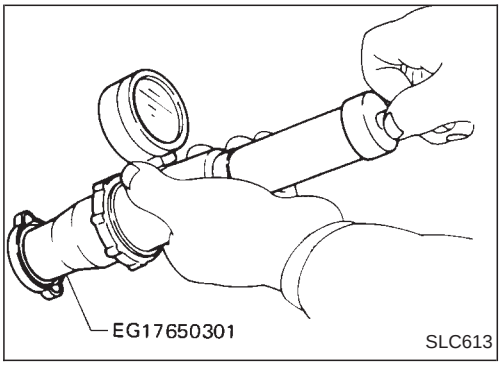
16. Refill reservoir tank to Max line with coolant.
17. Repeat step 12 through step 16 two or more times.
18. Warm up engine, and check for sound of coolant flow while running engine from idle up to 2,000 rpm with heater temperature control set at several positions between COOL and HOT.
- Sound may be noticeable at heater water cock.

19. If sound is heard, bleed air from cooling system by repeating steps 12 through 16 until coolant level no longer drops.
- **Clean excess coolant from engine.**

Checking Cooling System

CHECKING HOSES AND CLAMPS

Check hoses and clamps for proper attachment, leaks, cracks, damage, loose connections, chafing and deterioration.

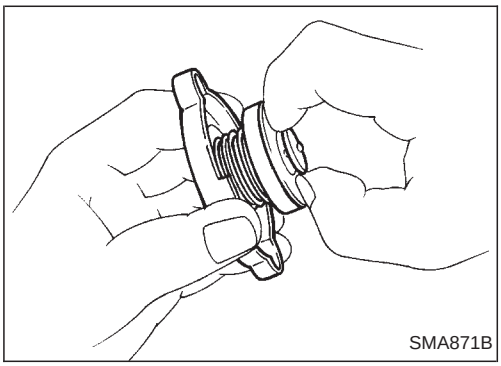


CHECKING RADIATOR CAP

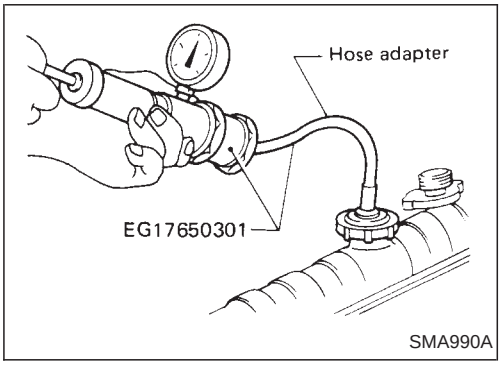
Apply pressure to radiator cap with cap tester to see if it is satisfactory.

Radiator cap relief pressure:
78 - 98 kPa
(0.78 - 1.0 bar, 0.8 - 1.0 kg/cm^2, 11 - 14 psi)

Checking Cooling System (Cont'd)


SMA871B

Pull the negative-pressure valve to open it. Check that it closes completely when released.



SMA990A

CHECKING COOLING SYSTEM FOR LEAKS

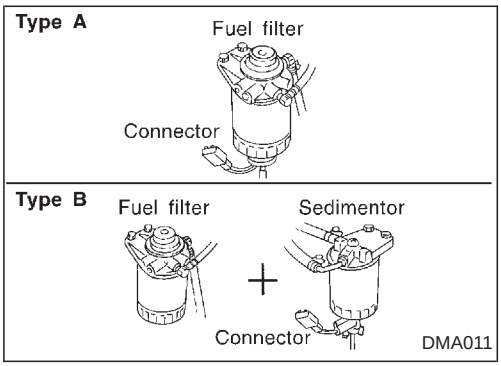
Apply pressure to the cooling system with cap tester to check for leakage.

Testing pressure:

157 kPa (1.57 bar, 1.6 kg/cm^2, 23 psi)

CAUTION:

Use of higher pressure than the specified value may cause damage to radiator.



DMA011

Checking and Replacing Fuel Filter and Draining Water

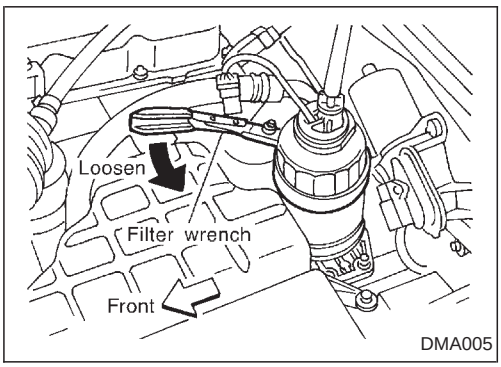
Be careful not to spill fuel in engine compartment. Place a rag to absorb fuel.

CHECKING FUEL FILTER

Check fuel filter for fuel leakage, damage and other abnormal signs.

REPLACING FUEL FILTER

1. Disconnect harness connector and drain fuel.



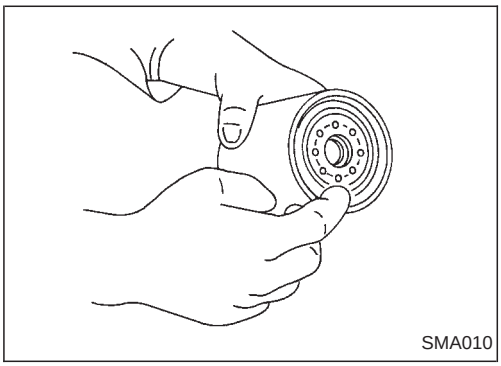
DMA005

2. Remove 2 bolts fixing fuel filter bracket, and remove the bracket with fuel filter. Do not remove fuel hose.
3. Install fuel filter upside down using the holes for the bolts to fix the fuel filter bracket.
4. Remove fuel filter using band-type filter wrench.
   Type A
   Remove fuel filter and fuel filter sensor.
   Type B
   Loosen fuel filter within the extent fuel does not spill, return fuel filter back to the normal position, then remove it.

CAUTION:

Remove fuel filter without spilling fuel. If spilt, wipe off immediately. Be specially careful not to spill fuel on engine mount insulator.

Checking and Replacing Fuel Filter and Draining Water (Cont'd)

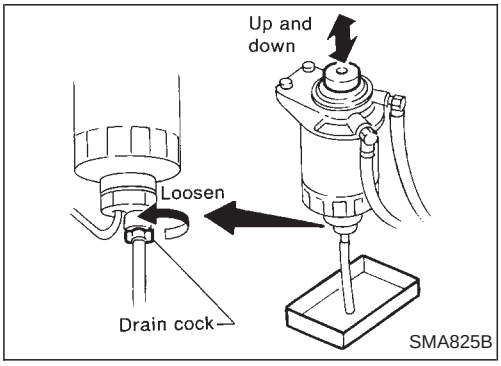

SMA010

5. Wipe clean fuel filter mounting surface on fuel filter bracket and smear a little fuel on rubber seal of fuel filter.
6. Screw fuel filter on until a slight resistance is felt, then tighten an additional more than 2/3 of a turn.
7. Install fuel filter sensor to new fuel filter. (Type A)
8. Bleed air from fuel line.

Refer to Bleeding Fuel System in EC section.

9. Start engine and check for leaks.

DRAINING WATER



SMA825B

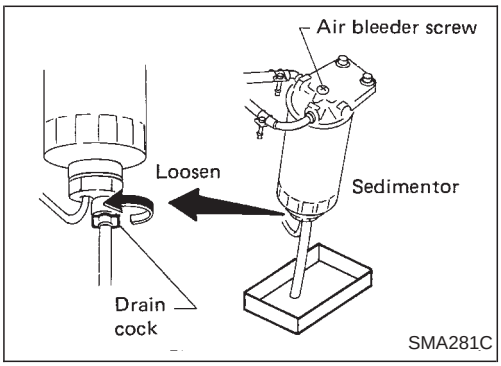
1. Drain water as follows.

