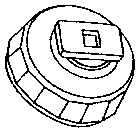
SECTION MA

CONTENTS

Special Service Tool

For engine maintenance

Tool number (Kent-Moore No.) Tool name	Description	Engine Application	
		VG30E	KA24E
KV10105900 (J34274) Oil filter cap wrench	 NT005 Removing oil filter	X	X

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 page
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.	—
Wheel nuts When checking the tires, make sure no nuts are missing, and check for any loose nuts. Tighten if necessary.	—
Tire rotation Tires should be rotated every 12,000 km (7,500 miles).	MA-23
Wheel alignment and balance If the vehicle should pull to either side while driving on a straight and level road, or if you detect uneven or abnormal tire wear, there may be a need for wheel alignment. If the steering wheel or seat vibrates at normal highway speeds, wheel balancing may be needed.	MA-23, FA-9
Windshield wiper blades Check for cracks or wear if they do not wipe properly.	—
Doors and engine hood Check that all doors and the engine hood operate smoothly as well as the trunk lid and back hatch. Also ensure, that all latches lock securely. Lubricate 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 lubrication frequently.	MA-26
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 buzzers/chimes Make sure that all warning lights and buzzers/chimes are operating properly.	—
Windshield wiper and washer Check that the wipers and washer operate properly and that the wipers do not streak.	—
Windshield defroster Check that the air comes out of the defroster outlets properly and in sufficient quantity when operating the heater or air conditioner.	—
Steering wheel Check that it has the specified free play. Be sure to check for changes in the steering condition, such as excessive free play, hard steering or strange noises. **Free play: Less than 35 mm (1.38 in)**	—
Seats Check seat position controls such as seat adjusters, seatback recliner, etc. to ensure they operate smoothly and that all latches lock securely in every position. Check that the head restrains move up and down smoothly and that the locks (if so equipped) hold securely in all latched positions. Check that the latches lock securely for folding-down rear seatbacks.	—
Seat belts Check that all parts of the seat belt system (e.g. buckles, anchors, adjusters and retractors) operate properly and smoothly, and are installed securely. Check the belt webbing for cuts, fraying, wear or damage.	MA-27
Clutch pedal Make sure the pedal operates smoothly and check that it has the proper free travel.	CL-5
Brakes Check that the brake does not pull the vehicle to one side when applied.	—

Item	Reference page
Brake pedal and booster Check the pedal for smooth operation and make sure it has the proper distance under it when depressed fully. Check the brake booster function. Be certain to keep floor mats away from the pedal.	BR-6, 10
Parking brake Check that the lever has the proper travel and confirm that your vehicle is held securely on a fairly steep hill with only the parking brake applied.	BR-27
Automatic transmission "Park position" mechanism Check that the lock release button on the selector lever operates properly and smoothly. On a fairly steep hill check that your vehicle is held securely with the selector lever in the "P" position without applying any brakes.	—
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-11, 16
Radiator and hoses Check the front of the radiator and clean off any dirt, insects, leaves, etc., that may have accumulated. Make sure the hoses have no cracks, deformation, rot or loose connections.	—
Brake and clutch fluid levels Make sure that the brake and clutch fluid levels are between the "MAX" and "MIN" lines on the reservoir.	MA-20, 23
Battery Check the fluid level in each cell. It should be between the "MAX" and "MIN" lines.	—
Engine drive belts Make sure that no belt is frayed, worn, cracked or oily.	MA-10, 15
Engine oil level Check the level on the dipstick after parking the vehicle on a level spot and turning off the engine.	MA-13, 18
Power steering fluid level and lines Check the level when the fluid is cold and the engine is turned off. Check the lines for proper attachment, leaks, cracks, etc.	MA-25
Automatic transmission fluid level Check the level on the dipstick after putting the selector lever in "P" with the engine idling.	MA-20
Exhaust system Make sure there are no loose supports, cracks or holes. If the sound of the exhaust seems unusual or there is a smell of exhaust fumes, immediately locate the trouble and correct it.	MA-20
Underbody The underbody is frequently exposed to corrosive substances such as those used on icy roads or to control dust. It is very important to remove these substances, otherwise rust will form on the floor pan, frame, fuel lines and around the exhaust system. At the end of winter, the underbody should be thoroughly flushed with plain water, being careful to clean those areas where mud and dirt can easily accumulate.	—
Fluid leaks Check under the vehicle for fuel, oil, water or other fluid leaks after the vehicle has been parked for a while. Water dripping from the air conditioner after use is normal. If you should notice any leaks or gasoline fumes are evident, check for the cause and correct it immediately.	—

Two different maintenance schedules are provided, and should be used, depending upon the conditions in which the vehicle is mainly operated. **After 60,000 miles (96,000 km) or 48 months, continue the periodic maintenance at the same mileage/time intervals.**

SCHEDULE 1

Follow Periodic Maintenance Schedule 1 if your driving habits frequently includes one or more of the following driving conditions:

- Repeated short trips of less than 5 miles (8 km).
- Repeated short trips of less than 10 miles (16 km) with outside temperatures remaining below freezing.
- Operating in hot weather in stop-and-go "rush hour" traffic.
- Extensive idling and/or low speed driving for long distances, such as police, taxi or door-to-door delivery use.
- Driving in dusty conditions.
- Driving on rough, muddy, or salt spread roads.
- Towing a trailer, using a camper or a car-top carrier.

SCHEDULE 2

Follow Periodic Maintenance Schedule 2 if none of the driving conditions shown in Schedule 1 apply to your driving habits.

Maintenance for off-road driving (4X4 only)

Whenever you drive off-road through sand, mud or water, 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 shaft and drive shafts
- ▲ Air cleaner filter
- ▲ Clutch housing (Check water entry. Refer to MA-20.)

Abbreviations: R = Replace I = Inspect. Correct or replace if necessary. [ ]: At the mileage intervals only

MAINTENANCE OPERATION Perform at number of miles, kilometers or months, whichever comes first.	Miles x 1,000 (km x 1,000) Months	MAINTENANCE INTERVAL 3.75 (6) 3	7.5 (12) 6	11.25 (18) 9	15 (24) 12	18.75 (30) 15	22.5 (36) 18	26.25 (42) 21	30 (48) 24	33.75 (54) 27	37.5 (60) 30	41.25 (66) 33	45 (72) 36	48.75 (78) 39	52.5 (84) 42	56.25 (90) 45	60 (96) 48	Reference page	
Emission control system maintenance																		KA24E	VG30E
Drive belts									I*								I*	MA-15	MA-10
Air cleaner filter	See NOTE (1)								[R]								[R]	MA-17	MA-12
Positive crankcase ventilation (PCV) filter (KA24E engine only)	See NOTE (3)								[R]								[R]	MA-19	—
Pulsed secondary air injection valve filter (KA24E engine only)	See NOTE (2)																	MA-19	—
Vapor lines									I*								I*	MA-19	MA-14
Fuel lines									I*								I*	MA-16	MA-12
Fuel filter	See NOTE (3)*																	MA-16	MA-12
Engine coolant	See NOTE (4)																R*	MA-15	MA-11
Engine oil		R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	MA-17	MA-13
Engine oil filter (Use Nissan PREMIUM type or equivalent)		R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	MA-18	MA-13
Spark plugs									[R]								[R]	MA-18	MA-14
Timing belt (VG30E engine only)		Replace every 105,000 miles (168,000 km)																—	EM-12
Chassis and body maintenance																			
Brake lines & cables					I				I				I				I	MA-23	
Brake pads, discs, drums & linings			I		I		I		I		I		I		I		I	MA-24	
Manual and automatic transmission, transfer & differential gear oil (exc. LSD)	See NOTE (5)				I				I				I				I	MA-20, 22	
Limited-slip differential (LSD) gear oil	See NOTE (5)				I				R				I				R	MA-23	
Steering gear (box) & linkage, (steering damper 4WD), axle & suspension parts			I		I		I		I		I		I		I		I	MA-25, FA-6, RA-4	
Drive shaft boots & propeller shaft (4WD)			I		I		I		I		I		I		I		I	MA-22, FA-14	
Steering linkage ball joints & front suspension ball joints			I		I		I		I		I		I		I		I	MA-25, FA-6	
Front wheel bearing grease (4x2)									I								I	FA-7	
Front wheel bearing grease & free-running hub grease (4WD)	See NOTE (6)				I				R				I				R	FA-7, 18	
Exhaust system			I		I		I		I		I		I		I		I	MA-20	

NOTE: (1) If operating mainly in dusty conditions, more frequent maintenance may be required.
(2) If operating mainly in dusty conditions, replace every 30,000 miles (48,000 km).
(3) If vehicle is operated under extremely adverse weather conditions or in areas where ambient temperatures are either extremely low or extremely high, the filters might become clogged. In such an event, replace them immediately.
(4) After 60,000 miles (96,000 km) or 48 months, replace every 30,000 miles (48,000 km) or 24 months.
(5) If towing a trailer, using a camper or a car-top carrier, or driving on rough or muddy roads, change (not just inspect) oil at every 30,000 miles (48,000 km) or 24 months except for LSD. Change LSD gear oil every 15,000 miles (24,000 km) or 12 months.
(6) If operating frequently in water, replace grease every 3,750 miles (6,000 km) or 3 months.
(7) Maintenance items and intervals with "*" are recommended by NISSAN for reliable vehicle operation. The owner need not perform such maintenance in order to maintain the emission warranty or manufacturer recall liability. Other maintenance items and intervals are required.

Abbreviations: R = Replace I = Inspect. Correct or replace if necessary. [ ]: At the mileage intervals only

MAINTENANCE OPERATION Perform at number of miles, kilometers or months, whichever comes first.		MAINTENANCE INTERVAL								Reference page	
	Miles x 1,000	7.5	15	22.5	30	37.5	45	52.5	60		
	(km x 1,000)	(12)	(24)	(36)	(48)	(60)	(72)	(84)	(96)		
	Months	6	12	18	24	30	36	42	48		
Emission control system maintenance										KA24E	VG30E
Drive belts					I*				I*	MA-15	MA-10
Air cleaner filter					[R]				[R]	MA-17	MA-12
Positive crankcase ventilation (PCV) filter (KA24E engine only)	See NOTE (1)				[R]				[R]	MA-19	—
Vapor lines					I*				I*	MA-19	MA-14
Fuel lines					I*				I*	MA-16	MA-12
Fuel filter	See NOTE (1)*									MA-16	MA-12
Engine coolant	See NOTE (2)								R*	MA-15	MA-11
Engine oil		R	R	R	R	R	R	R	R	MA-17	MA-13
Engine oil filter (Use Nissan PREMIUM type or equivalent)			R		R		R		R	MA-18	MA-13
Spark plugs					[R]				[R]	MA-18	MA-14
Timing belt (VG30E engine only)			Replace every 105,000 miles (168,000 km)							—	EM-12
Chassis and body maintenance											
Brake lines & cables			I		I		I		I	MA-23	
Brake pads, discs, drums & linings			I		I		I		I	MA-24	
Manual and automatic transmission, transfer & differential gear oil (exc. LSD)			I		I		I		I	MA-20, 22	
Limited-slip differential (LSD) gear oil			I		R		I		R	MA-23	
Steering gear (box) & linkage, (steering damper 4x4), axle & suspension parts					I				I	MA-25, FA-6, RA-4	
Drive shaft boots & propeller shaft (4x4)			I		I		I		I	MA-22, FA-14	
Steering linkage ball joints & front suspension ball joints									I	MA-25, FA-6	
Front wheel bearing grease (4x2)					I				I	FA-7	
Front wheel bearing grease & free-running hub grease (4x4)			I		R		I		R	FA-7, 18	
Exhaust system					I				I	MA-20	

