MAINTENANCE

SECTION MA

CONTENTS

CONTENTS (Cont'd)

Supplemental Restraint System (SRS) “AIR BAG” and “SEAT BELT PRE-TENSIONER”

NGMA0001

The Supplemental Restraint System such as “AIR BAG”and “SEAT BELT PRE-TENSIONER” used along with a seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. The Supplemental Restraint System consists of driver air bag module (located in the center of the steering wheel), front passenger air bag module (located on the instrument panel on passenger side), seat belt pre-tensioners, a diagnosis sensor unit, crash zone sensor, seat belt buckle switches, warning lamp, wiring harness and spiral cable.
Information necessary to service the system safely is included in the **RS section** of this Service Manual.

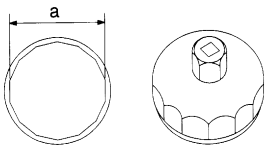
WARNING:

- **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 should 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. For removal of Spiral Cable and Air Bag Module, see the RS section.**
- **Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harness connectors.**

Special Service Tools

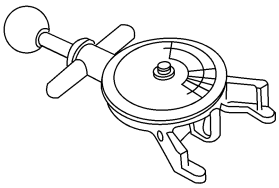
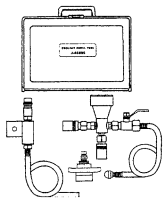
NGMA0002

The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name	Description	
KV10115801 (J38956) Oil filter cap wrench	 NT375	Removing oil filter **a: 64.3 mm (2.531 in)**

Commercial Service Tool

NGMA0052

Tool name (Kent-Moore No.)	Description	
Belt tension gauge (BT3373-F)	 AMA126	Checking drive belt tension
Coolant refill tool (J-45695)	 LMA053	Filling cooling system

GENERAL MAINTENANCE

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

OUTSIDE THE VEHICLE

The maintenance items listed here should be performed from time to time, unless otherwise specified.

Item		Reference page
Tires	Check the pressure at least once a month and always prior to a long distance trip with a gauge. 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.	MA-43
Windshield	Clean the windshield on a regular basis. Check the windshield at least every six months for cracks or other damage. Repair as necessary.	
Tire rotation	Tires should be rotated every 12,000 km (7,500 miles).	MA-43
Wheel alignment and balance	If the vehicle pulls 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-43, ***SU-6***, “Front Wheel Alignment”
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 make sure that all latches lock securely. Lubricate if necessary. Make sure that the secondary latch keeps the hood from opening when the primary latch is released. When driving in areas using road salt or other corrosive materials, check lubrication frequently.	MA-47
Lamps	Make sure that the headlamps, stop lamps, tail lamps, turn signal lamps, and other lamps are all operating properly and installed securely. Also check headlamp aim. Clean the headlamps on a regular basis.	***EL-38***, “Aiming Adjustment”

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.

Item		Reference page
Warning lamps and buzzers/chimes	Make sure that all warning lamps and buzzers/chimes are operating properly.	***EL-102***, “Electrical Components Inspection”
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 play. Be sure to check for changes in the steering condition, such as excessive play, hard steering or strange noises.	***ST-6***, “Checking Steering Wheel Play”
Seats	Check seat position controls such as seat adjusters, seatback recliner, etc. to make sure they operate smoothly and that all latches lock securely in every position. Check that the head restraints move up and down smoothly and that the locks (if 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-48, ***RS-6***, “Seat Belt Inspection”
Accelerator pedal	Check that pedal for smooth operation and make sure the pedal does not catch or require uneven effort. Keep the floor mats away from the pedal.	***FE-3***, “Adjusting Accelerator Wire”

Item		Reference page
Clutch pedal	Make sure the pedal operates smoothly and check that it has the proper free play.	***CL-6***, “Adjusting Clutch Pedal”
Brakes	Check that the brake does not pull the vehicle to one side when applied.	—
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 sure to keep floor mats away from the pedal.	***BR-11***, “Removal and Installation” and ***BR-16***, “On-vehicle Service”
Parking brake	Check that the lever has the proper travel and make sure that the vehicle is held securely on a fairly steep hill when only the parking brake is applied.	***BR-27***, “PARKING BRAKE CONTROL”
Automatic transmission “Park” mechanism	Check that the lock release button on the selector lever operates properly and smoothly. On a fairly steep hill check that the 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).

Item		Reference page	
		KA24DE	VG33E and VG33ER
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-17	MA-29
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, deterioration 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 reservoirs	MA-38, 43	
Battery	Check the fluid level in each cell. It should be between the “MAX” and “MIN” lines. Vehicles operated in high temperatures or under severe conditions require frequent checks of the battery fluid level.	—	
Engine drive belts	Make sure that no belt is frayed, worn, cracked or oily.	MA-16	MA-26
Engine oil level	Check the level on the dipstick after parking the vehicle on a level spot and turning off the engine.	MA-21	MA-32
Power steering fluid level and lines	Check the level on the reservoir with the engine off. Check the lines for improper attachment, leaks, cracks, etc.	MA-45	
Automatic transmission fluid level	Check the level on the dipstick after putting the selector lever in “P” with the engine idling.	MA-39	
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-38	
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.	—	

PERIODIC MAINTENANCE

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.	Emission Control System Maintenance	MA-8
		Chassis and Body Maintenance	MA-9
Schedule 2	Follow Periodic Maintenance Schedule 2 if none of the driving conditions shown in Schedule 1 apply to the driving habits.	Emission Control System Maintenance	MA-11
		Chassis and Body Maintenance	MA-12

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 rotors
▲ 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. Refer to “Checking Water Entry — For 4WD models with M/T”, MA-39.

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

MAINTENANCE OPERATION		MAINTENANCE INTERVAL																Reference Section - Page or - Content Title	
Perform at number of miles, kilometers or months, whichever comes first.	Miles x 1,000 (km x 1,000) Months	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	KA24DE	VG33E and VG33ER
Drive belts									I*								I*	MA-16	MA-26
Air cleaner filter	NOTE (1)								[R]								[R]	MA-21	MA-32
Positive crankcase ventilation (PCV) filter	NOTE (2)								[R]								[R]	MA-24	—
EVAP vapor lines									I*								I*	MA-23	MA-36
Fuel lines									I*								I*	MA-19	MA-31
Fuel filter*	NOTE (2)																	MA-20	MA-31
Engine coolant	NOTE (3)																R*	MA-17	MA-28
Engine oil		R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	MA-21	MA-32
Engine oil filter (Use part No. 15208-31U00 or equivalent for VG engine.)		R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	MA-22	MA-33
Spark plugs (Double PLATINUM–TIPPED type)		Replace every 105,000 miles (169,000 km)																MA-22	MA-34
Timing belt		Replace every 105,000 miles (169,000 km)																—	***EM-82***
Intake and Exhaust valve clearance ★	NOTE (4)																	***EM-38***	—

NOTE:

(1) If operating mainly in dusty conditions, more frequent maintenance may be required.

(2) When the filter becomes clogged, the vehicle speed cannot be increased as the driver wishes. In such an event, replace the filter.

(3) After 60,000 miles (96,000 km) or 48 months, replace every 30,000 miles (48,000 km) or 24 months.

(4) If valve noises increases, inspect valve clearance.

★ 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.

NGMA0004S01
NGMA0004S0101

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

MAINTENANCE OPERATION		MAINTENANCE INTERVAL																Reference Section - Page or - Content Title
Perform at number of miles, kilometers or months, whichever comes first.	Miles x 1,000 (km x 1,000) Months	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	
Brake lines & cables					I				I				I				I	MA-43
Brake pads, rotors, drums & linings			I		I		I		I		I		I		I		I	MA-43, 44
Automatic transmission fluid	NOTE (1)				I				I				I				I	MA-39, 40
Transfer fluid & differential gear oil (exc. LSD)	NOTE (2)				I				I				I				I	MA-40, 41
Limited slip differential (LSD) gear oil	NOTE (2)				I				R				I				R	MA-42
Manual transmission gear oil	NOTE (1)				I				I				I				I	MA-38
Steering gear, linkage, axle & suspension parts			I		I		I		I		I		I		I		I	MA-45
Tire rotation	NOTE (3)																	MA-43
Drive shaft boots and propeller shaft (4x4)			I		I		I		I		I		I		I		I	MA-46
Propeller shaft (4x4)	NOTE (4)		L		L		L		L		L		L		L		L	MA-41
Front wheel bearing grease	4x2								I								I	MA-45
Front wheel bearing grease and free-running hub grease	4x4	NOTE (5)				I				R				I				R	MA-45
Exhaust system			I		I		I		I		I		I		I		I	MA-38
In-cabin microfilter					R				R				R				R	***HA-83***

NOTE:

(1) 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.