Type A

Loosen drain cock and drain water.

Loosening drain cock 4 to 5 turns causes water to start draining. Do not remove drain cock by loosening it excessively.

If water does not drain properly, move the priming pump up and down.



SMA281C

Type B

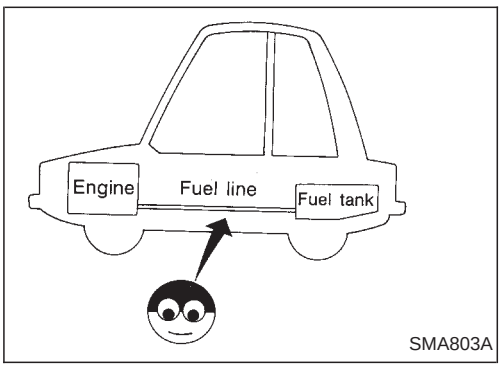
Loosen air bleeder screw from the sedimentor cover and then loosen drain cock and drain water.

Loosening drain cock 4 to 5 turns causes water to start draining. Do not remove drain cock by loosening it excessively.

2. Bleed air.

Refer to Bleeding Fuel System in EC section.

Checking Fuel Lines



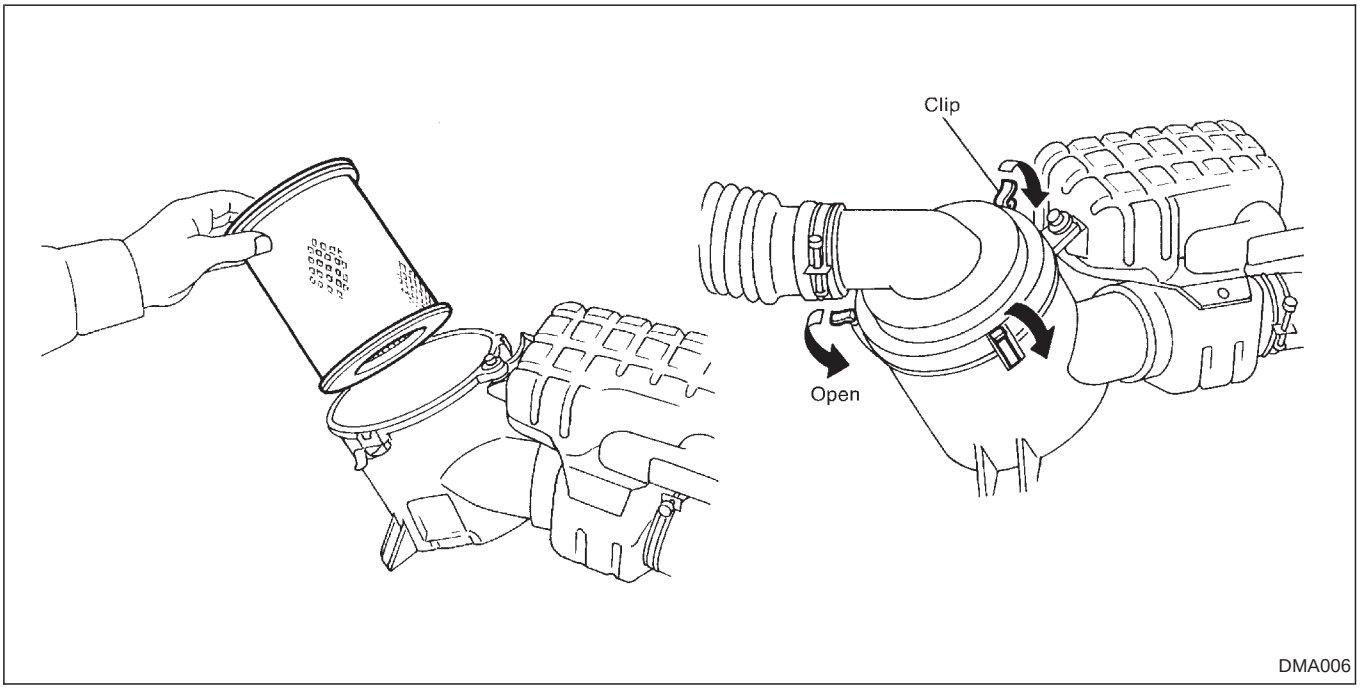
SMA803A

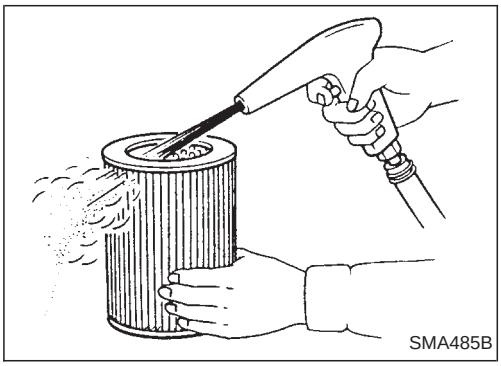
Check fuel lines and tank for proper attachment, leaks, cracks, damage, loose connections, chafing and deterioration.

CAUTION:

Keep clean parts with compressed air when assembling.

Cleaning and Replacing Air Cleaner Filter



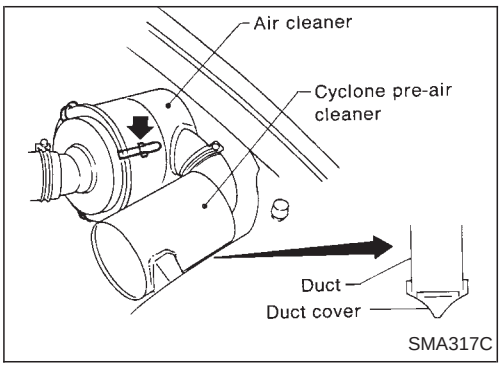


DRY PAPER TYPE

Clean or replace element more often under dusty driving conditions.

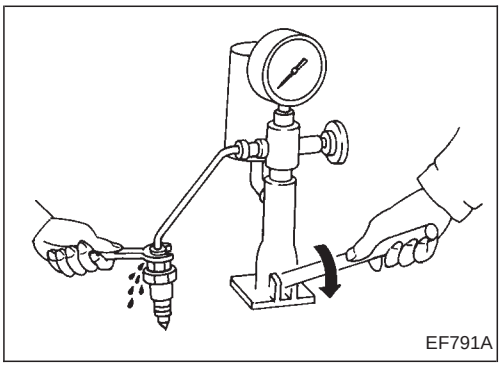
VISCOUS PAPER TYPE

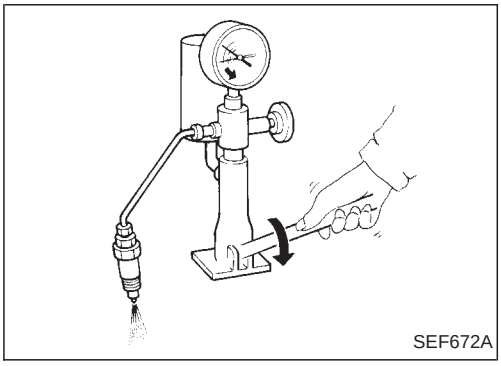
The viscous paper type air cleaner filter does not require any cleaning operation between renewal.

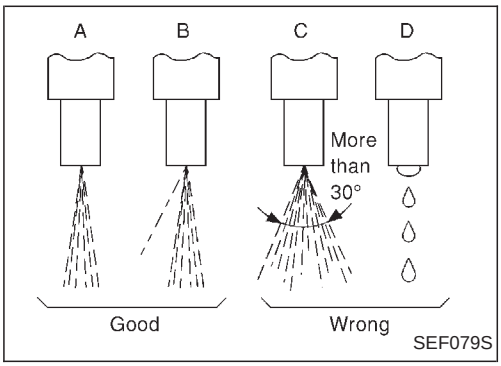


Checking Cyclone Pre-air Cleaner

Remove duct cover and check duct for dust clogging. Clean away dust.