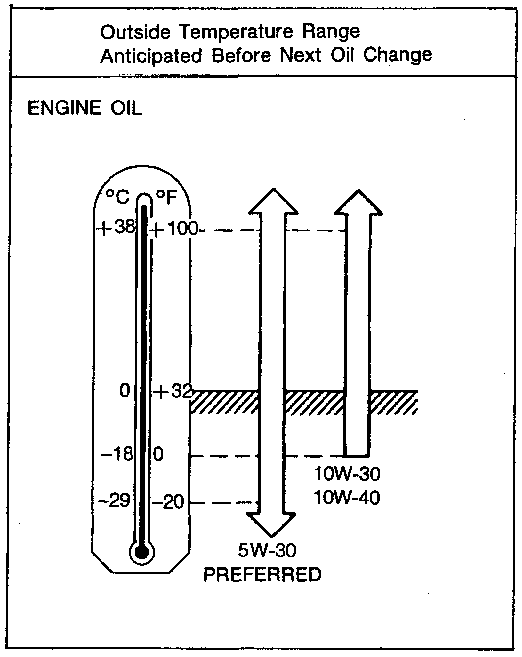
NOTE: (1) If vehicle is operated under extremely adverse weather conditions or in areas where ambient temperatures are either extremely low or extremely high, the filters might become clogged. In such an event, replace them immediately.
(2) After 60,000 miles (96,000 km) or 48 months, replace every 30,000 miles (48,000 km) or 24 months.
(3) Maintenance items and intervals with "*" are recommended by NISSAN for reliable vehicle operation. The owner need not perform such maintenance in order to maintain the emission warranty or manufacturer recall liability. Other maintenance items and intervals are required.

Fluids and Lubricants

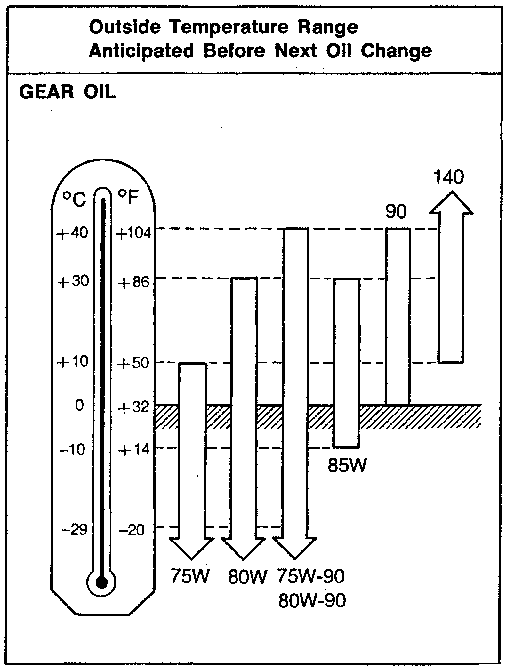
			Capacity (Approximate)			Recommended Fuel/Lubricants
			US measure	Imp measure	Liter	
Engine oil (Refill)						
VG30E	Truck (2WD)	With oil filter	4-1/4 qt	3-1/2 qt	4.0	Energy Conserving Oils*2 of API SG
		Without oil filter	3-7/8 qt	3-1/8 qt	3.6	
VG30E	Truck (4WD) & Pathfinder	With oil filter	3-5/8 qt	3 qt	3.4	
		Without oil filter	3-1/8 qt	2-5/8 qt	3.0	
KA24E	2WD	With oil filter	4-1/8 qt	3-3/8 qt	3.9	
		Without oil filter	3-3/4 qt	3-1/8 qt	3.5	
KA24E	4WD	With oil filter	3-1/2 qt	2-7/8 qt	3.3	
		Without oil filter	3-1/8 qt	2-1/2 qt	2.9	
Cooling system (With reservoir)						
	VG30E	2WD	11-3/8 qt	9-3/8 qt	10.7	Anti-freeze coolant (Ethylene glycol base)
		4WD	12-3/8 qt	10-1/4 qt	11.7	
	KA24E	2WD	8-5/8 qt	7-1/8 qt	8.1	
		4WD	9-1/2 qt	7-7/8 qt	9.0	
Manual transmission gear oil	FS5W71C	2WD	4-1/4 pt	3-1/2 pt	2.0	API GL-4*1
		4WD	8-1/2 pt	7 pt	4.0	
	FS5R30A	2WD	5-1/8 pt	4-1/4 pt	2.4	
		4WD	7-5/8 pt	6-3/8 pt	3.6	
Transfer gear oil			2-3/8 qt	2 qt	2.2	Genuine Nissan ATF*3 or equivalent Type DEXRON™ II
Manual steering gear oil			3/4 pt	5/8 pt	0.33	API GL-4*1
Differential carrier gear oil						
Rear:	H190A		3-1/8 pt	2-5/8 pt	1.5	Standard differential gear: API GL-5*1 Limited-slip differential (LSD) gear: Use only LSD gear oil API GL-5 and SAE 80W-90*4 approved for Nissan LSD*5.
	C200		2-3/4 pt	2-1/4 pt	1.3	
	H233B		5-7/8 pt	4-7/8 pt	2.8	
Front (4WD):	R180A		2-3/4 pt	2-1/4 pt	1.3	
	R200A		3-1/8 pt	2-5/8 pt	1.5	
Automatic transmission fluid	2WD		8-3/8 qt	7 qt	7.9	Genuine Nissan ATF*3 or equivalent Type DEXRON™
	4WD		9 qt	7-1/2 qt	8.5	
Power steering fluid			2-1/8 pt	1-3/4 pt	1.0	Type DEXRON™ II or equivalent
Brake and clutch fluid			—	—	—	Genuine Nissan Brake Fluid*3 or equivalent DOT 3 (US FMVSS No. 116)
Multi-purpose grease			—	—	—	NLGI No. 2 (Lithium soap base)
Free-running hub grease (Auto-lock)			—	—	—	Genuine Nissan grease or equivalent

*1: For further details, see the recommended SAE viscosity number chart.
*2: These oils can be identified by such labels as EC-I, EC-II, energy conserving, energy saving, improved fuel economy, etc.
*3: Available in mainland U.S.A. through your Nissan dealer.
*4: SAE 90 is acceptable in ambient temperatures above –18°C (0°F).
*5: Contact a Nissan dealer for a list of approved oils.

SAE Viscosity Number

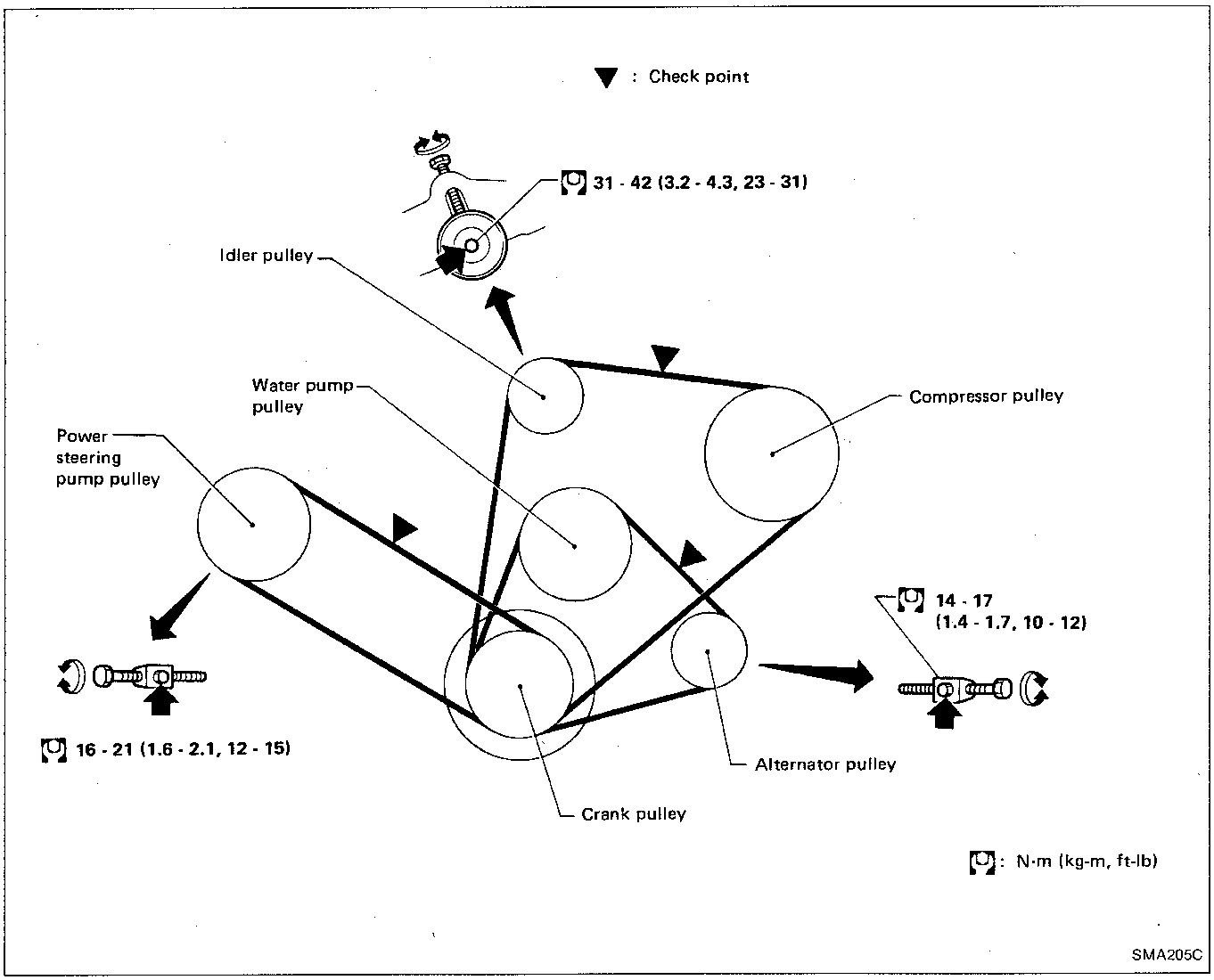


5W-30 is preferable for all ambient temperatures. 20W-40 and 20W-50 are usable if the ambient temperature is above 10°C (50°F) for all seasons.



75W-90 for transmission, and 80W-90 for differential are preferable if the ambient temperature is below 40°C (104°F).

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.

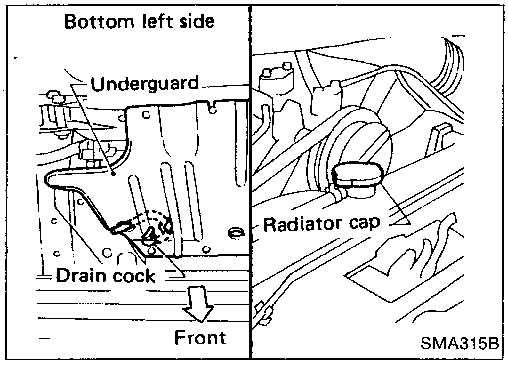
Adjust if belt deflections exceed the limit.