(2) If towing a trailer, using a camper or a car-top carrier, or driving on rough or muddy roads, change (not just inspect) oil (exc. LSD) at every 30,000 miles (48,000 km) or 24 months, and change LSD gear oil every 15,000 miles (24,000 km) or 12 months.

(3) Refer to "Tire rotation" under the "General maintenance" heading in this section.

(4) The propeller shaft should be re-greased after being immersed in water.

NGMA0004S0102

(5) If operating frequently in water, replace grease every 3,750 miles (6,000 km) or 3 months.

EMISSION CONTROL SYSTEM MAINTENANCE

Schedule 2

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

MAINTENANCE OPERATION		MAINTENANCE INTERVAL								Reference Section - Page or - Content Title	
Perform at number of miles, kilometers or months, whichever comes first.	Miles x 1,000 (km x 1,000) Months	7.5 (12) 6	15 (24) 12	22.5 (36) 18	30 (48) 24	37.5 (60) 30	45 (72) 36	52.5 (84) 42	60 (96) 48	KA24DE	VG33E and VG33ER
Drive belts					I*				I*	MA-16	MA-26
Air cleaner filter					[R]				[R]	MA-21	MA-32
Positive crankcase ventilation (PCV) filter	NOTE (1)				[R]				[R]	MA-24	—
EVAP vapor lines					I*				I*	MA-23	MA-36
Fuel lines					I*				I*	MA-19	MA-31
Fuel filter*	NOTE (1)									MA-20	MA-31
Engine coolant	NOTE (2)								R*	MA-17	MA-28
Engine oil		R	R	R	R	R	R	R	R	MA-21	MA-32
Engine oil filter		R	R	R	R	R	R	R	R	MA-22	MA-33
Spark plugs (Double PLATINUM–TIPPED type)		Replace every 105,000 miles (169,000 km)								MA-22	MA-34
Timing belt		Replace every 105,000 miles (169,000 km)								—	***EM-82***
Intake and Exhaust valve clearance ★	NOTE (3)									***EM-38***	—

NOTE:

(1) When the filter becomes clogged, the vehicle speed cannot be increased as the driver wishes. In such an event, replace the filter.

(2) After 60,000 miles (96,000 km) or 48 months, replace every 30,000 miles (48,000 km) or 24 months.

(3) If valve noises increase, inspect valve clearance.

★ 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.

NGMA0004S02
NGMA0004S0201

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

MAINTENANCE OPERATION		MAINTENANCE INTERVAL								Reference Section - Page or - Content Title
Perform at number of miles, kilometers or months, whichever comes first.	Miles x 1,000 (km x 1,000) Months	7.5 (12) 6	15 (24) 12	22.5 (36) 18	30 (48) 24	37.5 (60) 30	45 (72) 36	52.5 (84) 42	60 (96) 48	
Brake lines & cables			I		I		I		I	MA-43
Brake pads, rotors, drums & linings			I		I		I		I	MA-43, 44
Automatic transmission fluid			I		I		I		I	MA-39, 40
Transfer fluid & differential gear oil (exc. LSD)			I		I		I		I	MA-40, 41
Limited slip differential (LSD) gear oil			I		R		I		R	MA-42
Manual transmission gear oil			I		I		I		I	MA-38
Steering gear, linkage, axle & suspension parts					I				I	MA-45
Tire rotation	NOTE (1)									MA-43
Drive shaft boots and propeller shaft (4x4)			I		I		I		I	MA-46
Propeller shaft (4x4)	NOTE (2)		L		L		L		L	MA-41
Front wheel bearing grease (4x2)					I				I	MA-45
Front wheel bearing grease and free-running hub grease (4x4)			I		R		I		R	MA-45
Exhaust system					I				I	MA-38
In-cabin microfilter			R		R		R		R	***HA-83***

NOTE:

(1) Refer to "Tire rotation" under the "General maintenance" heading in this section.

(2) The propeller shaft should be re-greased after being immersed in water.

NGMA0004S0202

Fluids and Lubricants

NGMA0005S01

KA24DE

KA24DE			Capacity (Approximate)			Recommended Fluids/Lubricants
			US measure	Imp measure	Liter	
Engine oil	Drain and refill	With oil filter	3-3/4 qt	3-1/8 qt	3.5	• API Certification Mark*1 • API grade SG/SH, Energy Conserving I & II or API grade SJ, Energy Conserving*1 • ILSAC grade GF-I & GF-II*1
		Without oil filter	3-1/2 qt	2-7/8 qt	3.3	
	Dry engine (Engine overhaul)		4-3/8 qt	3-5/8 qt	4.1	
Cooling system (With reservoir)		MT	7-3/4 qt	6-3/8 qt	7.3	Mix 50% genuine NISSAN anti-freeze coolant or equivalent and 50% demineralized water or distilled water.
		AT	7-1/2 qt	6-1/4 qt	7.1	
Manual transmission gear oil (FS5W71C)			4-1/4 pt	3-1/2 pt	2.0	API GL-4, Viscosity SAE 75W-85
Differential carrier gear oil		C200	3-1/8 pt	2-5/8 pt	1.5	Standard differential gear: API GL-5 Viscosity SAE 80W-90*3 Limited-slip differential (LSD) gear: Use only LSD gear oil API GL-5 Viscosity SAE 80W-90*3 approved for NISSAN LSD*4.
Power steering fluid			30.4-33.8 fl oz	31.7-35.2 fl oz	0.9-1.0	Genuine NISSAN PSF II or equivalent*5
Brake and clutch fluid			—	—	—	Genuine NISSAN Brake Fluid*2 or equivalent DOT 3 (U.S. FMVSS No. 116)
Multi-purpose grease			—	—	—	NLGI No. 2 (Lithium soap base)

*1: For further details, see “SAE Viscosity Number”.

*2: Available in mainland U.S.A. through your NISSAN dealer.

*3: For hot climates, viscosity SAE 90 is suitable for ambient temperatures above 0°C (32°F).

*4: Contact a NISSAN dealer for a list of approved oils.

*5: Genuine NISSAN PSF, Canada NISSAN Automatic Transmission Fluid, DEXRON™III, MERCON™, or equivalent ATF may also be used.

VG33E and VG33ER

VG33E and VG33ER			Capacity (Approximate)			Recommended Fluids/Lubricants
			US measure	Imp measure	Liter	
Engine oil	Drain and refill	With oil filter	3-1/2 qt	2-7/8 qt	3.3	• API Certification Mark*1 • API grade SG/SH, Energy Conserving I & II or API grade SJ, Energy Conserving*1 • ILSAC grade GF-I & GF-II*1
		Without oil filter	3-1/8 qt	2-5/8 qt	3.0	
	Dry engine (Engine overhaul)		4 qt	3-3/8 qt	3.8	
Cooling system (With reservoir)			11-5/8 qt	9-5/8 qt	10.95	Mix 50% genuine NISSAN anti-freeze coolant or equivalent and 50% demineralized water or distilled water.
Manual transmission gear oil (FS5R30A)		2WD	5-7/8 pt	4-7/8 pt	2.8	API GL-4, viscosity SAE 75W-85
		4WD	10-3/4 pt	9 pt	5.1	
Transfer fluid (TX10A)			2-3/8 qt	2 qt	2.2	NISSAN Matic ’D’ (Continental U.S. and Alaska) or Canada NISSAN Automatic Transmission Fluid*2 or API GL-4 Viscosity SAE 75W-85 or 75W-90.