EF791A


SEF672A



SEF079S

Checking Injection Nozzle

WARNING:

When using nozzle tester, be careful not to allow diesel fuel sprayed from nozzle to come into contact with your hand or body, and make sure that your eyes are properly protected.

1. Install nozzle to injection nozzle tester and bleed air from flare nut.
2. Check initial injection pressure by pumping tester handle one full stroke per second.

Initial injection pressure:

Used nozzle

9,807 - 10,297 kPa
(98.1 - 103.0 bar, 100 - 105 kg/cm^2,
1,422 - 1,493 psi)

New nozzle

10,297 - 11,278 kPa
(103.0 - 112.8 bar, 105 - 115 kg/cm^2,
1,493 - 1,635 psi)

- **Always check initial injection pressure before installing new nozzle.**

3. Check spray pattern by pumping tester handle one full stroke per second.

a. If main spray angle is within 30 degrees as shown, injection nozzle is good.

b. It is still normal even if a thin stream of spray deviates from main spray (pattern B).

4. If initial injection pressure or injection nozzle is not normal, adjust or clean injection nozzle.
5. Test again. If it is not corrected, replace nozzle.

Refer to EC section for injection pressure adjustment, cleaning and replacement.

6. Install all injection nozzles with Tool and securely connect fuel spill tube and delivery tubes.
7. Bleed air from fuel system and check for fuel leakage with engine running.

Injection nozzle to cylinder head:
: 54 - 64 N·m (5.5 - 6.5 kg-m, 40 - 47 ft-lb)
Spill tube nut:
: 29 - 39 N·m (3.0 - 4.0 kg-m, 22 - 29 ft-lb)
Injection tube:
: 20 - 25 N·m (2.0 - 2.5 kg-m, 14 - 18 ft-lb)

Checking Idle Speed

Preparation

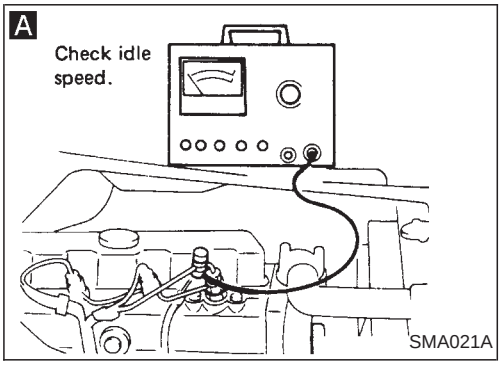
1. Make sure that injection timing is correct.
2. Make sure that injection nozzles are in good condition.
3. Make sure that the following parts are in good condition.

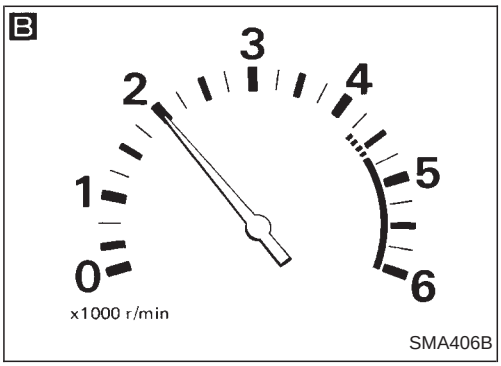
- Air cleaner clogging
- Glow system
- Engine oil and coolant levels
- Valve clearance
- Air intake system (Oil filler cap, oil level gauge, etc.)

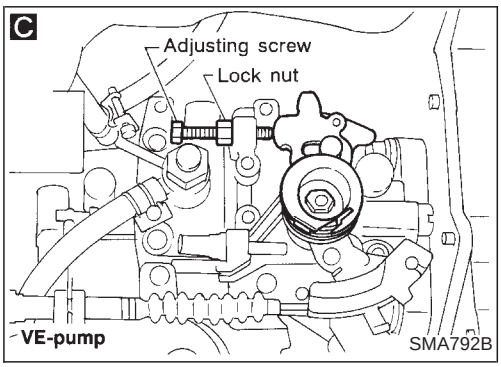
4. Set shift lever in “Neutral” position. Engage parking brake and lock both front and rear wheels with wheel chocks.
5. Turn off air conditioner, lights and accessories.

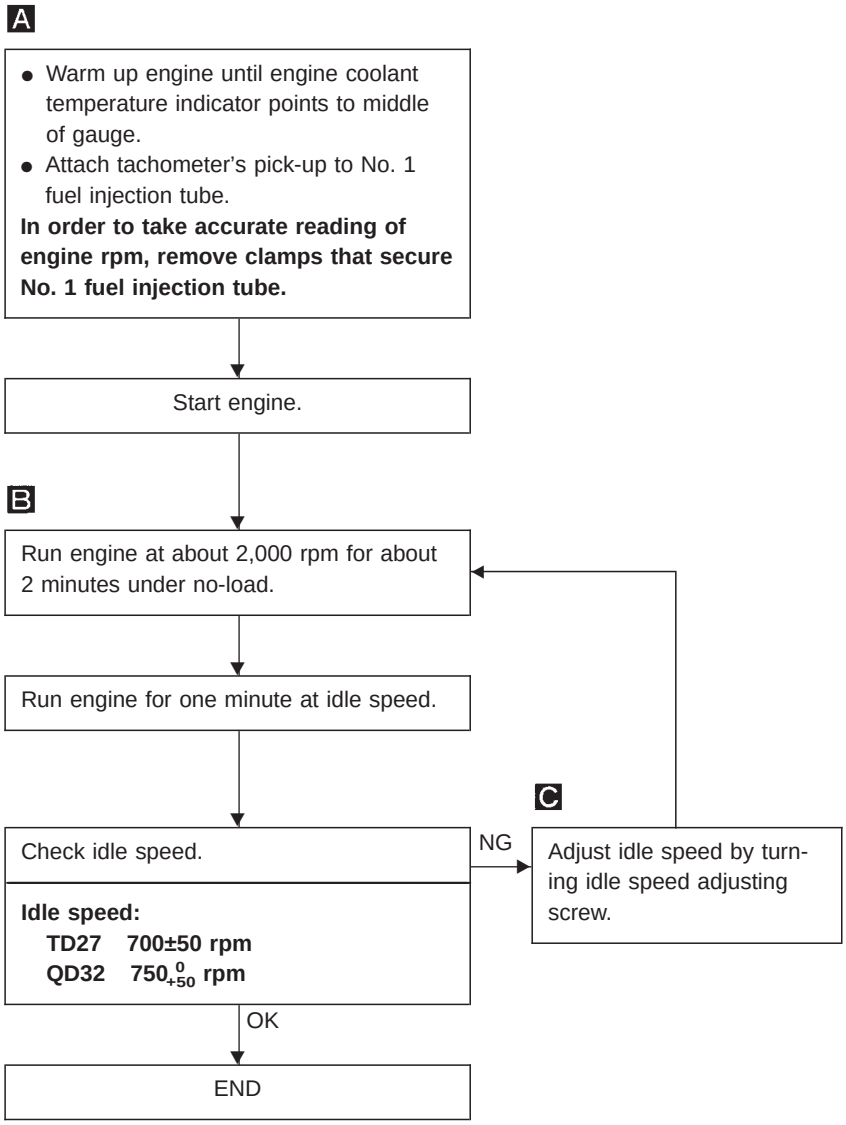
Checking Idle Speed (Cont'd)