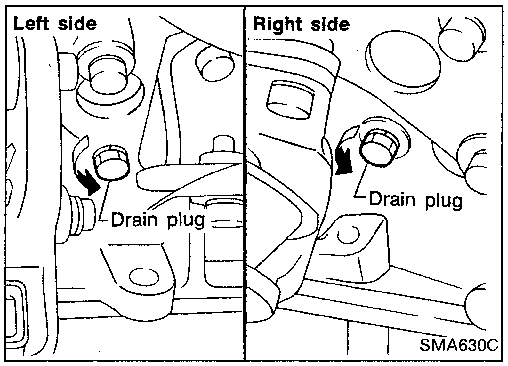
Belt deflection:

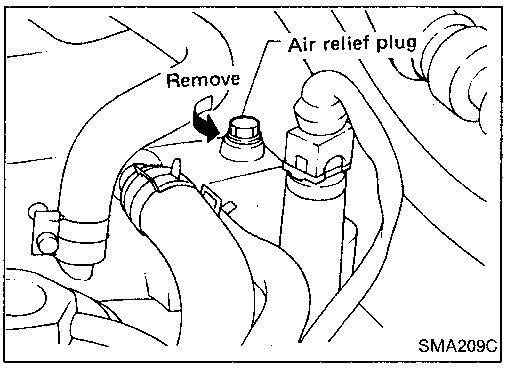
Unit: mm (in)

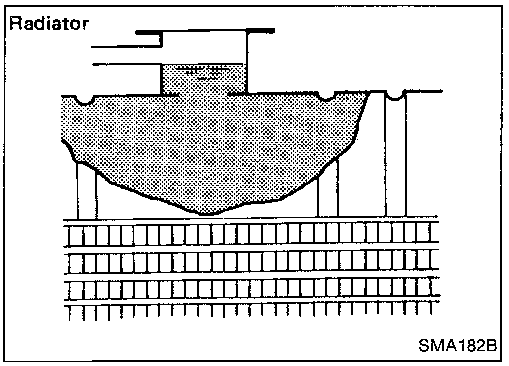
	Used belt deflection		Deflection of new belt
	Limit	Deflection after adjustment	
Alternator	12 (0.47)	6 - 8 (0.24 - 0.31)	5 - 7 (0.20 - 0.28)
Air conditioner compressor	16 (0.63)	9 - 11 (0.35 - 0.43)	7 - 9 (0.28 - 0.35)
Power steering oil pump	17 (0.67)	11 - 13 (0.43 - 0.51)	9 - 11 (0.35 - 0.43)
Applied pushing force	98 N (10 kg, 22 lb)		

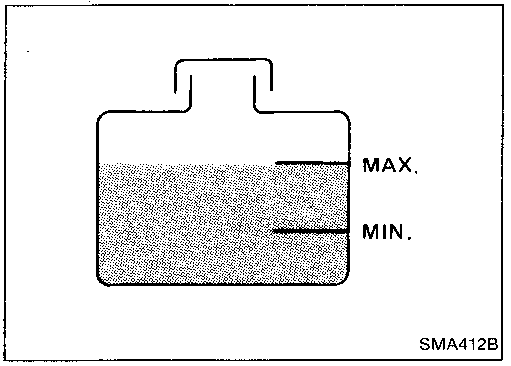
Inspect drive belt deflections when engine is cold.











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 or the highest temperature position.

For Auto-air conditioner:

Turn ignition switch "ON" to open water cock.

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

Be careful not to allow coolant to contact drive belts.

3. Remove drain plugs on both sides of cylinder block.
4. Close drain cock and tighten drain plugs securely.

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

Apply sealant to the drain plug thread.

5. Open air relief plug.
6. Fill radiator with water and close air relief plug.
7. Start engine and warm it up sufficiently.
8. Stop engine and wait until it cools down.
9. Repeat step 3 through step 8 until clear water begins to drain from radiator.
10. Drain water.

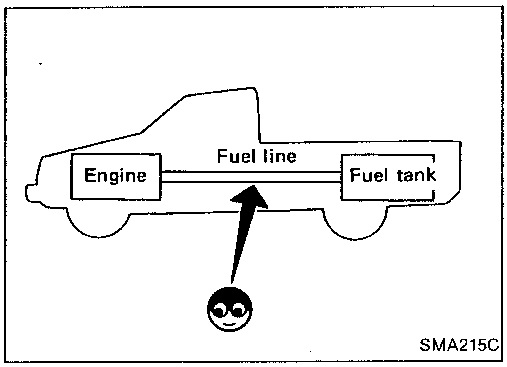
11. Open air relief plug again.
12. Fill radiator with coolant up to specified level.
    Follow instructions attached to anti-freeze container for mixing ratio of anti-freeze to water.

Unit: ℓ (US qt, Imp qt)

	Coolant capacity	
	2WD	4WD
Without reservoir tank	9.9 (10-1/2, 8-3/4)	10.9 (11-1/2, 9-5/8)
Reservoir tank	0.8 (7/8, 3/4)	

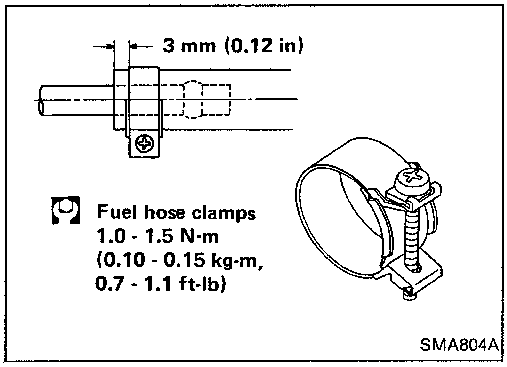
Pour coolant through coolant filler neck slowly to allow air in system to escape.

13. Remove reservoir tank, drain coolant, then clean reservoir tank.
14. Fill reservoir tank with coolant up to "MAX" level.
15. Close air relief plug again.
16. Run engine and warm it up.
17. Stop engine and cool it down, then add coolant as necessary.

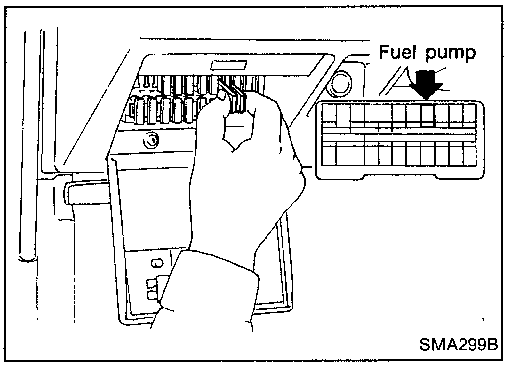


Checking Fuel Lines

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.



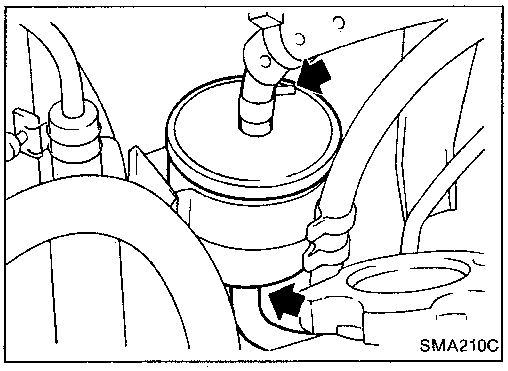
CAUTION:
Tighten high-pressure rubber hose clamp so that clamp end is 3 mm (0.12 in) from hose end.
Tightening torque specifications are the same for all rubber hose clamps.
Ensure that screw does not contact adjacent parts.



Changing Fuel Filter

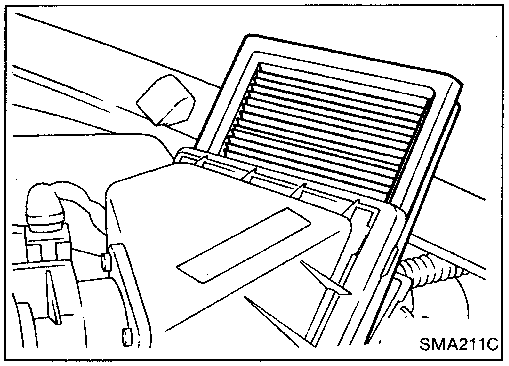
WARNING:
Before removing fuel filter, release fuel pressure from fuel line to eliminate danger.

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.



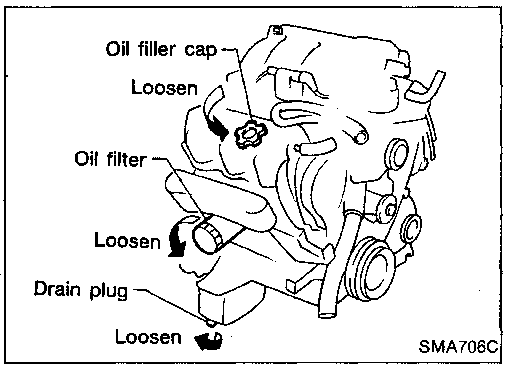
5. Loosen fuel hose clamps.
6. Replace fuel filter.

- **Be careful not to spill fuel 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

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 SG
Viscosity: See "RECOMMENDED FLUIDS AND LUBRICANTS" in MA section.

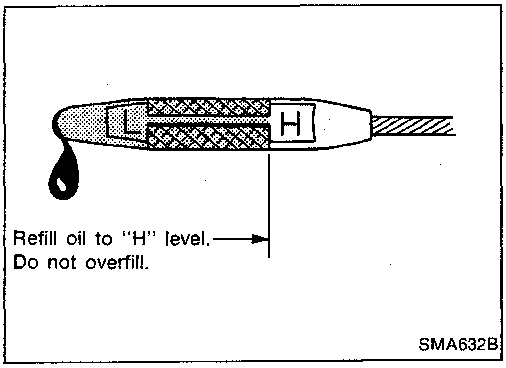
Refill oil capacity (Approximately) :

Unit: ℓ (US qt, Imp qt)

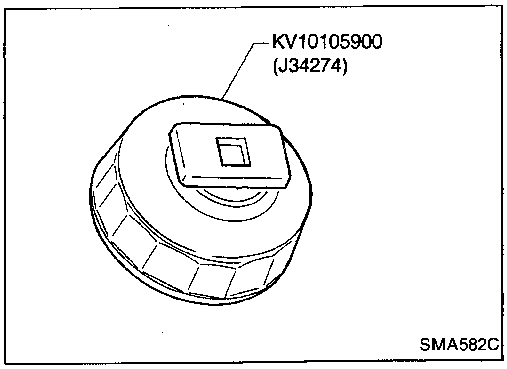
	Truck 2WD	Truck 4WD & Pathfinder
With oil filter change	4.0 (4-1/4, 3-1/2)	3.4 (3-5/8, 3)
Without oil filter change	3.6 (3-7/8, 3-1/8)	3.0 (3-1/8, 2-5/8)

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 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.