VG33E and VG33ER			Capacity (Approximate)			Recommended Fluids/Lubricants
			US measure	Imp measure	Liter	
Differential carrier gear oil	Front (4WD)		3-3/4 pt	3-1/8 pt	1.75	Standard differential gear: API GL-5 Viscosity SAE 80W-90*4. Limited-slip differential (LSD) gear: Use only LSD gear oil API GL-5 Viscosity SAE 80W-90*4 approved for NISSAN LSD*5.
	Rear		5-7/8 pt	4-7/8 pt	2.8	
Automatic transmission fluid		2WD	8-3/4	7-1/4	8.3	NISSAN Matic "D" (Continental U.S. and Alaska) or Canada NISSAN Automatic Transmission Fluid*2
		4WD	9 qt	7-1/2 qt	8.5	
Power steering fluid			33.8-37.2 fl oz	35.2-38.7 fl oz	1.0-1.1	Genuine NISSAN PSF II or equivalent*6
Brake and clutch fluid			—	—	—	Genuine NISSAN Brake Fluid*3 or equivalent DOT 3 (U.S. FMVSS No. 116)
Propeller shaft grease			—	—	—	NLGI No. 2 (Molybdenum disulphide lithium soap base)
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 "SAE Viscosity Number".

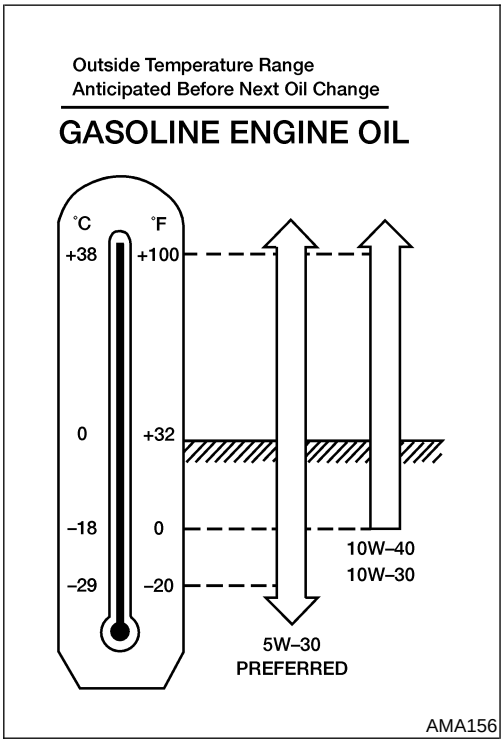
*2: DEXRON III™, MERCON™ or equivalent may also be used. Outside the continental United States and Alaska contact a NISSAN dealership for more information regarding suitable fluids, including recommended brand(s) of DEXRON™III, MERCON™ Automatic Transmission Fluid.

*3: Available in mainland U.S.A. through your NISSAN dealer.

*4: For hot climates, viscosity SAE 90 is suitable for ambient temperatures above 0°C (32°F).

*5: Contact a NISSAN dealer for a list of approved oils.

*6: Genuine NISSAN PSF, Canada NISSAN Automatic Transmission Fluid, DEXRON™III, MERCON™, or equivalent ATF may also be used.



SAE Viscosity Number

NGMA0005S02

GASOLINE ENGINE OIL

NGMA0005S0201

SAE 5W-30 viscosity oil is preferred for all temperatures. SAE 10W-30 and 10W-40 viscosity oil may be used if the ambient temperature is above −18°C (0°F).

Anti-freeze Coolant Mixture Ratio

NGMA0005S03

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:

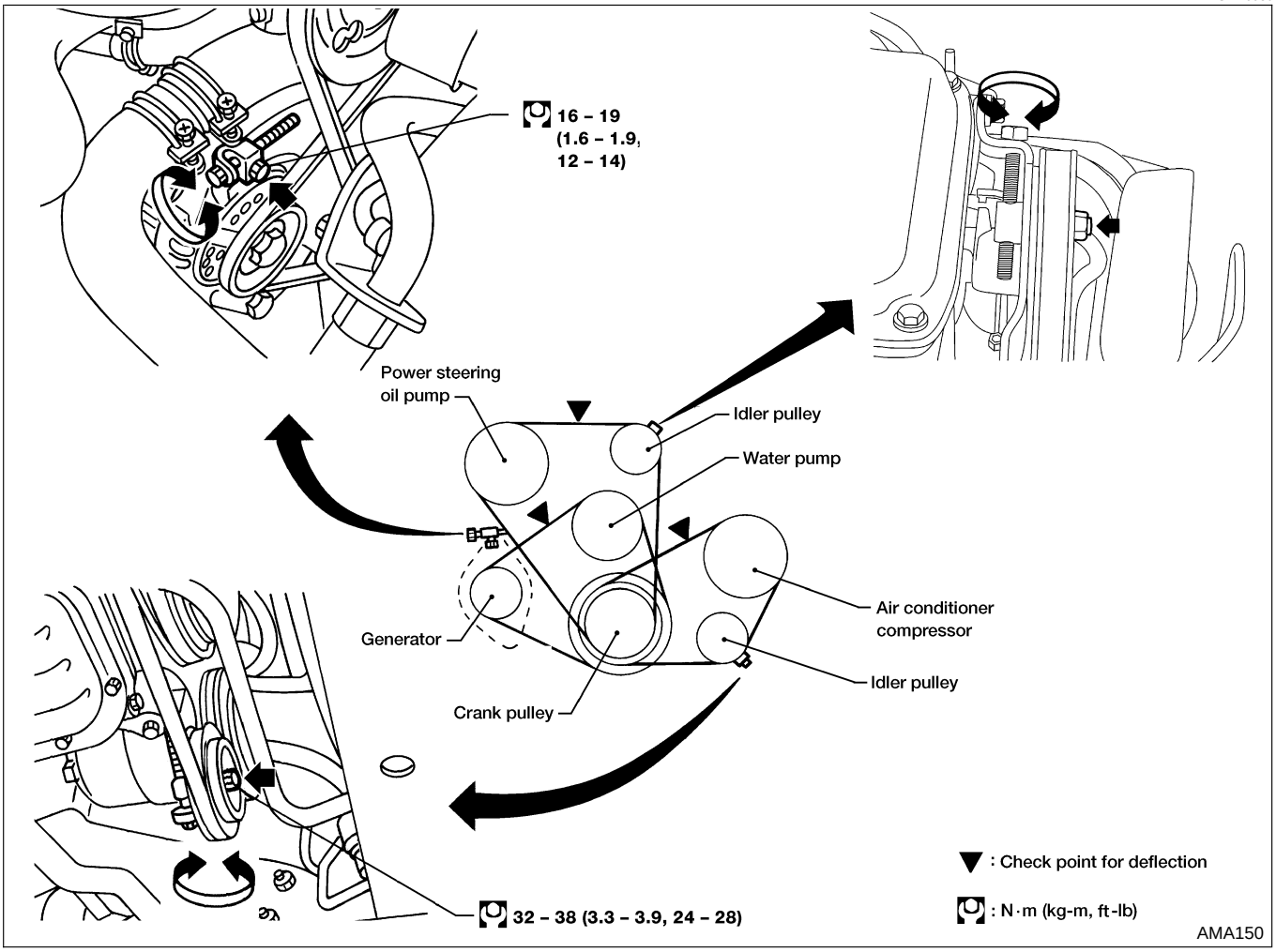
When adding or replacing coolant, be sure to use only genuine NISSAN anti-freeze coolant or equivalent with the proper mixture.

Outside temperature down to:		Genuine NISSAN anti-freeze coolant or equivalent	Demineralized water or distilled water
°C	°F		
-35	-30	50%	50%

Other types of coolant solutions may damage the engine cooling system.

Checking Drive Belts

NGMA0056



1. Inspect belt for cracks, fraying, wear and oil. If necessary, replace.
2. Inspect drive belt deflection or tension at a point on the belt midway between pulleys.

Check belt tension using belt tension gauge (BT3373-F or equivalent).

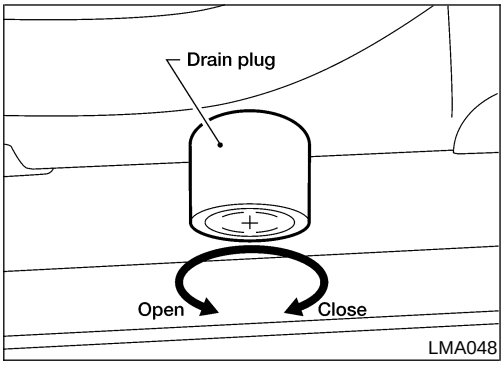
Inspect drive belt deflection or tension when engine is cold.