6. Make sure that idle control knob is fully released and idle adjusting screw contacts accelerator control lever.



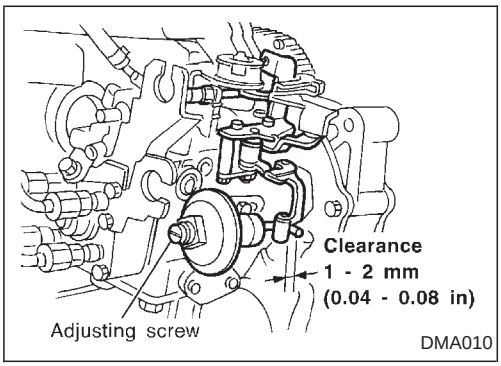






- **Rev engine two or three times and allow engine to return to idle speed. If idle speed is not within the specified range, check acceleration linkage for binding and correct it if necessary.**

Checking Idle Speed (Cont'd)



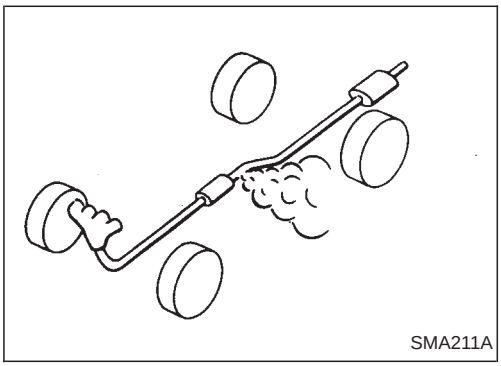
AIR CONDITIONER EQUIPPED MODEL

1. Make certain that the clearance between the actuator idle control lever pin and the injection pump control lever is within the specified limits.
   Clearance: 1 - 2 mm (0.04 - 0.08 in)
2. Adjust idle speed to specified rpm without the air conditioner operating.
3. Then check the idle speed when the air conditioner is operating and make sure it is correct.

Unit: rpm

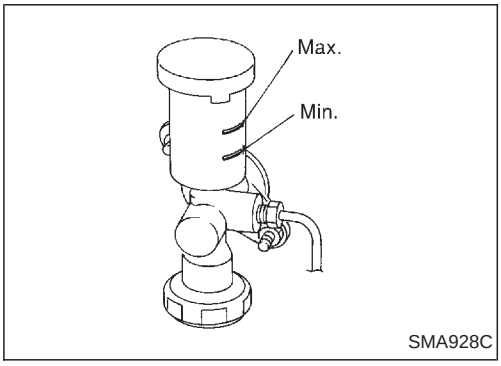
Engine	TD27	QD32
Idle speed (Air conditioner "ON")	850±50	750^{0}_{+50}

If not, adjust it by turning FICD actuator stroke adjusting screw.


SMA211A

Checking Exhaust System

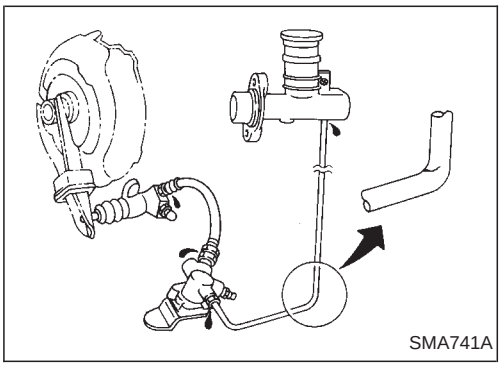
Check exhaust pipes, muffler and mounting for improper attachment, leaks, cracks, damage, loose connections, chafing or deterioration.



SMA928C

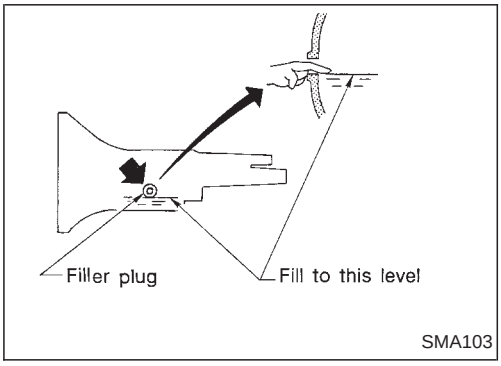
Checking Clutch Fluid Level and Leaks

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


SMA741A

Checking Clutch System

Check fluid lines and operating cylinder for improper connections, cracks, damage, chafing or deterioration.



SMA103

Checking M/T Oil

Check for oil leakage and oil level.

Never start engine while checking oil level.

Filler plug:

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

Changing M/T Oil

1. Drain oil from drain plug and refill with new gear oil.
2. Check oil level.

Oil grade and viscosity:

API GL-4. Refer to "RECOMMENDED FLUIDS AND LUBRICANTS", MA-11.

Oil capacity:

FS5W71C

2WD 2.0 ℓ (3-1/2 Imp pt)

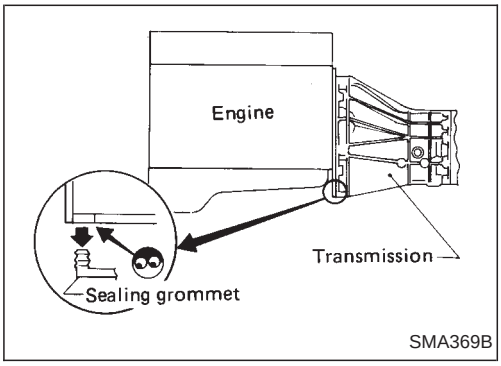
4WD 4.9 ℓ (8-5/8 Imp pt)

FS5R30A

4WD 5.1 ℓ (9 Imp pt)

Drain plug:

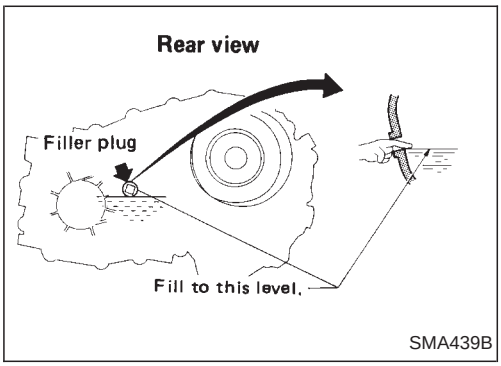
: 25 - 34 N·m (2.5 - 3.5 kg-m, 18 - 25 ft-lb)



SMA369B

Checking Water Entry — For 4WD models

Check water entry in the clutch housing by removing the sealing grommet whenever driving in deep water or mud.



Checking Transfer Fluid

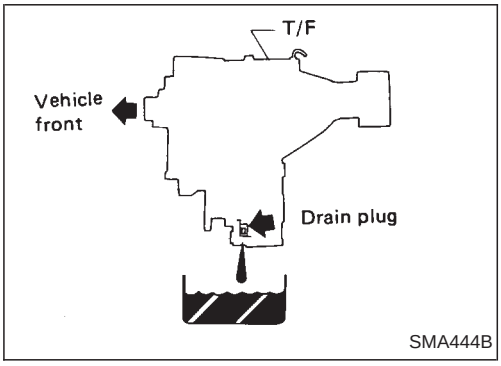
Check for fluid leakage and fluid level.

Automatic Transmission Fluid is used for the transfer in the factory.

Never start engine while checking fluid level.

Filler plug:

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



Changing Transfer Fluid

When changing transfer fluid completely, use the following fluid.

Fluid grade:

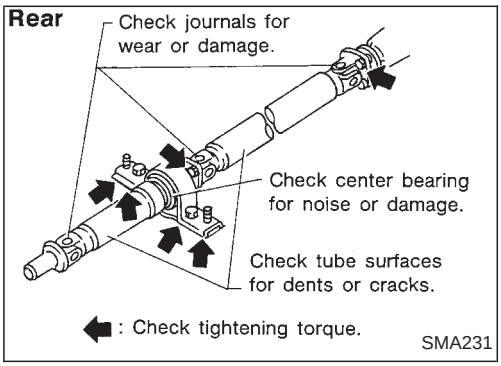
Nissan Matic "D" or Equivalent Automatic Transmission Fluid or API GL-4. Refer to "RECOMMENDED FLUIDS AND LUBRICANTS", MA-11.