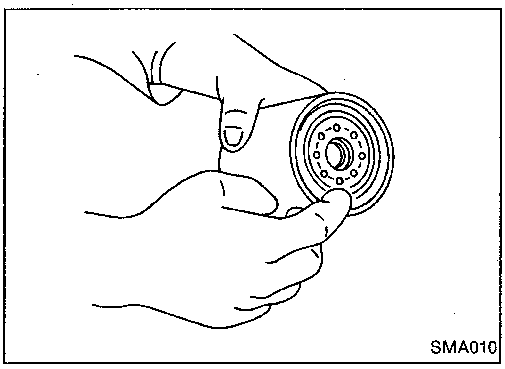


Changing Oil Filter

1. Remove oil filter with Tool.

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

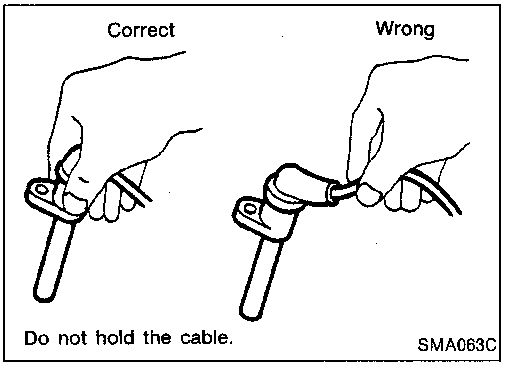
Changing Oil Filter (Cont'd)


SMA010

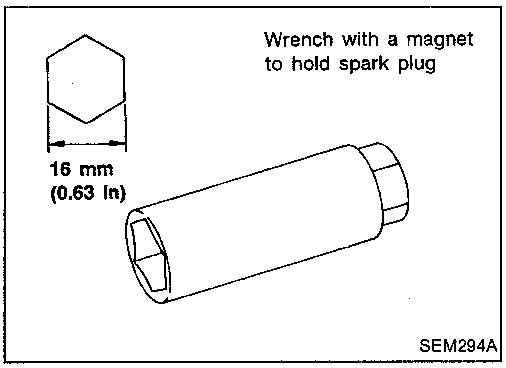
2. Before installing a new oil filter, clean the oil filter mounting surface on cylinder block, and coat the oil filter rubber seal with a little engine oil.
3. Screw in the oil filter until a slight resistance is felt, then tighten additionally more than 2/3 turn.
4. Add engine oil.

Refer to Changing Engine Oil.

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.

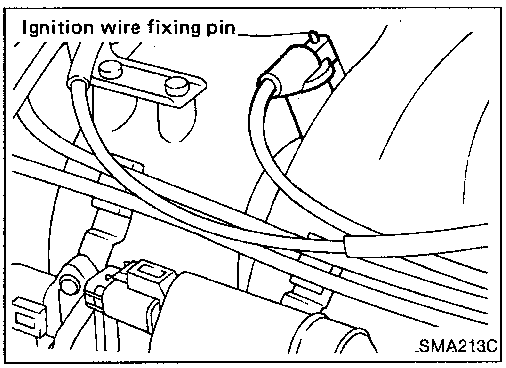
Spark plug:

	For California	Except for California
Standard type	BKR6EY	BKR5EY
Cold type	BKR7EY	BKR6EY
Hot type	BKR5EY	—

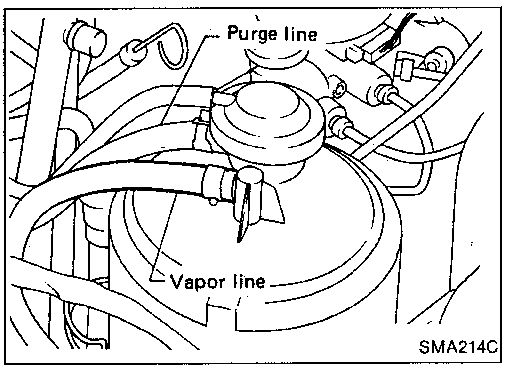
3. Check spark plug gap of each new spark plug.
   Gap:
   0.8 - 0.9 mm (0.031 - 0.035 in)
4. Install spark plugs. Reconnect ignition wires according to numbers indicated on them.

When installing spark plugs to No. 2 and 4 cylinders, securely fit each ignition wire mounting hole onto the ignition wire fixing pin.

Spark plug:
: 20 - 29 N·m
(2.0 - 3.0 kg-m, 14 - 22 ft-lb)

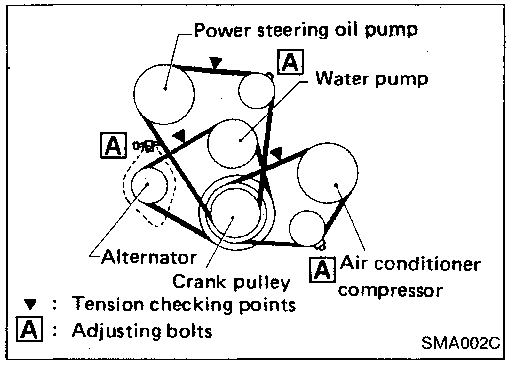


Checking Vapor Lines



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 SYSTEM" in EF & EC section.



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.

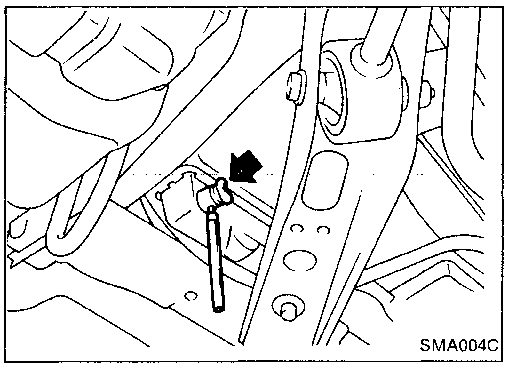
Adjust if belt deflections exceed the limit.

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.



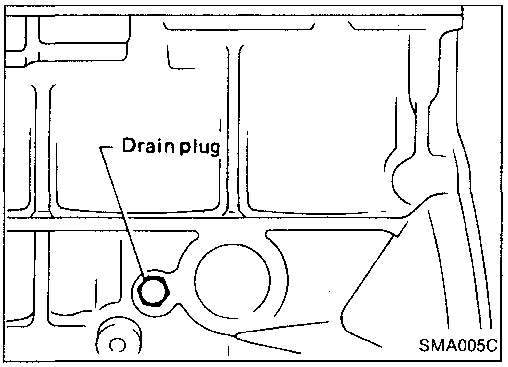
Changing Engine Coolant

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 or the highest temperature position.
2. Open drain cock at the bottom of radiator, and remove radiator cap.

Be careful not to allow coolant to contact drive belts.



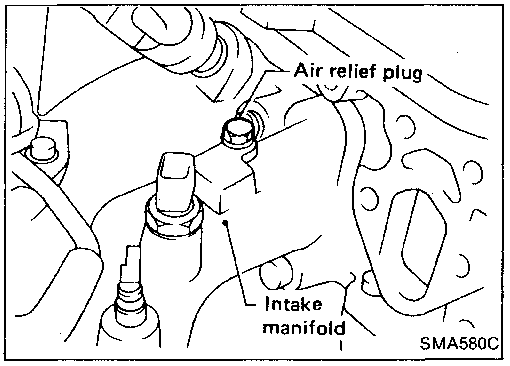
3. Remove cylinder block drain plug.
4. Close drain cock and tighten drain plug securely.

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

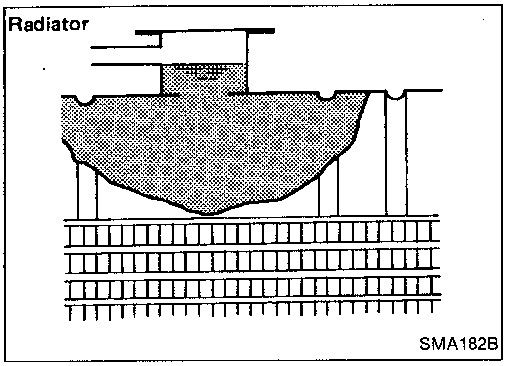
  : 34 - 44 N·m

  (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.



Changing Engine Coolant (Cont'd)



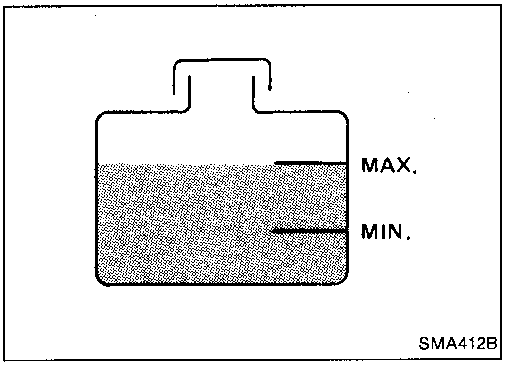
SMA182B

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.

Unit: ℓ (US qt, Imp qt)

	Coolant capacity	
	2WD	4WD
Without reservoir tank	7.3 (7-3/4, 6-3/8)	8.2 (8-5/8, 7-1/4)
Reservoir tank	0.8 (7/8, 3/4)	

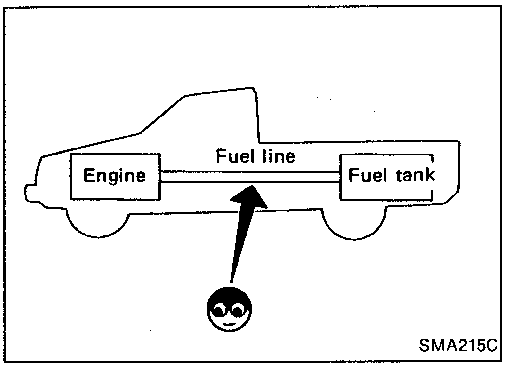
Pour coolant through coolant filler neck slowly to allow air in system to escape.



SMA412B

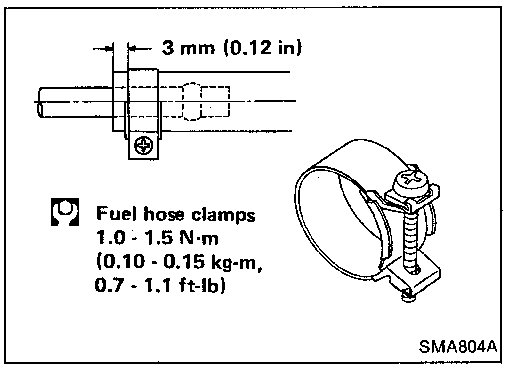
14. Close air relief plug.
15. Remove reservoir tank, drain coolant, then clean reservoir tank.
16. Install reservoir tank and fill it with coolant up to "MAX" level and then install radiator cap.
17. Run engine and warm it up sufficiently.
18. Race engine 2 or 3 times under no-load.
19. Stop engine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

Checking Fuel Lines



SMA215C

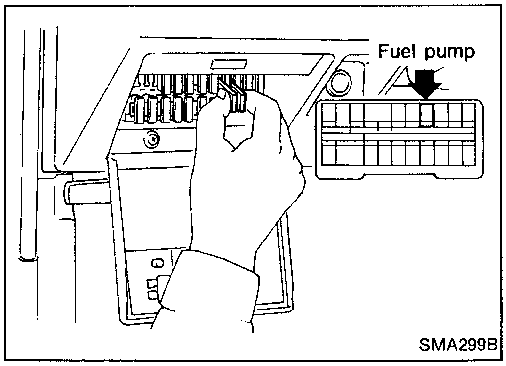
Inspect fuel lines and tank for improper attachment and for leaks, cracks, damage, loose connections, chafing and deterioration.
If necessary, repair or replace faulty parts.