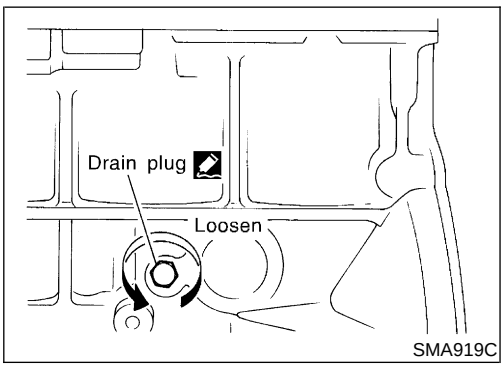
- **Adjust if belt deflections exceed the limit or if belt tension is not within specifications.**
- **Drive belt tension can be checked at other points on the belt.**

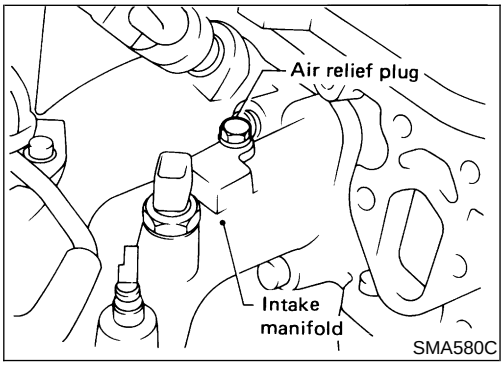
DRIVE BELT DEFLECTION AND TENSION

	Deflection adjustment Unit: mm (in)			Tension adjustment *1 Unit: N (kg, lb)		
	Used belt		New belt	Used belt		New belt
	Limit	After adjustment		Limit	After adjustment	
Generator	17 (0.67)	10 - 12 (0.39 - 0.47)	8 - 10 (0.31 - 0.39)	222.4 (22.7, 50)	355.8 - 444.8 (36.3 - 45.4, 80 - 100)	489.3 - 578.2 (49.9 - 59.0, 110 - 130)
Air conditioner compressor	16 (0.63)	10 - 12 (0.39 - 0.47)	8 - 10 (0.31 - 0.39)	200.2 (20.4, 45)	355.8 - 444.8 (36.3 - 45.4, 80 - 100)	489.3 - 578.2 (49.9 - 59.0, 110 - 130)
Power steering oil pump	17 (0.67)	10 - 13 (0.39 - 0.51)	8 - 10 (0.31 - 0.39)	222.4 (22.7, 50)	355.8 - 444.8 (36.3 - 45.4, 80 - 100)	489.3 - 578.2 (49.9 - 59.0, 110 - 130)
Applied pushing force	98 N (10 kg, 22 lb)			—		

*1: If belt tension gauge cannot be installed at check point shown, check belt tension at a different location on the belt.







Changing Engine Coolant

NGMA0057

WARNING:

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

—DRAINING ENGINE COOLANT—

NGMA0057S01

1. Set air conditioner system as follows to prevent coolant from remaining in the system.

a. Turn ignition switch ON and set temperature control lever all the way to hot position for the highest temperature position.

b. Wait 10 seconds before turning ignition switch OFF.

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

Be careful not to allow coolant to contact drive belts.

When draining all of the coolant in the system, also perform the following two steps.

1) Remove cylinder block drain plug and air relief plug.

2) Check drained coolant for contaminants such as rust, corrosion or discoloration. If contaminated flush engine cooling system, "Refer to FLUSHING COOLING SYSTEM", MA-19.

—REFILLING ENGINE COOLANT—

NGMA0057S02

1. Install the radiator drain plug. Install the reservoir tank and cylinder block drain plug, if removed for a total system drain or for engine removal or repair.

- The radiator must be completely empty of coolant and water.
- Apply sealant to the threads of the cylinder block drain plugs. Use Genuine High Performance Thread Sealant or equivalent.

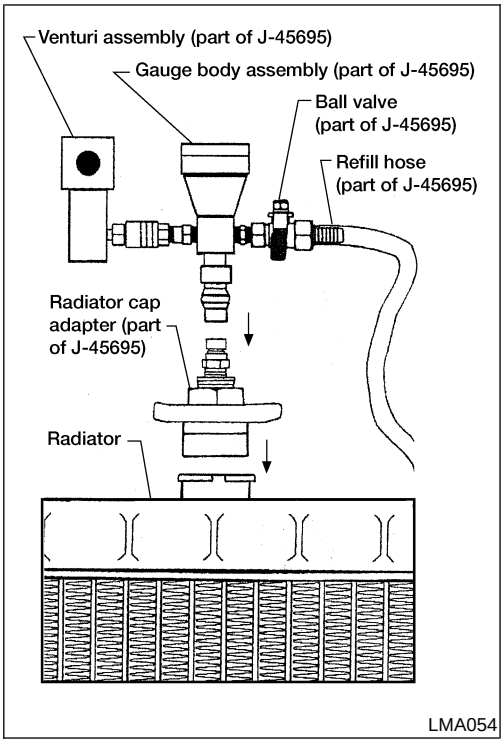
Refer to "Recommended Chemical Products and Sealants", ***GI-50***.

Radiator drain plug: 7.8 - 11.8 N●m (0.8 - 1.2 kg-m, 69 - 104 in-lb)

Cylinder block drain plug: 34 - 44 N●m (3.5 - 4.5 kg-m, 25 - 33 ft-lb)

Air relief plug: 7 - 8 N●m (0.7 - 0.8 kg-m, 61- 69 in-lb)

2. If disconnected, reattach the upper radiator hose at the engine side.
3. Set the vehicle heater controls to the full HOT and heater ON position. Turn the vehicle ignition ON with the engine OFF as necessary to activate the heater mode.



4. Install the Tool by installing the radiator cap adapter onto the radiator neck opening. Then attache the gauge body assembly with the refill tube and the venturi assembly to the radiator cap adapter.
5. Insert the refill hose into the coolant mixture container that is placed at floor level. Make sure the ball valve is in the closed position.

- Use Genuine NISSAN Anti-Freeze Coolant or equivalent, mixed 50/50 with distilled water or demineralized water. Refer to "Anti-freeze Coolant Mixture Ratio", MA-15.

Engine coolant capacity (without reservoir tank)

MT: 6.5ℓ (6 7/8 US qt)

AT: 6.3ℓ (6 5/8 US qt)

Reservoir tank: 0.8ℓ (7/8 US qt)

6. Install an air hose to the venturi assembly; the air pressure must be with specification.

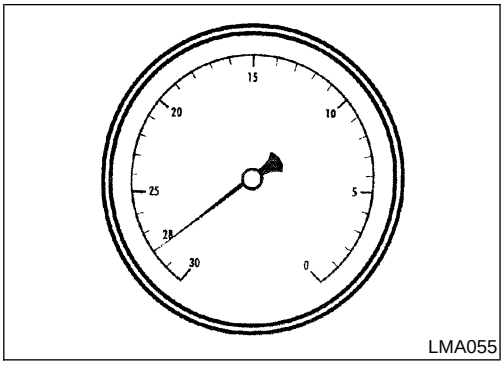
Compressed air supply pressure

5.7 - 8.5 kPa (5.6 - 8.4 kg/cm^2, 80 - 120 psi)

CAUTION:

The compressed air supply must be equipped with an air dryer.

7. The vacuum gauge will begin to rise and there will be an audible hissing noise. During this process, open the ball valve on the refill hose slightly. Coolant will be visible rising in the refill hose. Once the refill hose is full of coolant, close the ball valve. This will purge any air trapped in the refill hose.



LMA055

8. Continue to draw the vacuum until the gauge reaches 28 inches of vacuum. The gauge may not reach 28 inches in high altitude locations; refer to the vacuum specifications based on the altitude above sea level.

Altitude above sea level	Vacuum gauge reading
0 - 100 m (328 ft)	28 inches of vacuum
300 m (984 ft)	27 inches of vacuum
500 m (1,641 ft)	26 inches of vacuum
1,000 m (3,281 ft)	24 - 25 inches of vacuum

9. When the vacuum gauge has reached the specified amount, disconnect the air hose and wait 20 seconds to see if the system loses any vacuum. If the vacuum level drops , perform any necessary repairs to the system and repeat steps 6 - 8 to bring the vacuum to the specified amount. Recheck for any leaks.
10. Place the coolant container (with the refill hose inserted) at the same level as the top of the radiator. Then open the ball valve on the refill hose so the coolant will be drawn up to fill the cooling system. The cooling system is full when the vacuum gauge reads zero.