Fluid capacity:

2.2 ℓ (2 lmp qt)

Drain plug:

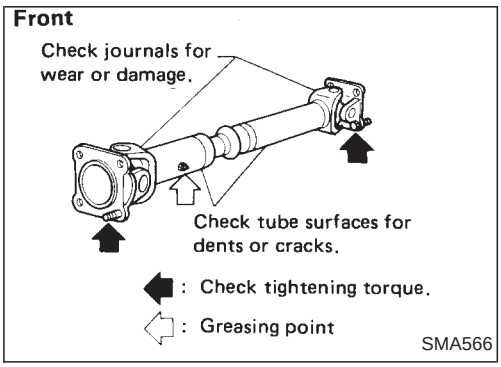
: 25 - 34 N·m (2.5 - 3.5 kg-m, 18 - 25 ft-lb)



Checking Propeller Shaft

Check propeller shaft for damage, looseness or grease leakage.

Tightening torque: Refer to PD section.

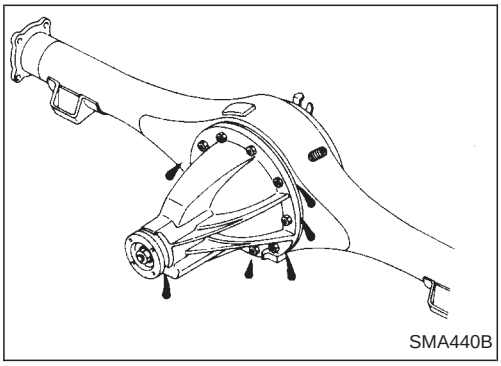


Greasing Propeller Shaft

Apply specified grease to nipples provided on propeller shaft.

Grease specification:

Refer to "RECOMMENDED FLUIDS AND LUBRICANTS", MA-11.



Checking Differential Gear Oil

Check for oil leakage and oil level.

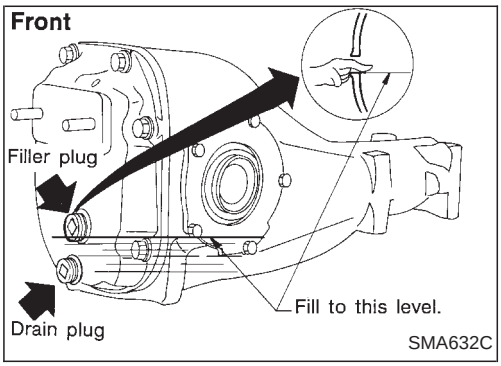
Filler plug:

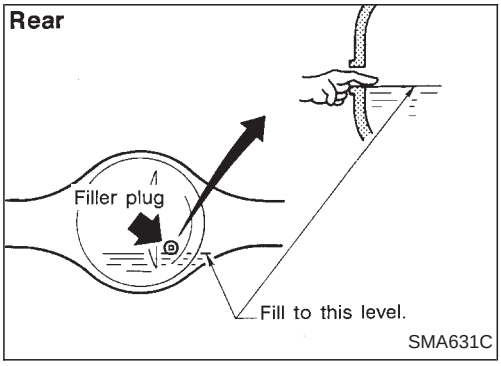
Front

: 39 - 59 N·m (4 - 6 kg-m, 29 - 43 ft-lb)

Rear

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





Changing Differential Gear Oil

1. Drain oil from drain plug and refill with new gear oil.
2. Check oil level.

Oil grade and viscosity:
See "RECOMMENDED FLUIDS AND LUBRICANTS", MA-11.
Oil capacity:
Front
1.3 ℓ (2-1/4 Imp pt)
Rear
C200
1.3 ℓ (2-1/4 Imp pt)
H233B
2.8 ℓ (4-7/8 Imp pt)
Drain plug:
Front
: 39 - 59 N·m (4 - 6 kg-m, 29 - 43 ft-lb)
Rear
: 59 - 98 N·m (6 - 10 kg-m, 43 - 72 ft-lb)

Limited-slip differential gear

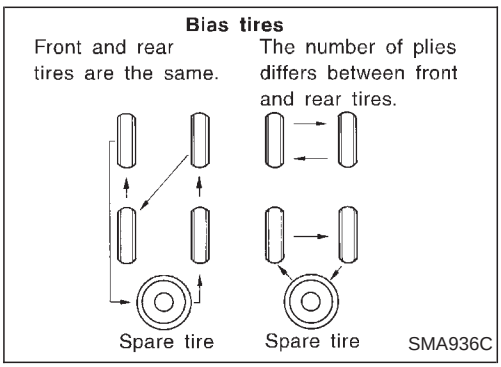
- Use only approved limited-slip differential gear oil.
- Limited-slip differential identification.

(1) Lift both rear wheels off the ground.
(2) Turn one rear wheel by hand.
(3) If both rear wheels turn in the same direction simultaneously, vehicle is equipped with limited-slip differential.

Balancing Wheels

Adjust wheel balance using the road wheel center.

Wheel balance (Maximum allowable unbalance):
Refer to SDS, MA-60.

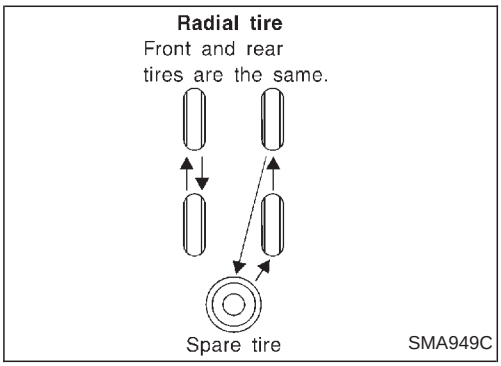


Tire Rotation

- **After rotating the tires, adjust the tire pressure.**
- **Retighten the wheel nuts after the aluminum wheel has been run for the first 1,000 km (600 miles) or if a flat tire occurs.**

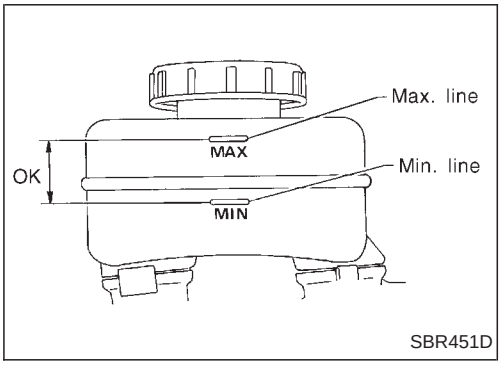
Wheel nuts:
: 118 - 147 N·m (12 - 15 kg-m, 87 - 108 ft-lb)

Tire Rotation (Cont'd)



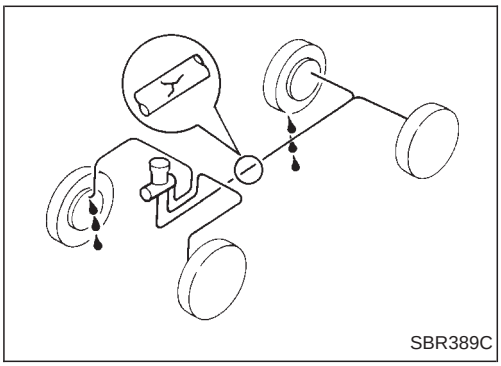
Checking Brake Fluid Level and Leaks

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



Checking Brake System

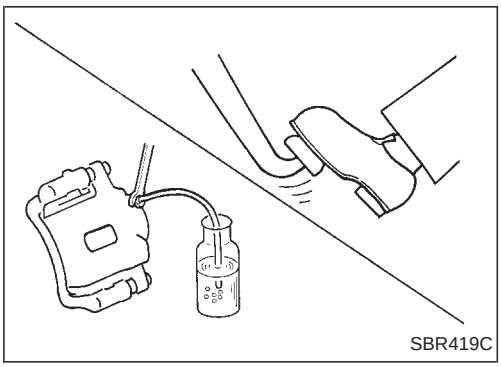
Check brake fluid lines and parking brake cables for improper attachment, leaks, chafing, abrasion, deterioration, etc.