SMA804A

CAUTION:
Tighten high-pressure rubber hose clamp so that clamp end is 3 mm (0.12 in) from hose end.
Ensure that screw does not contact adjacent parts.

Changing Fuel Filter

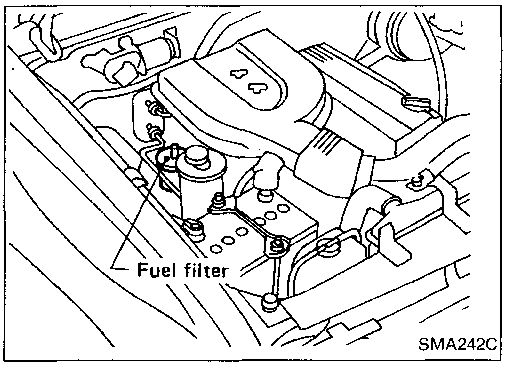


SMA299B

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

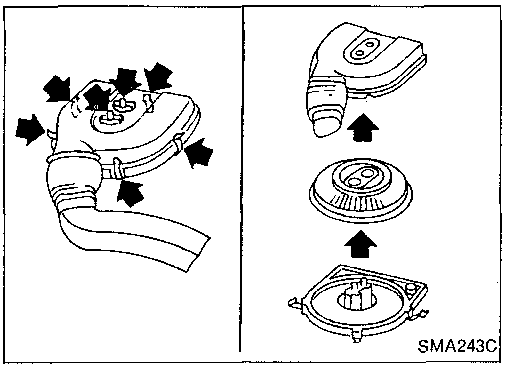
1. Remove fuse for fuel pump.
2. Start engine.
3. After engine stalls, crank engine two or three times to make sure that fuel pressure is released.
4. Turn ignition switch off and install fuse for fuel pump.

Changing Fuel Filter (Cont'd)



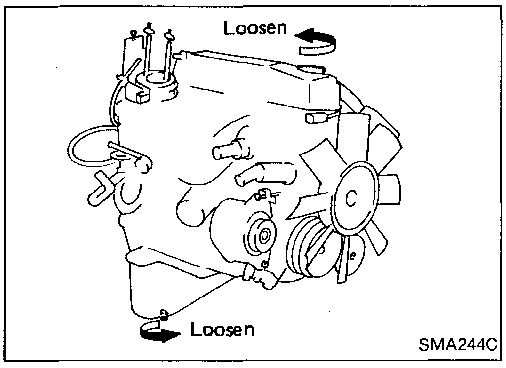
5. Loosen fuel hose clamps.
6. Replace fuel filter.

- **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" in MA-16.**



Changing Air Cleaner Filter

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 SG

Viscosity:

See RECOMMENDED FLUIDS AND LUBRICANTS in MA section.

Refill oil capacity (Approximately):

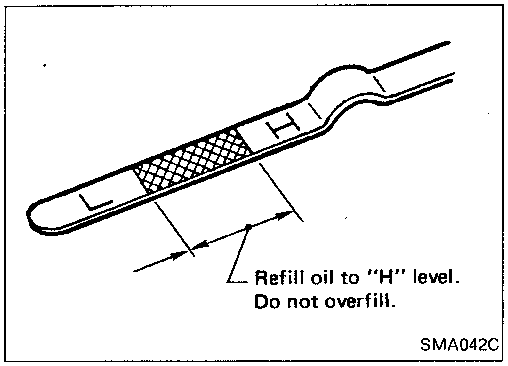
Unit: ℓ (US qt, Imp qt)

	2WD	4WD
With oil filter change	3.9 (4-1/8, 3-3/8)	3.3 (3-1/2, 2-7/8)
Without oil filter change	3.5 (3-3/4, 3-1/8)	2.9 (3-1/8, 2-1/2)

CAUTION:

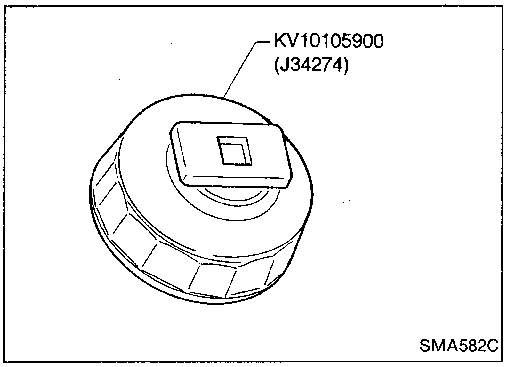
- **Be sure to clean drain plug and install with new washer.**
  Drain plug:
  : 29 - 39 N·m
  (3.0 - 4.0 kg-m, 22 - 29 ft-lb)
- **The refill capacity changes depending on the oil temperature and drain time, use these values as a reference and be certain to check with the dipstick when changing the oil.**

Changing Engine Oil (Cont'd)



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.

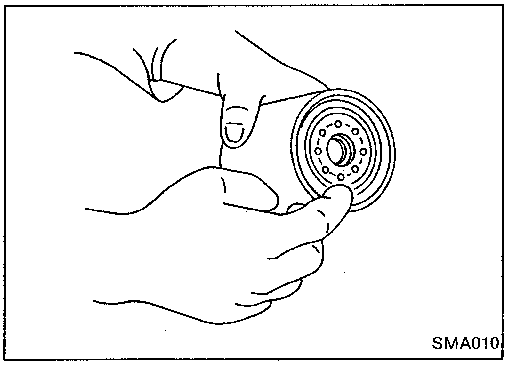
Changing Oil Filter



1. Remove oil filter with tool.

WARNING:

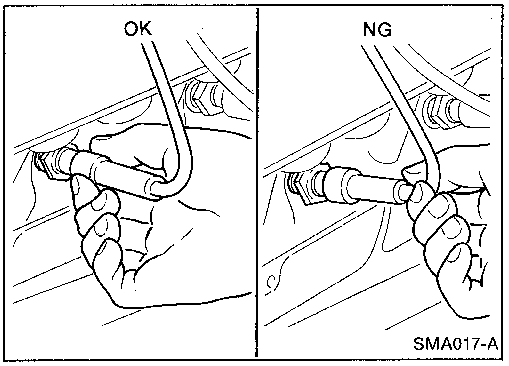
Be careful not to burn yourself, as the engine and the engine oil are hot.



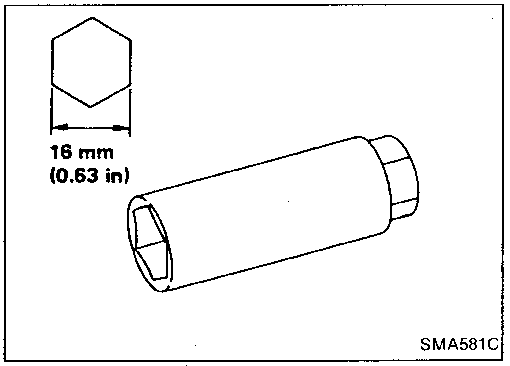
2. Before installing new oil filter, clean the oil filter mounting surface on cylinder block, and coat the rubber seal of oil filter with a little engine oil.
3. Screw in the oil filter until a slight resistance is felt, then tighten additionally more than 2/3 turn.
4. Add engine oil.

Refer to Changing Engine Oil in MA-17.

Changing Spark Plugs



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

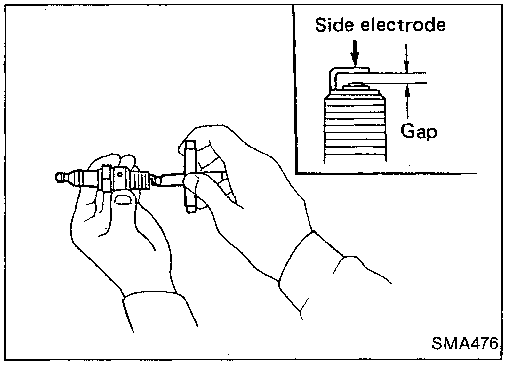


2. Remove spark plugs with spark plug wrench.

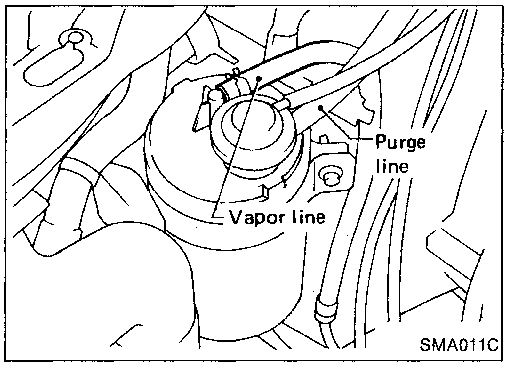
Spark plug:

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

Changing Spark Plugs (Cont'd)

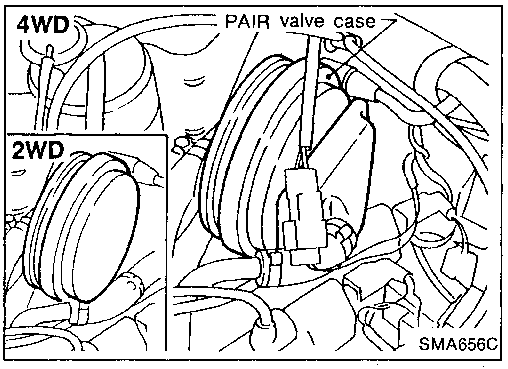


3. Check plug gap of each new spark plug.
   Gap: 1.0 - 1.1 mm (0.039 - 0.043 in)
4. Install spark plugs. Reconnect ignition wires according to numbers indicated on them.
   Spark plug:
   : 20 - 29 N·m
   (2.0 - 3.0 kg-m, 14 - 22 ft-lb)



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 SYSTEM in EF & EC section.

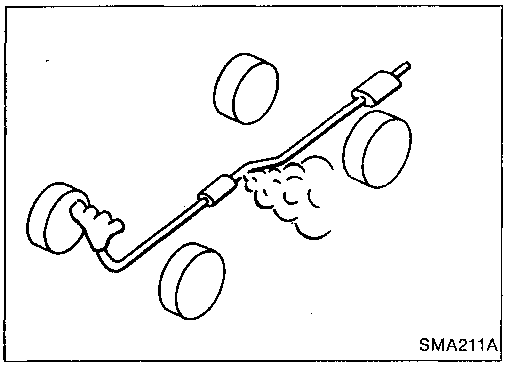


Changing Pulsed Secondary Air Injection (PAIR) Valve (PAIR valve) Filter

Remove PAIR valve case and take out PAIR valve filter. Then install new PAIR valve filter.