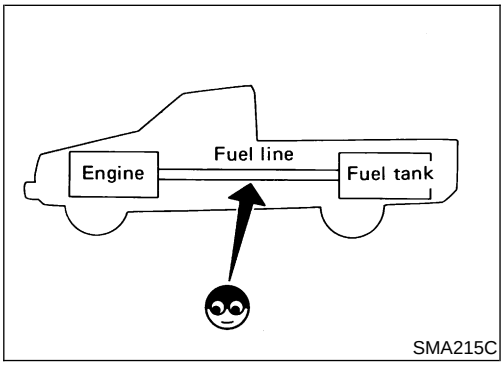
CAUTION:
Do not allow the coolant container to get too low when filling , to avoid air from being drawn into the cooling system.

11. Remove the Tool from the radiator neck opening.
12. Fill the cooling system reservoir tank to the specified level. Run the engine to warm up the cooling system and top up the system as necessary before installing the radiator cap.

—FLUSHING COOLING SYSTEM—

NGMA0057S03

1. Open air relief plug.
2. Fill radiator with water until water spills from the air relief hole, then close air relief plug. Fill radiator and reservoir tank with water and reinstall radiator cap.
3. Run engine and warm it up to normal operating temperature.
4. Rev engine two or three times under no-load.
5. Stop engine and wait until it cools down.
6. Drain water.
7. Repeat steps 1 through 6 until clear water begins to drain from radiator.

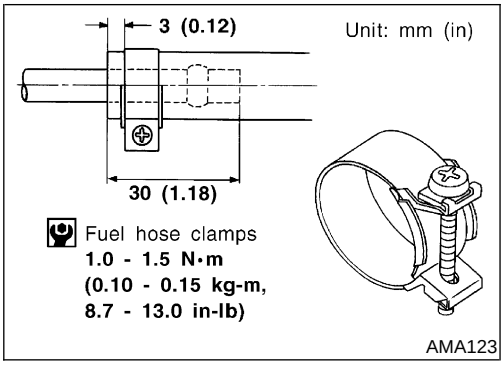


SMA215C

Checking Fuel Lines

NGMA0058

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



Changing Fuel Filter

NGMA0059

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 the screw does not contact adjacent parts.

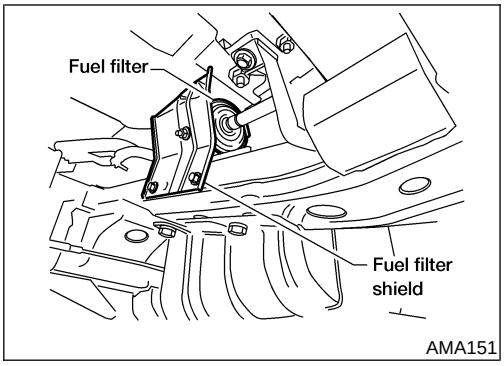
WARNING:

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

WITH CONSULT-II

NGMA0059S01

1. Start engine.
2. Perform “FUEL PRES RELEASE” in “WORK SUPPORT” mode to release fuel pressure to zero.
3. After engine stalls, crank engine two or three times to make sure that fuel pressure is released.
4. Turn ignition switch “OFF”.



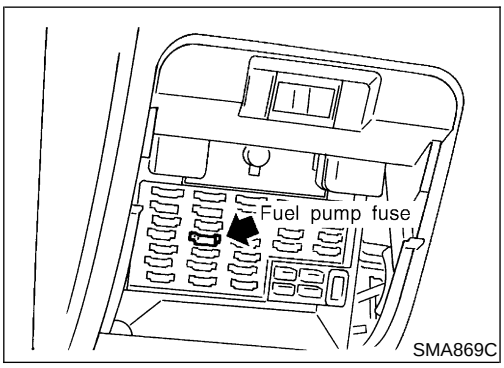
5. Remove the fuel filter shield.
6. Loosen fuel hose clamps.
7. Replace fuel filter.

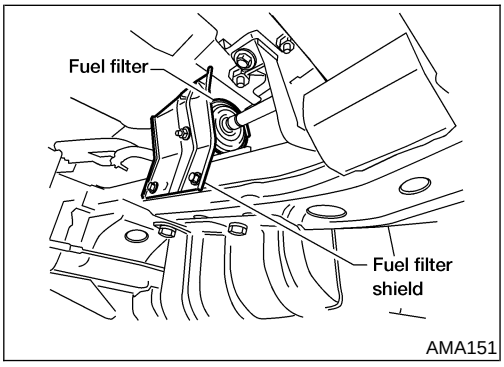
- **Use a high-pressure type fuel filter. Do not use a synthetic resinous fuel filter.**
- **Properly tighten fuel hose clamps. Refer to “Checking Fuel Lines”, MA-19.**

WITHOUT CONSULT-II

NGMA0059S02

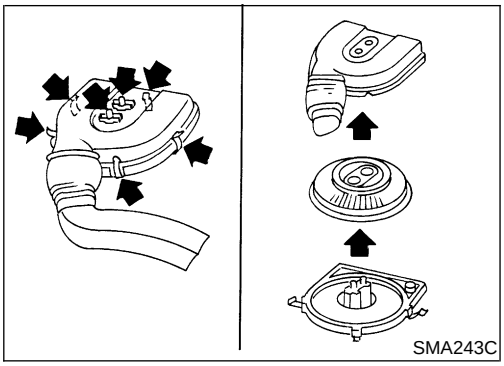
1. Remove fuel pump fuse. For correct fuse location, refer to label on fuse block cover.
2. Start engine.
3. After engine stalls, crank engine two or three times to make sure that fuel pressure is released.
4. Turn ignition switch “OFF” and install fuel pump fuse.





5. Remove the fuel filter shield.
6. Loosen fuel hose clamps.
7. Replace fuel filter.

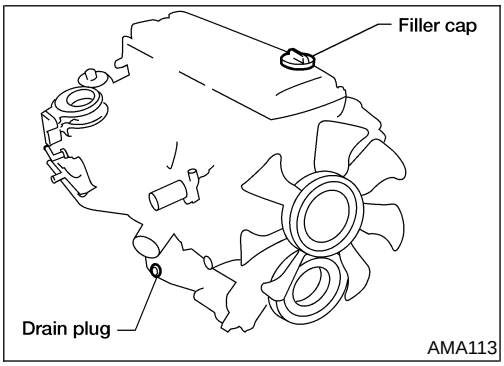
- **Use a high-pressure type fuel filter. Do not use a synthetic resinous fuel filter.**
- **Properly tighten fuel hose clamps. Refer to “Checking Fuel Lines”, MA-19.**


SMA243C

Changing Air Cleaner Filter

NGMA0060

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



AMA113

Changing Engine Oil

NGMA0061

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 specification and viscosity:

- **API Certification Mark**
- **API grade SG/SH, Energy Conserving I & II or API grade SJ, Energy Conserving**
- **ILSAC grade GF-I & GF-II**
- **Refer to "RECOMMENDED FLUIDS AND LUBRICANTS", MA-13.**

Oil capacity (Approximately):

Unit: ℓ (US qt, Imp qt)

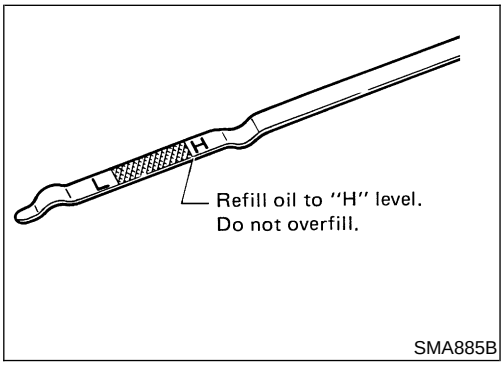
Drain and refill	with oil filter change	3.5 (3-3/4, 3-1/8)
	without oil filter change	3.3 (3-1/2, 2-7/8)
Dry engine (engine overhaul)		4.1 (4-3/8, 3-5/8)

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 depends on the oil temperature and drain time. Use these specifications for reference only. Always use the dipstick to determine when the proper amount of oil is in the engine.**



SMA885B

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

NGMA0062

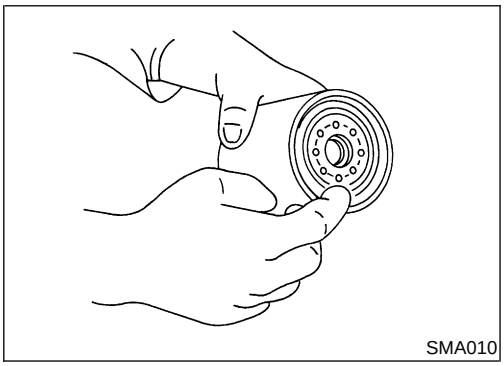
1. Remove oil filter with Tool.