Changing Brake Fluid

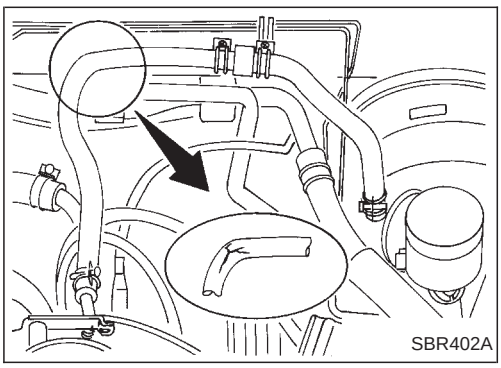
1. Drain brake fluid from each air bleeder valve.
2. Refill until new brake fluid comes out from each air bleeder valve. Use same procedure as in bleeding hydraulic system to refill brake fluid. Refer to BR section.

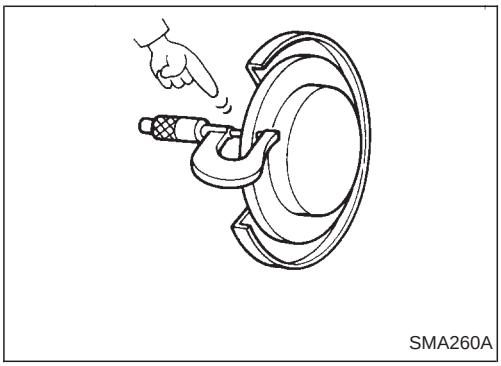
- **Refill with recommended brake fluid.**
- **Never reuse drained brake fluid.**
- **Be careful not to splash brake fluid on painted areas.**



Checking Brake Booster, Vacuum Hoses, Connections and Check Valve

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




SMA260A

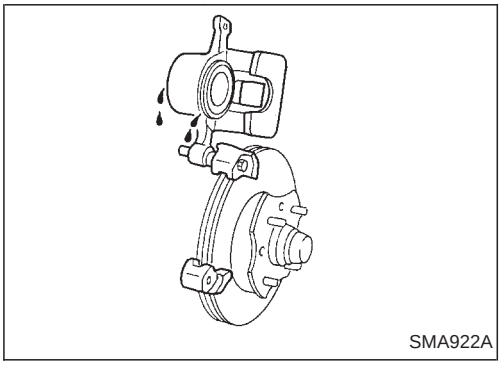
Checking Disc Brake

ROTOR

Check condition and thickness.

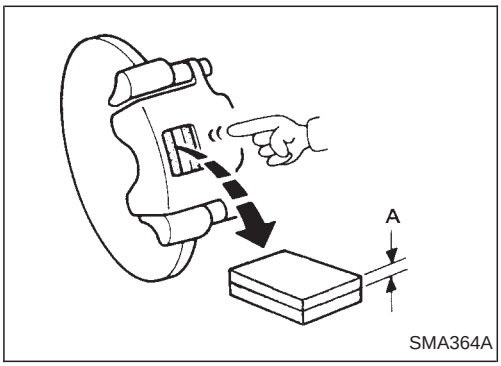
Minimum thickness:

CL28VA 20 mm (0.79 in)
CL28VD 24 mm (0.94 in)


SMA922A

CALIPER

Check for leakage.

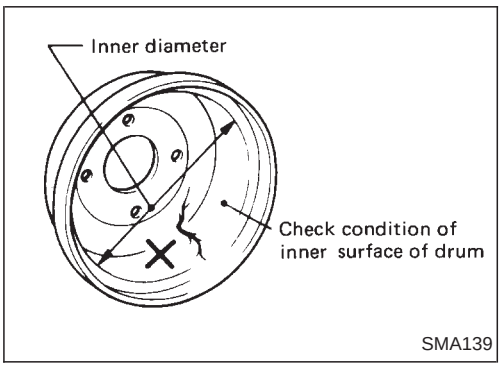


SMA364A

PAD

Check wear or damage.

Minimum thickness: 2 mm (0.08 in)



SMA139

Checking Drum Brake

WHEEL CYLINDER

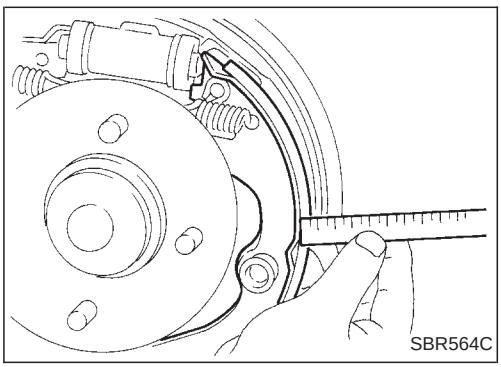
Check for leakage.

DRUM

Check condition and inner surface.

Drum repair limit (Maximum inner diameter):

LT26B 261.5 mm (10.30 in)
LT30A 296.5 mm (11.67 in)


SBR564C

LINING

Check wear or damage.

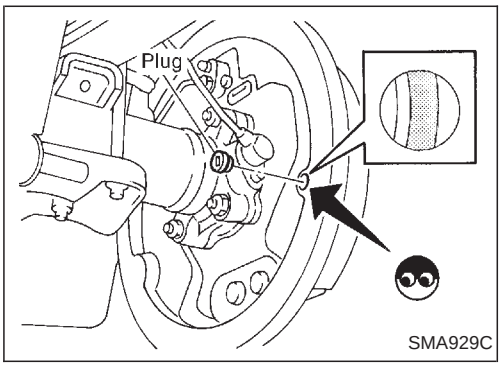
Lining wear limit (Minimum thickness):

1.5 mm (0.059 in)

Checking Drum Brake (Cont'd)

TEMPORARY METHOD FOR CHECKING LINING WEAR

Remove inspection hole plug and check for lining wear.



SMA929C

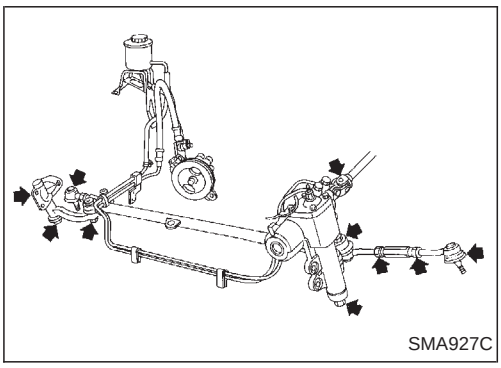
Checking Steering Gear and Linkage

STEERING GEAR

- Check gear housing and boots for looseness, damage or grease leakage.
- Check connection with steering column for looseness.

STEERING LINKAGE

- Check ball joint, dust cover and other component parts for looseness, wear, damage or grease leakage.

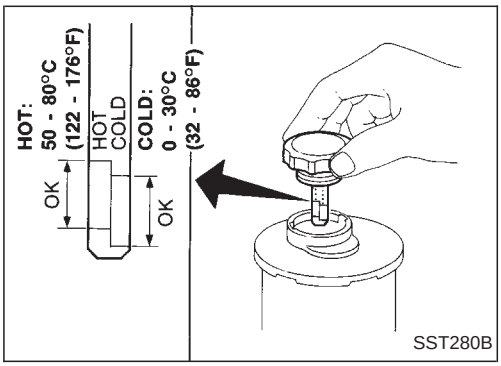

SMA927C

Checking Power Steering Fluid and Lines

- Check fluid level with engine off.
- Check fluid level with dipstick on reservoir cap. Use "HOT" range at fluid temperatures of 50 to 80°C (122 to 176°F). Use "COLD" range at fluid temperatures of 0 to 30°C (32 to 86°F).