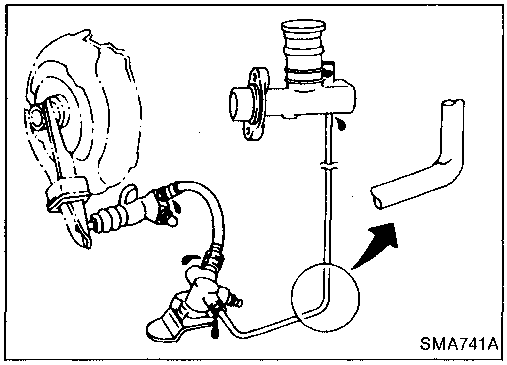
Changing Positive Crankcase Ventilation (PCV) Filter

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


SMA211A

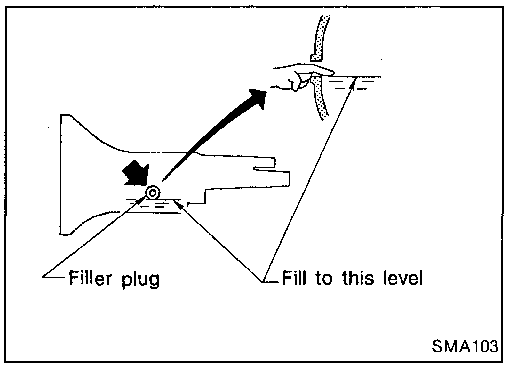
Checking Exhaust System

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


SMA741A

Checking Clutch Fluid Level and Leaks

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



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 capacity:

FS5W71C

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

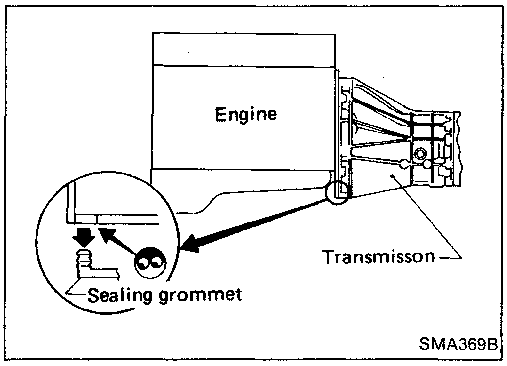
4WD 4.0 liters (8-1/2 US pt, 7 Imp pt)

FS5R30A

2WD 2.4 liters (5-1/8 US pt, 4-1/4 Imp pt)

4WD 3.6 liters (7-5/8 US pt, 6-3/8 Imp pt)

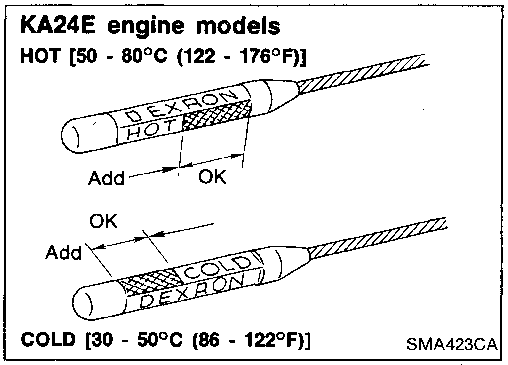
: Drain plug 25 - 34 N·m (2.5 - 3.5 kg-m, 18 - 25 ft-lb)



SMA369B

Checking Water Entry — For 4WD model

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

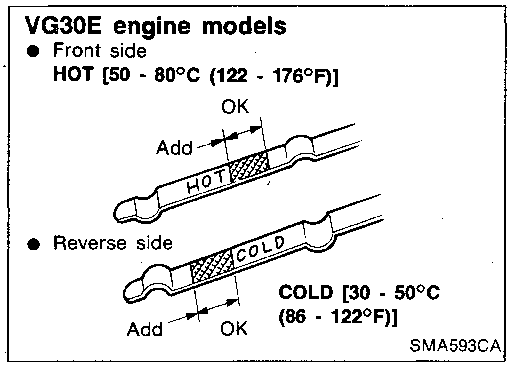


SMA423CA

Checking A/T Fluid

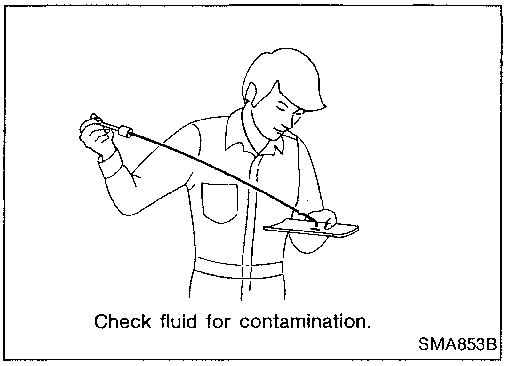
1. Check for fluid leakage and fluid level.
   Fluid level should be checked using "HOT" range on dipstick at fluid temperatures of 50 to 80°C (122 to 176°F) after vehicle has been driven approximately 5 minutes in urban areas after engine is warmed up. But it can be checked at fluid temperatures of 30 to 50°C (86 to 122°F) using "COLD" range on dipstick for reference after engine is warmed up and before driving. However, fluid level must be rechecked using "HOT" range.

Checking A/T Fluid (Cont'd)



(1) Park vehicle on level surface and set parking brake.
(2) Start engine and then move selector lever through each gear range, ending in "P".
(3) Check fluid level with engine idling.
(4) Remove dipstick and wipe it clean with lint-free paper.
(5) Reinsert dipstick into charging pipe as far as it will go.
(6) Remove dipstick and note reading. If level is at low side of either range, add fluid to the charging pipe.

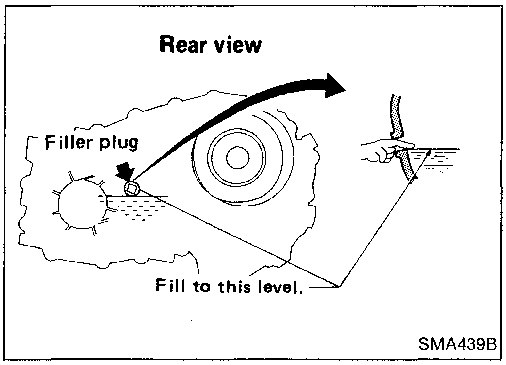
Do not overfill.



2. Check fluid for contamination. If fluid is very dark or smells burned, or contains the frictional material (clutches, band, etc.), check operation of A/T.
   Refer to section AT for checking operation of A/T.

Changing A/T Fluid

1. Warm up A/T fluid.
2. Stop engine.
3. Drain A/T fluid from drain plug and refill with new A/T fluid. Always refill same volume with drained fluid.
   Oil grade:
   Genuine Nissan ATF or equivalent type DEXRON™II
   Oil capacity (With torque converter):
   2WD 7.9 liters (8-3/8 US qt, 7 Imp qt)
   4WD 8.5 liters (9 US qt, 7-1/2 Imp qt)
4. Run engine at idle speed for five minutes.
5. Check fluid level and condition. Refer to "Checking A/T Fluid". If fluid is still dirty, repeat step 2. through 5.



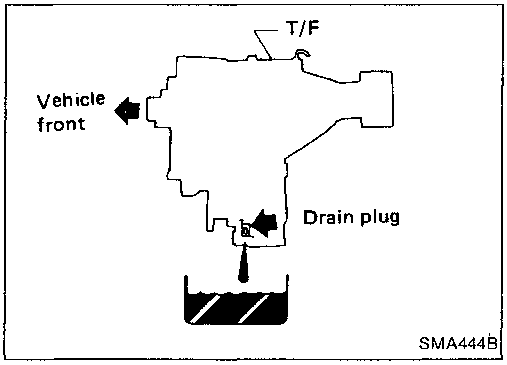
Checking Transfer Oil

● Check for oil leakage and oil level.

Automatic Transmission Fluid is used for the transfer in the factory. Never add gear oil (75W-90) to Automatic Transmission Fluid.

Never start engine while checking oil level.

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

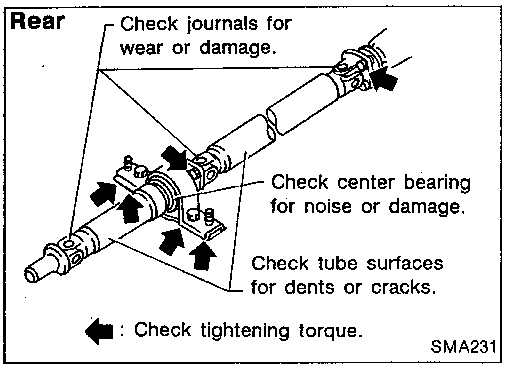


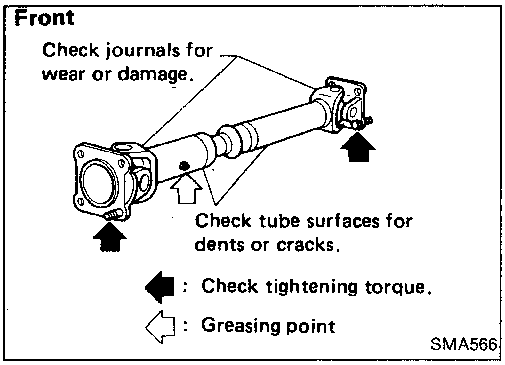
Changing Transfer Oil

When changing transfer oil completely, Genuine Nissan ATF or equivalent type DEXRON™ II or gear oil (75W-90) may be used.

Do not mix Automatic Transmission Fluid and gear oil.

Oil capacity:
2.2 liters (2-3/8 US qt, 2 Imp qt)
Drain plug:
: 25 - 34 N·m (2.5 - 3.5 kg-m, 18 - 25 ft-lb)

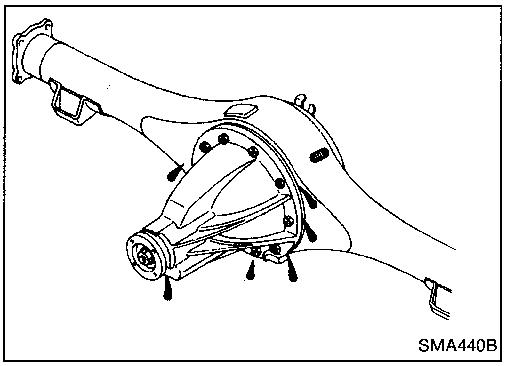




Checking Propeller Shaft

Check propeller shaft for damage, looseness or grease leakage.

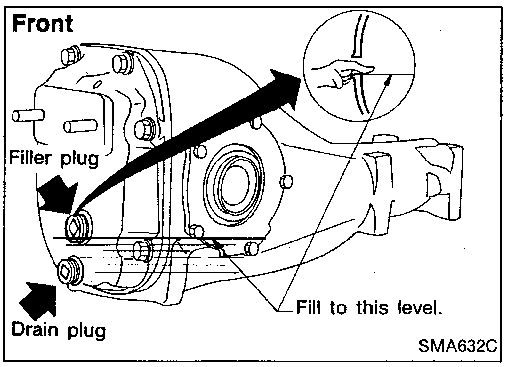
Tightening torque: Refer to section PD.