- a: 64.3 mm (2.531 in)

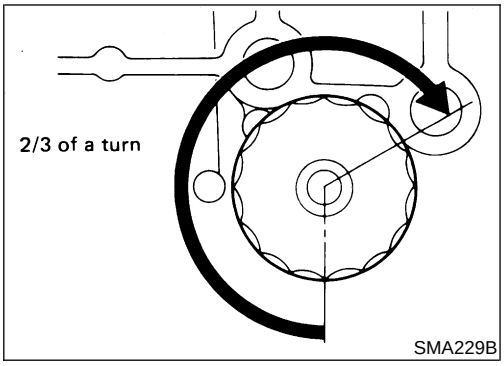
WARNING:

Be careful not to burn yourself. Engine and engine oil are hot.

The filter is a full-flow cartridge type and is provided with a relief valve.


SMA010

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



SMA229B

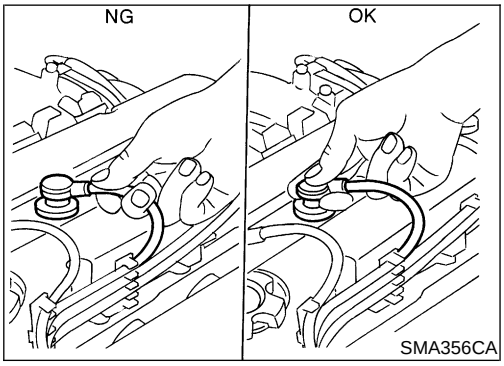
3. Screw in the oil filter until a slight resistance is felt, then tighten additionally more than 2/3 of a turn.
4. Add engine oil.

Refer to “Changing Engine Oil”, MA-21.

- **Clean excess oil from engine.**

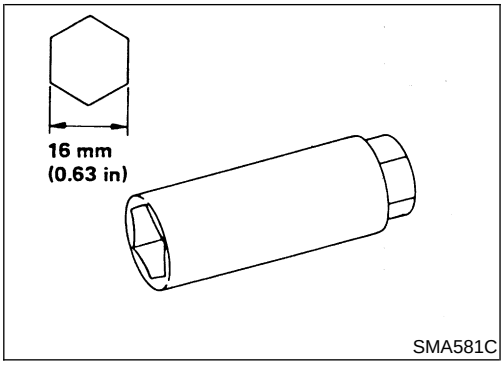
Changing Spark Plugs

NGMA0063

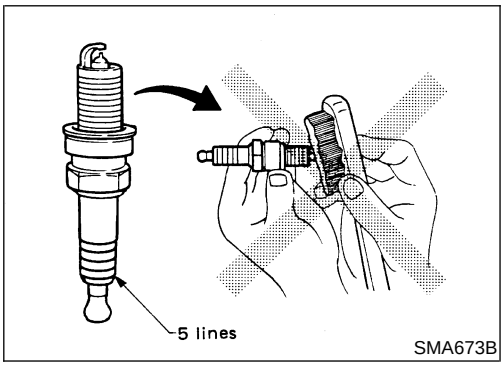


SMA356CA

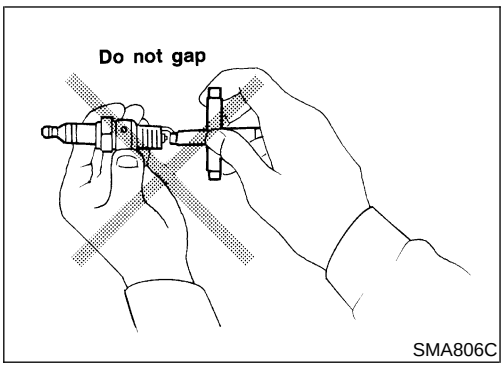
1. Disconnect ignition wires from spark plugs at boot. Do not pull on the wire.



SMA581C



SMA673B



SMA806C

2. Remove spark plugs with spark plug wrench.

Spark plug:

Make	NGK - Double Platinum-tipped
Standard type	PFR5G-11
Cold type	PFR6G-11

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

- extended highway driving
- frequent high engine revolution
- **Do not use a wire brush for cleaning.**
- **If plug tip is covered with carbon, spark plug cleaner may be used.**

  Cleaner air pressure:
  Less than 588 kPa (6 kg/cm^2, 85 psi)
  Cleaning time:
  Less than 20 seconds

- **Checking and adjusting plug gap is not required between change intervals.**

  Spark plug (Double Platinum-tipped type)
  Gap (Nominal): 1.1 mm (0.043 in)

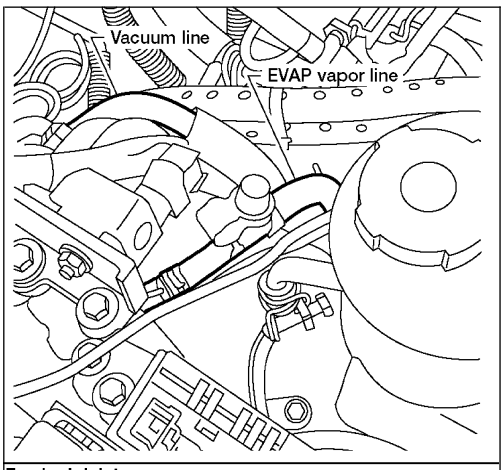
3. Install spark plugs. Reconnect ignition wires according to numbers indicated on them.

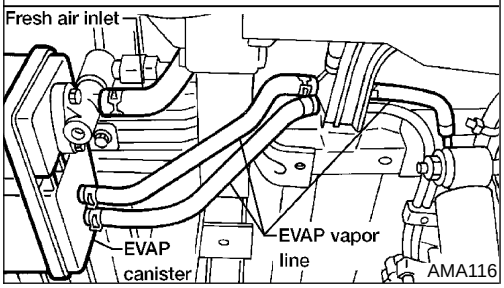
   Spark plug:
   : 20 - 29 N·m (2.0 - 3.0 kg-m, 14 - 22 ft-lb)

Checking EVAP Vapor Lines

NGMA0064

1. Visually inspect EVAP 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-40*, "EVAPORATIVE EMISSION SYSTEM".





AMA116

Changing Positive Crankcase Ventilation (PCV) Filter

NGMA0065

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

Engine Maintenance

KA24DE

Drive Belt Deflection and Tension

NGMA0066

NGMA0066S01

	Deflection adjustment Unit: mm (in)			Tension adjustment *1 Unit: N (kg, lb)		
	Used belt		New belt	Used belt		New belt
	Limit	After adjustment		Limit	After adjustment	
Generator	17 (0.67)	10 - 12 (0.39 - 0.47)	8 - 10 (0.31 - 0.39)	222.4 (22.7, 50)	355.8-444.8 (36.3-45.4, 80-100)	489.3-578.2 (49.9-59.0, 110-130)
Air conditioner compressor	16 (0.63)	10 - 12 (0.39 - 0.47)	8 - 10 (0.31 - 0.39)	200.2 (20.4, 45)	355.8-444.8 (36.3-45.4, 80-100)	489.3-578.2 (49.9-59.0, 110-130)
Power steering oil pump	17 (0.67)	10 - 13 (0.39 - 0.51)	8 - 10 (0.31 - 0.39)	222.4 (22.7, 50)	355.8-444.8 (36.3-45.4, 80-100)	489.3-578.2 (49.9-59.0, 110-130)
Applied pushing force	98 N (10 kg, 22 lb)			—		

*1: If belt tension gauge cannot be installed at check point shown, check belt tension at a different location on the belt.