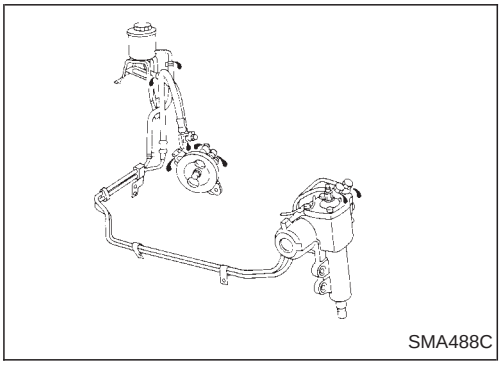
CAUTION:

- **Do not overfill.**
- **Recommended fluid is Automatic Transmission Fluid type "DEXRON™ IIE", "DEXRON™ III" or equivalent.**



SST280B

- Check lines for improper attachment, leaks, cracks, damage, loose connections, chafing or deterioration.


SMA488C

Checking Steering Gear Oil Level and Leaks

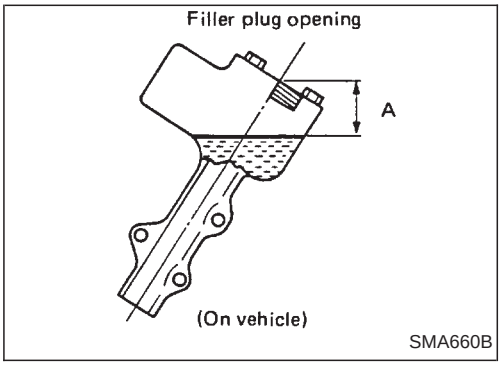
- Check steering gear for oil level and leakage.
- Check oil level.

Oil level:

Distance "A"

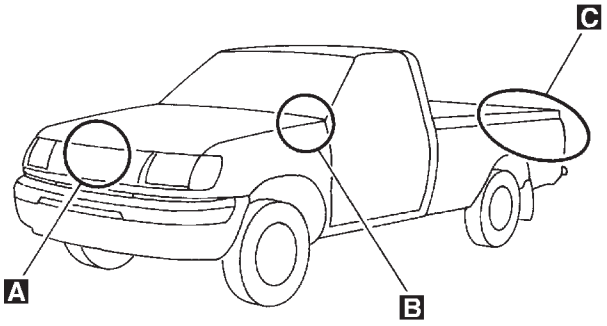
20 mm (0.79 in) or less

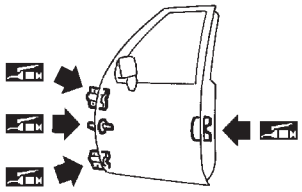
Be careful not to overflow gear oil when filling up.



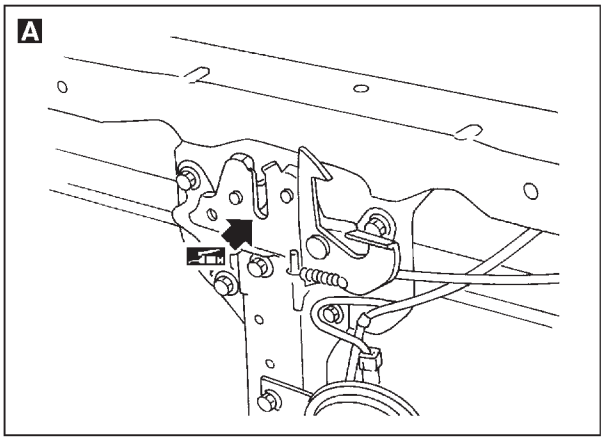
SMA660B

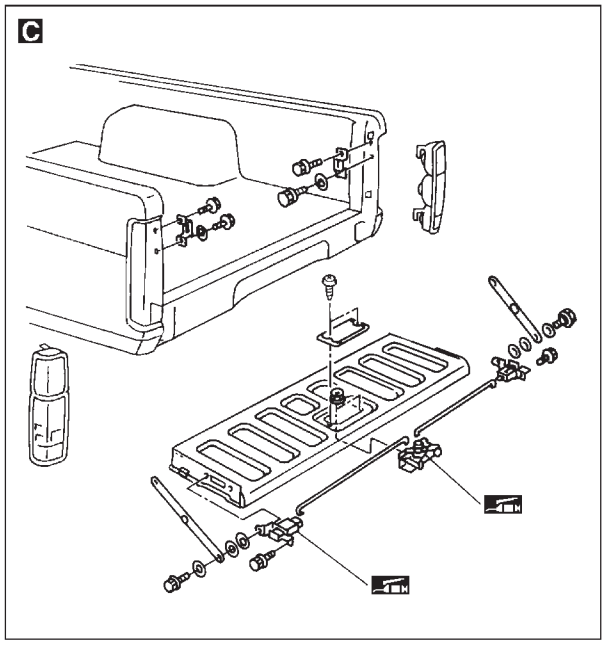
Lubricating Hood Latches, Locks and Hinges