Checking Differential Gear Oil

1. Check for oil leakage and oil level.

: Filler plug
Front
39 - 59 N·m (4 - 6 kg-m, 29 - 43 ft-lb)
Rear
H190A, H233B
59 - 98 N·m (6 - 10 kg-m, 43 - 72 ft-lb)
C200
39 - 59 N·m (4 - 6 kg-m, 29 - 43 ft-lb)

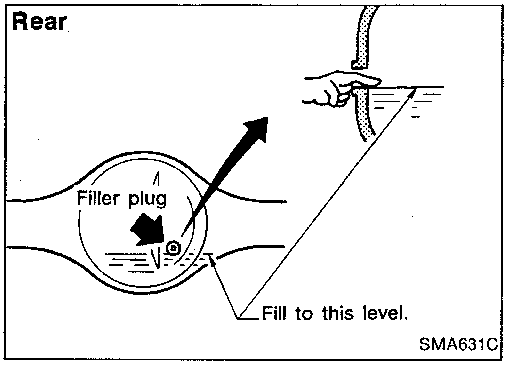


Changing Differential Gear Oil

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

Oil capacity:
Front
R180A
1.3 liters (2-3/4 US pt, 2-1/4 Imp pt)
R200A
1.5 liters (3-1/8 US pt, 2-5/8 Imp pt)
Rear
H190A
1.5 liters (3-1/8 US pt, 2-5/8 Imp pt)
C200
1.3 liters (2-3/4 US pt, 2-1/4 Imp pt)
H233B
2.8 liters (5-7/8 US pt, 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)



Changing Differential Gear Oil (Cont'd)

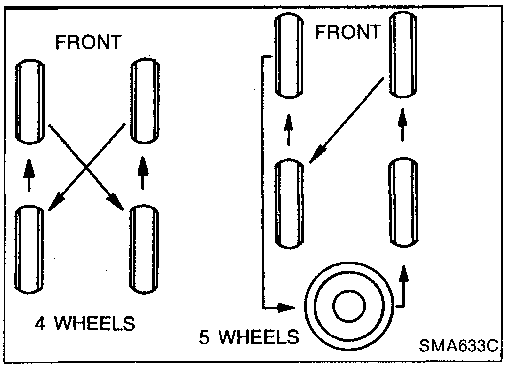
Limited-slip differential gear

- 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

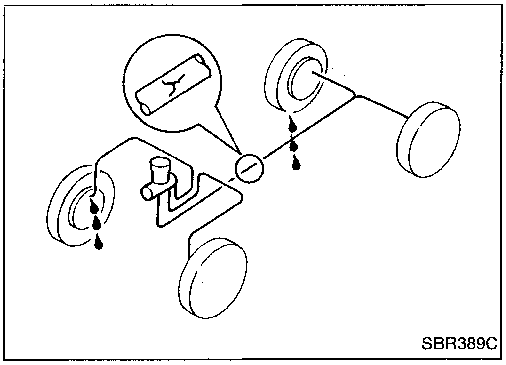
- Adjust wheel balance using the road wheel center.
  Wheel balance (Maximum allowable unbalance):
  Refer to "Chassis and Body Maintenance" in SDS (MA-28).



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). (also in cases of a flat tire, etc.)**
- **Do not include the T-type spare tire and small size spare tire when rotating the tires.**

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

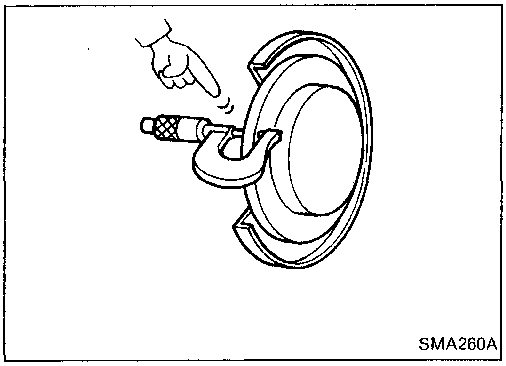


Checking Brake Fluid Level and Leaks

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 and for leaks, chafing, abrasion, deterioration, etc.



Checking Disc Brake

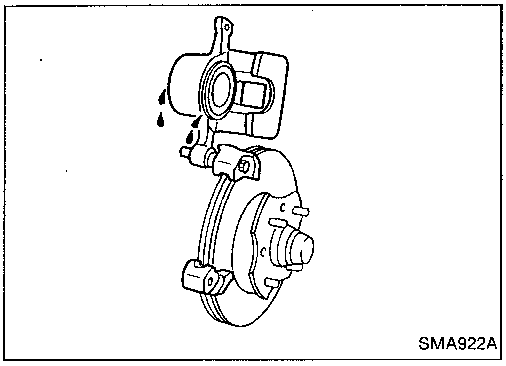
ROTOR

Check condition and thickness.

Minimum thickness:

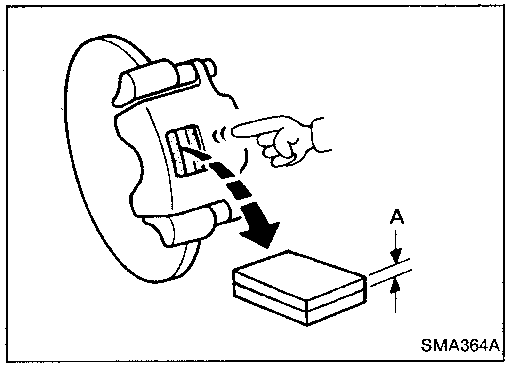
CL28VA	**20 mm (0.79 in)**
CL28VD	**24 mm (0.94 in)**
AD14VB	**16 mm (0.63 in)**

Checking Disc Brake (Cont'd)


SMA922A

CALIPER

Check for leakage.



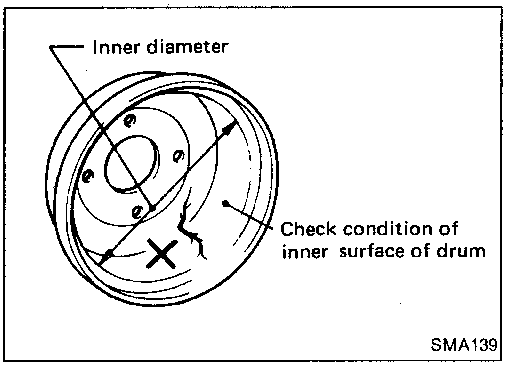
SMA364A

PAD

Check wear or damage.

Minimum thickness: 2 mm (0.08 in)

Checking Drum Brake



SMA139

WHEEL CYLINDER

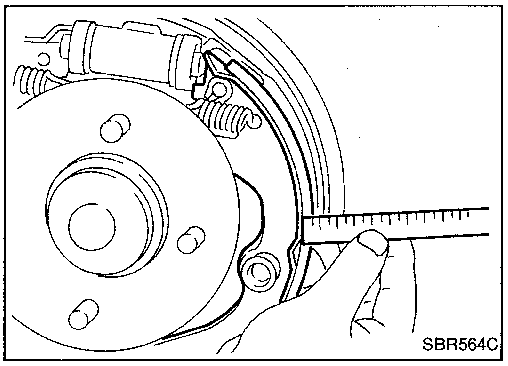
Check for leakage.

DRUM

Check condition and inner surface.

Drum repair limit (Inner diameter):

LT26B	**261.5 mm (10.30 in)**
LT30A	**296.5 mm (11.67 in)**
DS19HB	**191.0 mm (7.52 in)**


SBR564C

LINING

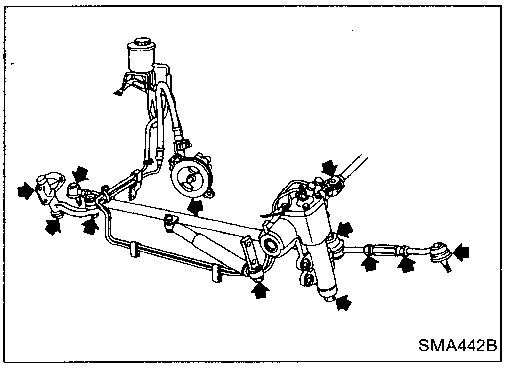
Check wear or damage.

Lining wear limit (Minimum thickness):
1.5 mm (0.059 in)

PARKING DRUM BRAKE

Adjust lining and drum as follows:

(1) Set the transfer lever in the "2H" position. Using either low or 2nd transmission speed, drive the unloaded vehicle at approximately 30 km/h (19 MPH) on a safe, level and dry road.
(2) Depress the release button of the parking brake lever and pull the lever back with a force of 98 N (10 kg, 22 lb).
(3) While holding the lever back, continue to drive the vehicle 100 m (328 ft).
(4) Repeat steps 1 through 3 two or three times.


SMA442B

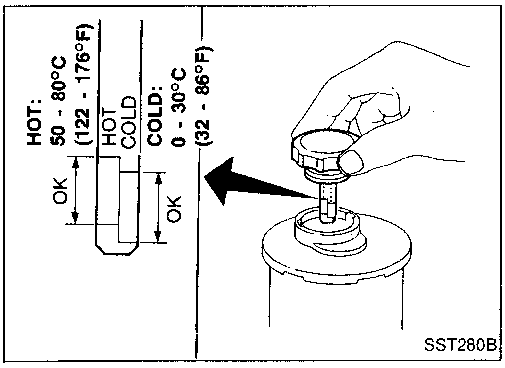
Checking Steering Gear and Linkage

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.



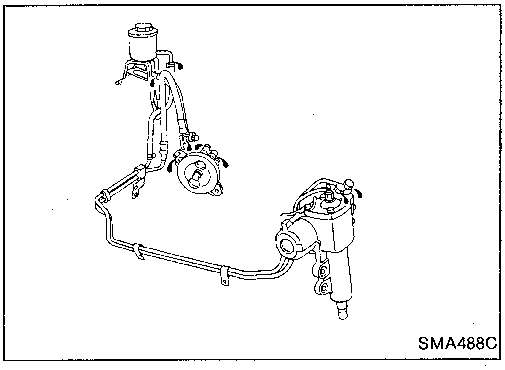
SST280B

Checking Power Steering Fluid and Lines

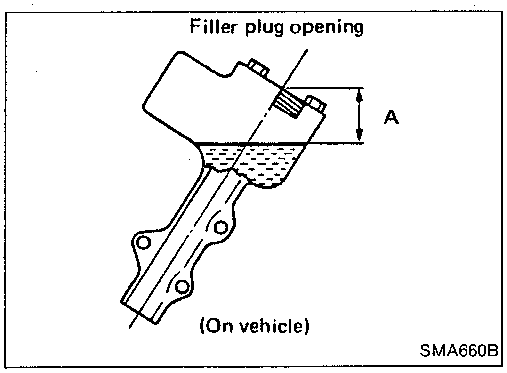
Check fluid level.
Fluid level should be checked using "HOT" range on dipstick at fluid temperatures of 50 to 80°C (122 to 176°F) or using "COLD" range on dipstick at fluid temperatures of 0 to 30°C (32 to 86°F).