Spark Plug

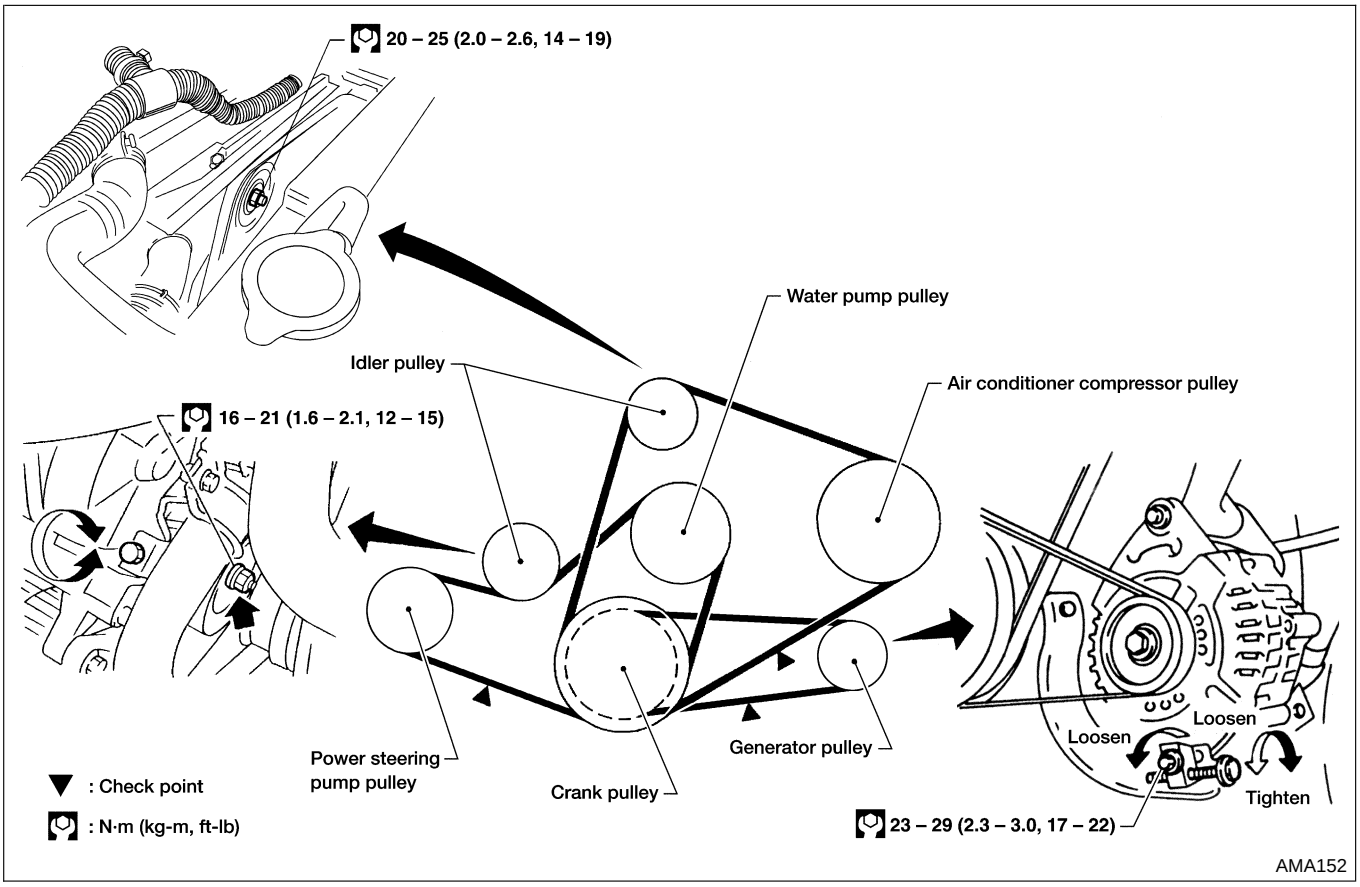
NGMA0066S02

Make	NGK—Double Platinum-tipped
Hot type	—
Standard type	PFR5G-11
Cold type	PFR6G-11
Gap (nominal)	1.1 mm (0.043 in)

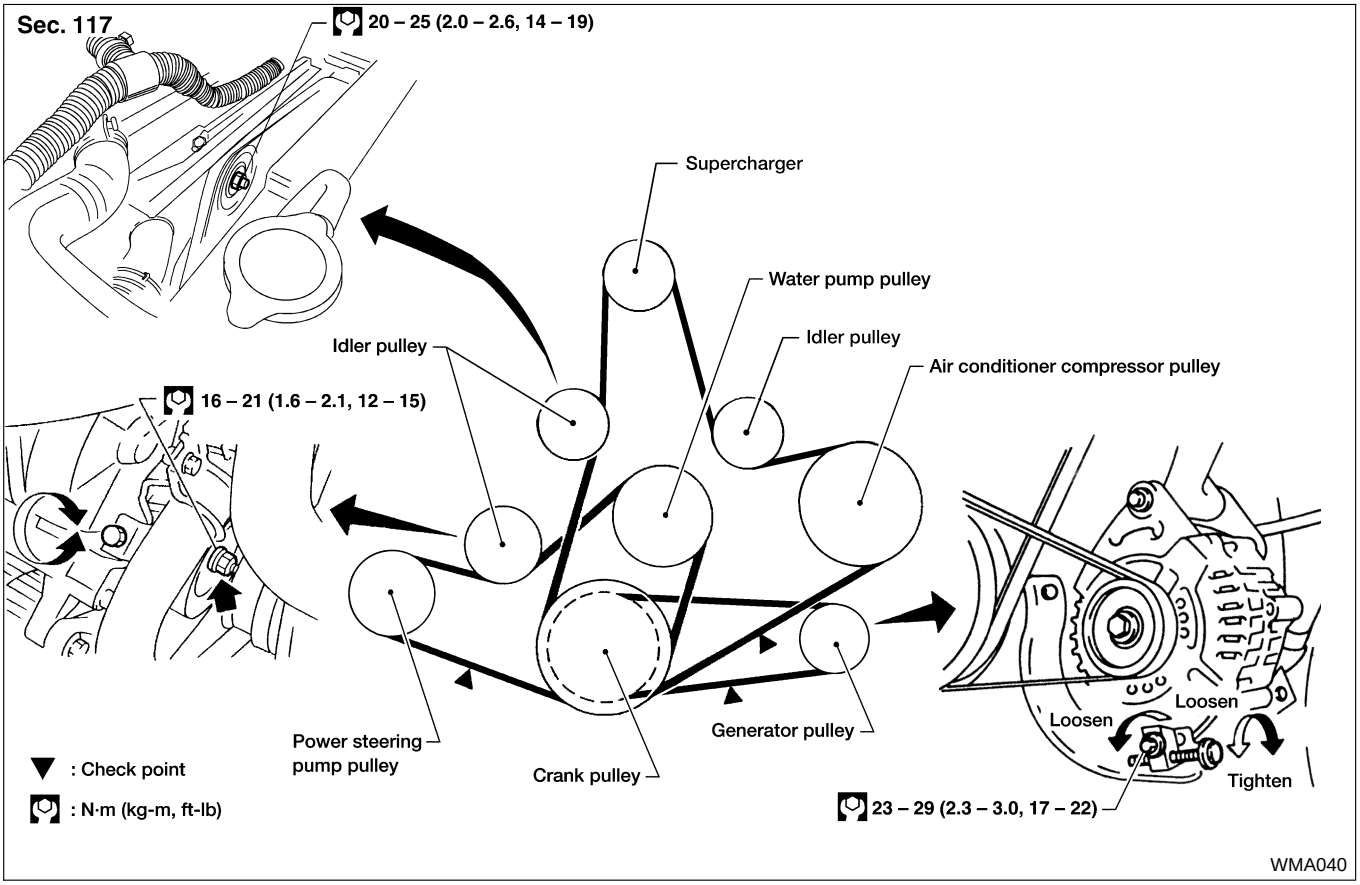
Checking Drive Belts

NGMA0016

VG33E



VG33ER



1. Inspect belt for cracks, fraying, wear and oil. If necessary, replace.
2. Inspect drive belt deflection or tension at a point on the belt midway between pulleys.