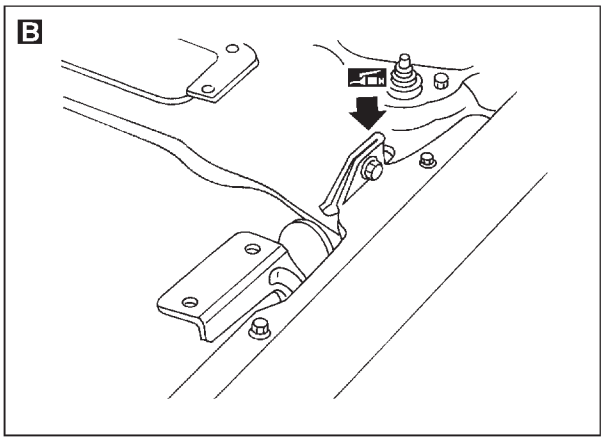




: Grease-up points

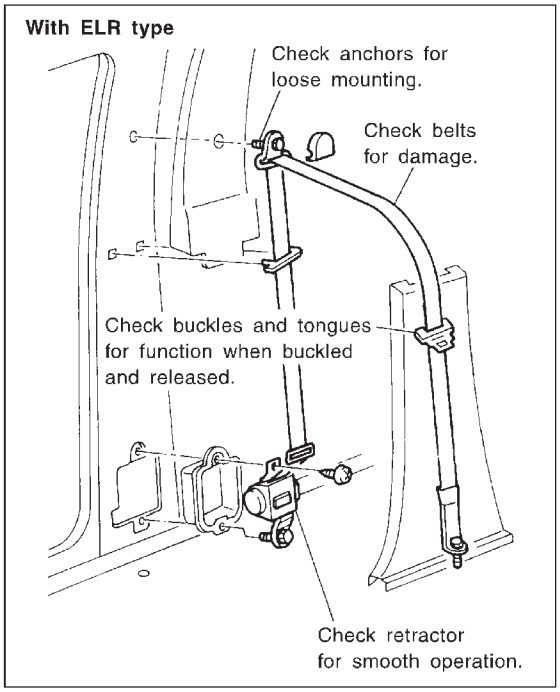


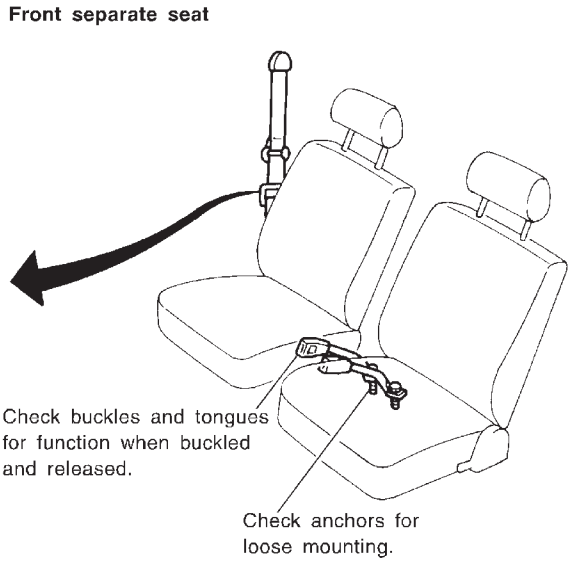


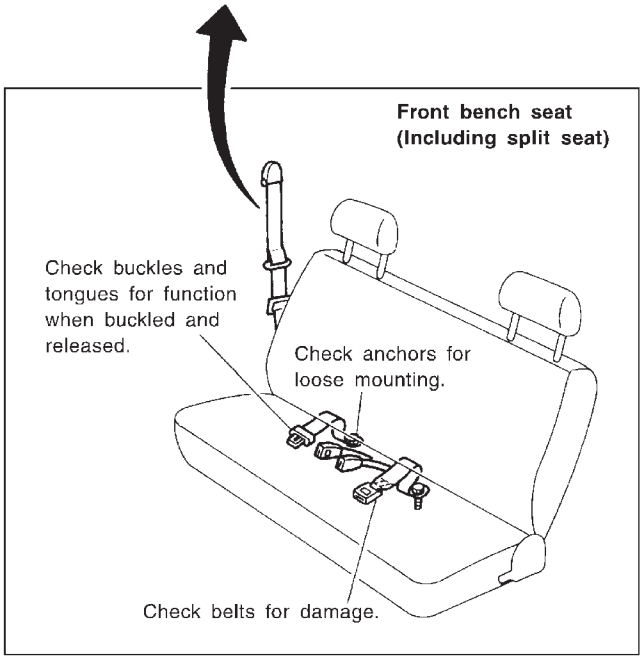


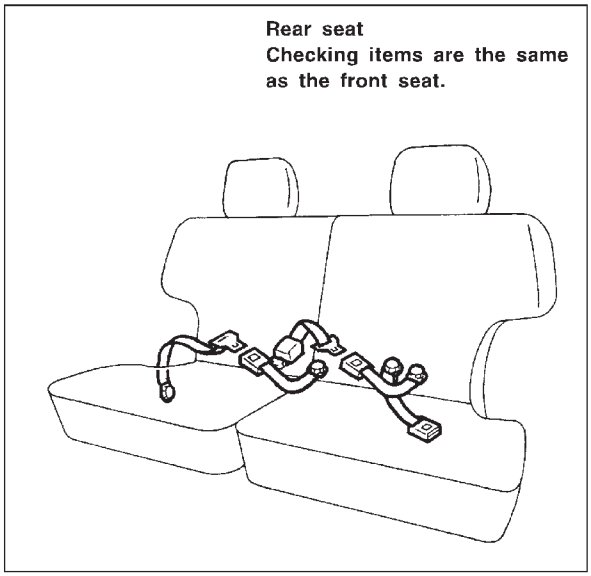
SMA944C

Checking Seat Belts, Buckles, Retractors, Anchors and Adjusters









CAUTION:

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

Anchor bolt:

: 43 - 55 N·m (4.4 - 5.6 kg-m, 32 - 41 ft-lb)

SMA945C

Engine Maintenance (KA)

INSPECTION AND ADJUSTMENT

Drive belt deflection

Unit: mm (in)

	Used belt deflection		Deflection of new belt
	Limit	Deflection after adjustment	
Alternator	17 (0.67)	10 - 12 (0.39 - 0.47)	8 - 10 (0.31 - 0.39)
Air conditioner compressor	16 (0.63)	10 - 12 (0.39 - 0.47)	8 - 10 (0.31 - 0.39)
Power steering oil pump	15 (0.59)	9 - 11 (0.35 - 0.43)	7 - 9 (0.28 - 0.35)
Applied pushing force	98 N (10 kg, 22 lb)		

Spark plug

Standard type		ZFR5E-11
Hot type		ZFR4E-11
Cold type		ZFR6E-11
Plug gap	mm (in)	1.0 - 1.1 (0.039 - 0.043)

Ignition wire

Resistance	kΩ/m (kΩ/ft)	Less than 12.2 (3.72)

Engine Maintenance (NA)

INSPECTION AND ADJUSTMENT

Drive belt deflection

Unit: mm (in)

	Used belt deflection		Deflection of new belt
	Limit	Deflection after adjustment	
Alternator	12 (0.47)	8 - 10 (0.31 - 0.39)	7 - 8 (0.28 - 0.31)
Power steering oil pump	16 (0.63)	10 - 12 (0.39 - 0.47)	8 - 10 (0.31 - 0.39)
Compressor	13 (0.51)	8 - 10 (0.31 - 0.39)	6 - 8 (0.24 - 0.31)
Applied pushing force	98 N (10 kg, 22 lb)		

Spark plug

Make		NGK
Type		
Standard		BPR5ES
Hot		BPR4ES
Cold		BPR6ES, BPR7ES
Plug gap	mm (in)	0.8 - 0.9 (0.031 - 0.035)

Ignition wire

Resistance	kΩ/m (kΩ/ft)	9.6 - 22.4 (2.93 - 6.83)

Engine Maintenance (Z)

INSPECTION AND ADJUSTMENT

Drive belt deflection

Unit: mm (in)

	Used belt deflection		Deflection of new belt
	Limit	Deflection after adjustment	
Alternator	16 (0.63)	10 - 13 (0.39 - 0.51)	8 - 11 (0.31 - 0.43)
A/C compressor	13 (0.51)	8 - 10 (0.31 - 0.39)	6 - 8 (0.24 - 0.31)
P/S oil pump	16 (0.63)	10 - 12 (0.39 - 0.47)	8 - 10 (0.31 - 0.39)
Applied pushing force	98 N (10 kg, 22 lb)		

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

Valve clearance (Hot)

Unit: mm (in)

Intake	0.30 (0.012)
Exhaust	0.30 (0.012)

Spark plug

Make	NGK
Standard	BP6ES
Hot type	BP4ES, BP5ES
Cold type	BP7ES

Ignition wires

High tension wire resistance kΩ/m (kΩ/ft)	Less than 19 (5.8)

Engine Maintenance (QD & TD)

INSPECTION AND ADJUSTMENT

Drive belt deflection

Unit: mm (in)

	Used belt deflection		Deflection of new belt
	Limit	Deflection after adjustment	
Alternator	20 (0.79)	11 - 13 (0.43 - 0.51)	9 - 11 (0.35 - 0.43)
Air conditioner compressor	12 (0.47)	6 - 7.5 (0.236 - 0.295)	5 - 6.5 (0.197 - 0.256)
Power steering oil pump	15 (0.59)	8 - 9.5 (0.315 - 0.374)	7 - 8.5 (0.276 - 0.335)
Applied pushing force	98 N (10 kg, 22 lb)		

Inspect drive belt deflections when engine is cold.

Valve clearance (Hot)

Intake and exhaust	mm (in)	0.30 - 0.40 (0.012 - 0.016)

Injection nozzle

Injection pressure kPa (bar, kg/cm^2, psi)	
Used nozzle	9,807 - 10,297 (98.1 - 103.0, 100 - 105, 1,422 - 1,493)
New nozzle	10,297 - 11,278 (103.0 - 112.8, 105 - 115, 1,493 - 1,635)

Idle speed

	FICD OFF	FICD ON
Idle speed rpm		
TD27	700±50	850±50
QD32	750^{0}_{+50}	750^{0}_{+50}

Chassis and Body Maintenance

INSPECTION AND ADJUSTMENT

Wheel balance

Maximum allowable unbalance	Dynamic (At rim flange)	g (oz)	10 (0.35) (one side)
	Static	g (oz)	20 (0.71)