CAUTION:

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


SMA488C

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



SMA660B

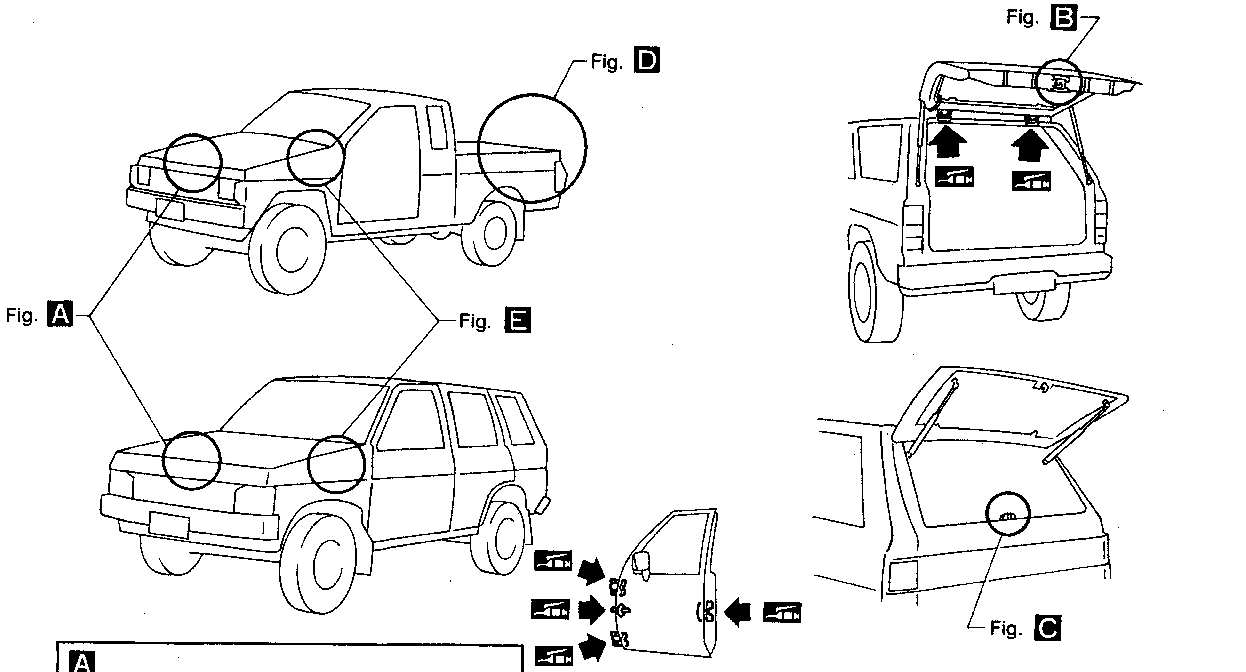
Checking Steering Gear Oil Level and Leaks

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

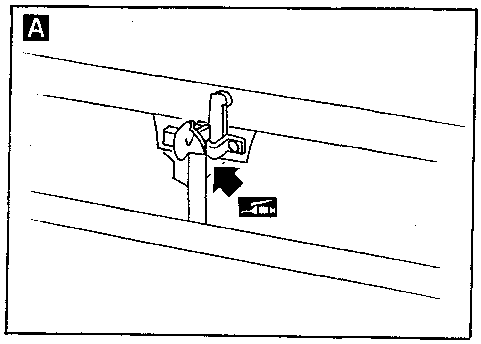
Oil level:
Distance "A"
20 mm (0.79 in) or less

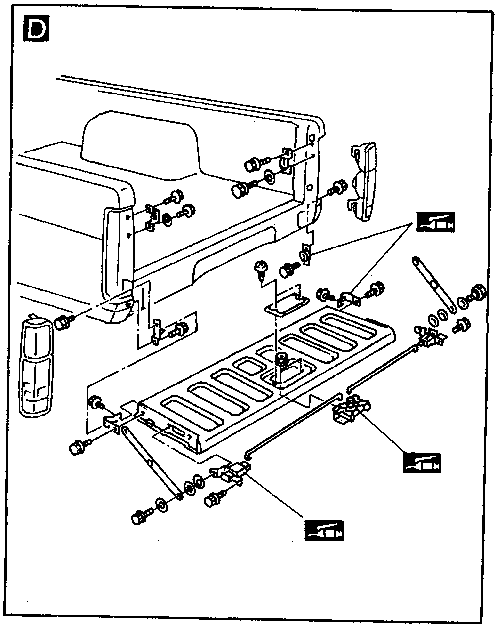
Be careful not to overflow gear oil when filling up.

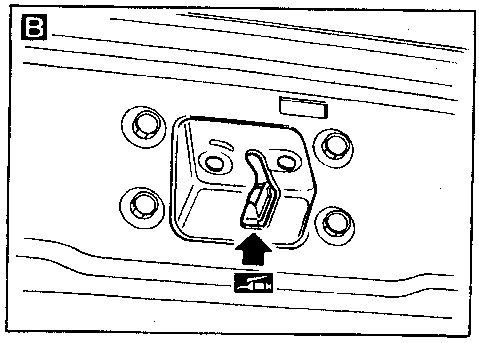
Lubricating Hood Latches, Locks and Hinges

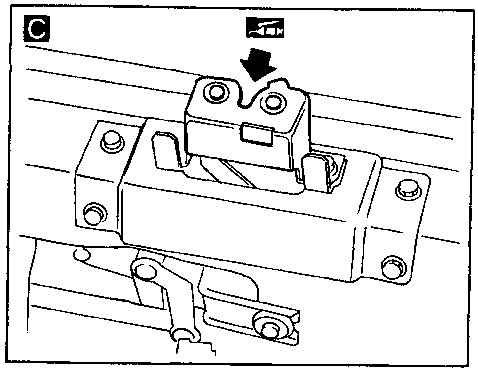


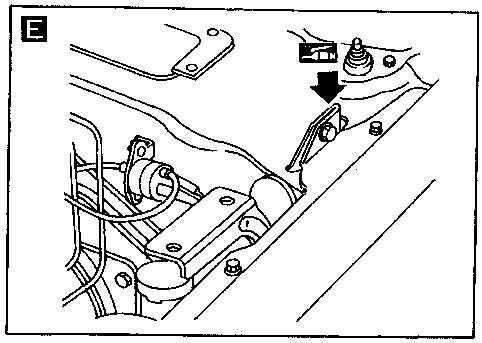
: Grease-up points





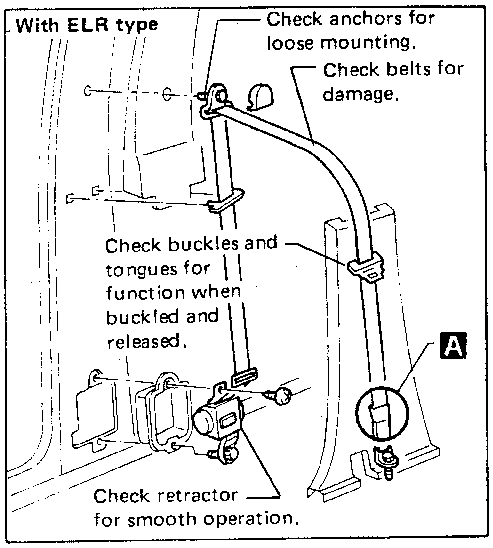


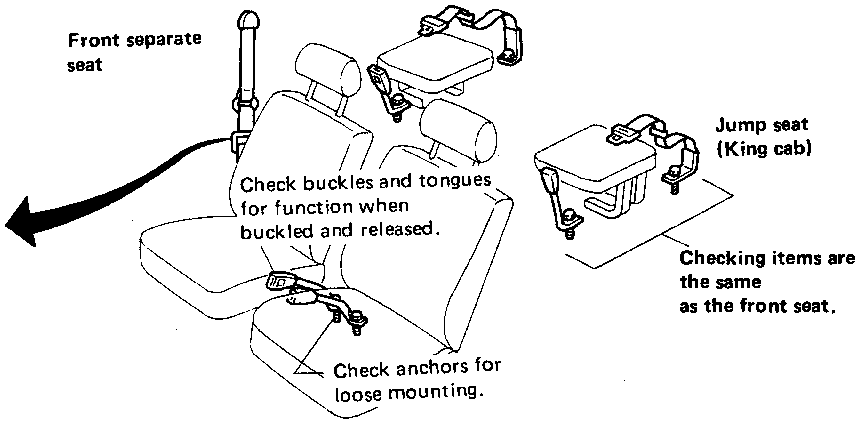


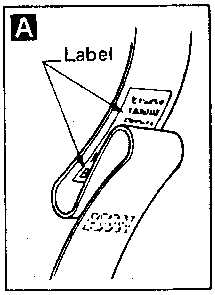


MMA092A

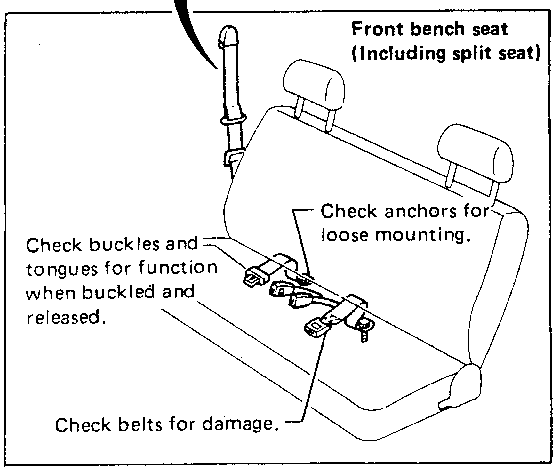
Checking Seat Belts, Buckles, Retractors, Anchors and Adjusters

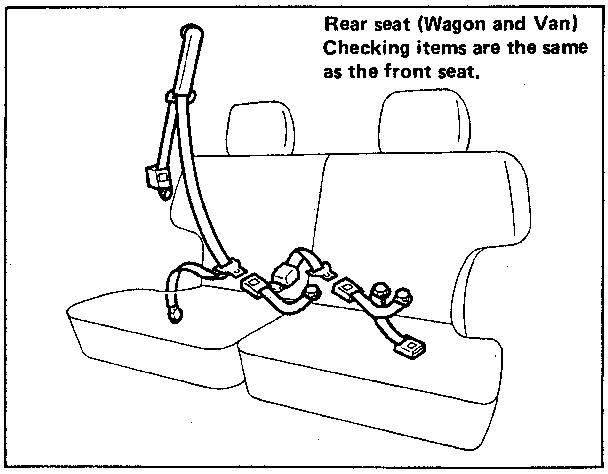






For front seat belt, shock absorber type belt has been used.
Replace the belt when loop has been pulled out and "REPLACE BELT" is visible because this seat belt has a loop of webbing under the sleeve.





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:

: 35.8 - 45.6 N·m (3.65 - 4.65 kg-m, 26.4 - 33.6 ft-lb)

SMA256C

Engine Maintenance

INSPECTION AND ADJUSTMENT (VG30E)

Drive belt deflection

Unit: mm (in)

	Used belt deflection		Deflection of new belt
	Limit	Deflection after adjustment	
Alternator	12 (0.47)	6 - 8 (0.24 - 0.31)	5 - 7 (0.20 - 0.28)
Air conditioner compressor	16 (0.63)	9 - 11 (0.35 - 0.43)	7 - 9 (0.28 - 0.35)
Power steering oil pump	17 (0.67)	11 - 13 (0.43 - 0.51)	9 - 11 (0.35 - 0.43)
Applied pushing force	98 N (10 kg, 22 lb)		

Spark plug

Standard type	BKR6EY
Hot type	BKR5EY
Cold type	BKR7EY
Plug gap	0.8 - 0.9 mm (0.031 - 0.035 in)

INSPECTION AND ADJUSTMENT (KA24E)

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	1.0 - 1.1 mm (0.039 - 0.043 in)

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)

Brake

Unit: mm (in)

Disc brake	
Pad wear limit	2.0 (0.079)
Rotor thickness repair limit	
CL28VA	20 (0.79)
CL28VD	24 (0.94)
AD14VB	16 (0.63)
Drum brake	
Drum inner dia. repair limit	
LT26B	261.5 (10.30)
LT30A	296.5 (11.67)
DS19HB	191.0 (7.52)
Lining wear limit	1.5 (0.059)