Check belt tension using belt tension gauge (BT3373-F or equivalent).

Inspect drive belt deflection or tension when engine is cold.

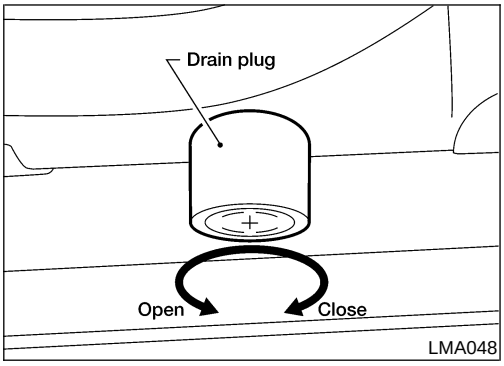
- **Adjust if belt deflections exceed the limit or if belt tension is not within specifications**.
- **Drive belt tension can be checked at other points on the belt.**

DRIVE BELT DEFLECTION AND TENSION

NGMA0016S01

	Deflection adjustment Unit: mm (in)			Tension adjustment *1 Unit: N (kg, lb)		
	Used belt		New belt	Used belt		New belt
	Limit	After adjustment		Limit	After adjustment	
Generator	11 (0.43)	7 - 8 (0.24 - 0.31)	6 - 7 (0.24 - 0.28)	226 (23, 51)	554.1 - 642.4 (56.5 - 65.5, 124.6 - 144.4)	671.8 - 760.0 (68.5 - 77.5, 151.0 - 170.9)
Air conditioner compressor - VG33E	18 (0.71)	12 - 13 (0.47 - 0.51)	10.5 - 11.5 (0.413 - 0.453)	196 (20, 44)	495.3 - 583.5 (50.5 - 59.5, 111.4 - 131.2)	603.1 - 691.4 (61.5 -70.5, 135.6 - 155.5)
Air conditioner compressor and Supercharger- VG33ER	16.5 (0.65)	9.5 - 10.5 (0.374 - 0.413)	8.5 - 9.5 (0.33 - 0.37)	294 (30, 66)	730 - 818 (75.5 - 83.5, 166.5 - 184.1)	838 - 926 (85.5 - 94.5, 188.5 - 208.4)
Power steering oil pump	15 (0.59)	9.5 - 10.5 (0.374 - 0.413)	8 - 9 (0.31 - 0.35)	275 (28, 62)	554.1 - 642.4 (56.5 - 65.5, 124.6 - 144.4)	671.8 - 760.0 (68.5 - 77.5, 151.0 - 170.9)
Applied pushing force	98 N (10 kg, 22 lb)			—		

*1: If belt tension gauge cannot be installed at check point shown, check belt tension at a different location on the belt.



Changing Engine Coolant

NGMA0017

WARNING:

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

—DRAINING ENGINE COOLANT—

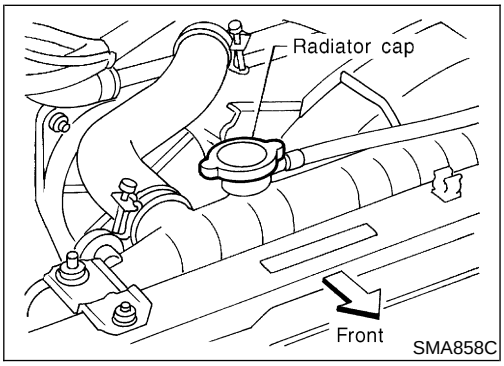
NGMA0017S01

1. Set air conditioning system as follows to prevent coolant from remaining in the system.

a. Turn ignition switch "ON" and set temperature controller to maximum hot position.

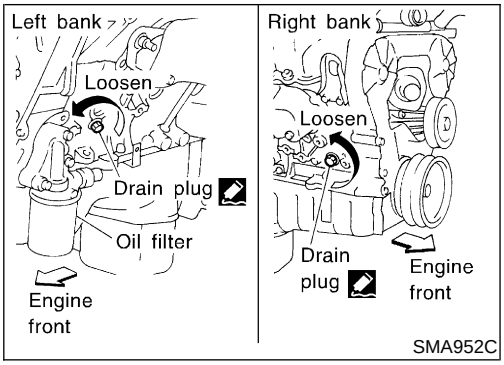
b. Wait 10 seconds before turning ignition switch "OFF".

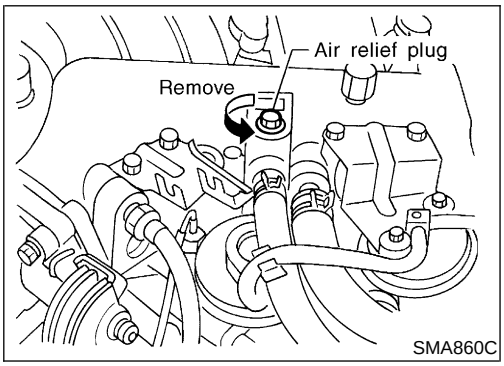
2. Open radiator drain plug at the bottom of radiator and remove radiator cap.



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

When draining all of the coolant in the system, also perform the two following steps.





1) Remove cylinder block drain plugs and air relief plug.
2) Check drained coolant for contaminants such as rust, corrosion or discoloration. If contaminated flush engine cooling system. Refer to "FLUSHING COOLING SYSTEM", MA-30.

—REFILLING ENGINE COOLANT—

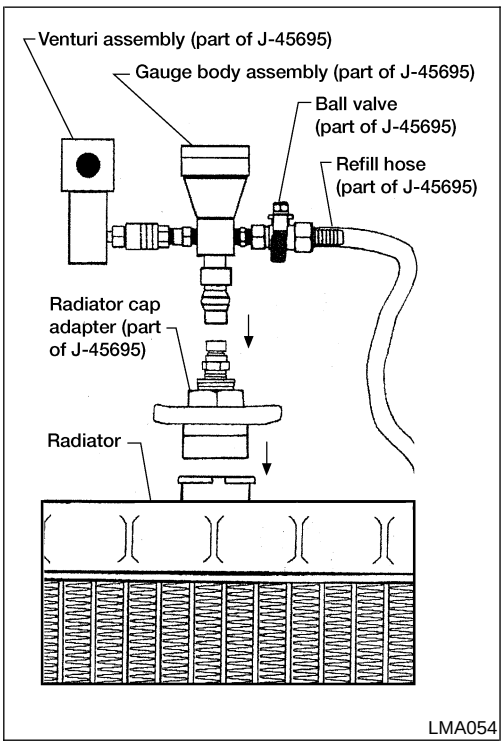
NGMA0017S02

1. Install the radiator drain plug. Install the reservoir tank and cylinder block drain plug, if removed for a total system drain or for engine removal or repair.

- The radiator must be completely empty of coolant and water.
- Apply sealant to the threads of the cylinder block drain plugs. Use Genuine High Performance Thread Sealant or equivalent. Refer to "Recommended Chemical Products and Sealants", ***GI-50***.

Radiator drain plug: 7.8 - 11.8 N•m (0.8 - 1.2 kg-m, 69 - 104 in-lb)
Cylinder block drain plug: 34 - 44 N•m (3.5 - 4.5 kg-m, 25 - 33 ft-lb)
Air relief plug: 7 - 8 N•m (0.7 - 0.8 kg-m, 61- 69 in-lb)

2. If disconnected, reattach the upper radiator hose at the engine side.
3. Set the vehicle heater controls to the full HOT and heater ON position. Turn the vehicle ignition ON with the engine OFF as necessary to activate the heater mode.



4. Install the Tool by installing the radiator cap adapter onto the radiator neck opening. Then attache the gauge body assembly with the refill tube and the venturi assembly to the radiator cap adapter.
5. Insert the refill hose into the coolant mixture container that is placed at floor level. Make sure the ball valve is in the closed position.

- Use Genuine NISSAN Anti-Freeze Coolant or equivalent, mixed 50/50 with distilled water or demineralized water. Refer to "Anti-freeze Coolant Mixture Ratio", MA-15.

Engine coolant capacity (without reservoir tank)
10.15 ℓ (10 3/4 US qt)
Reservoir tank: 0.8 ℓ (7/8 US qt)

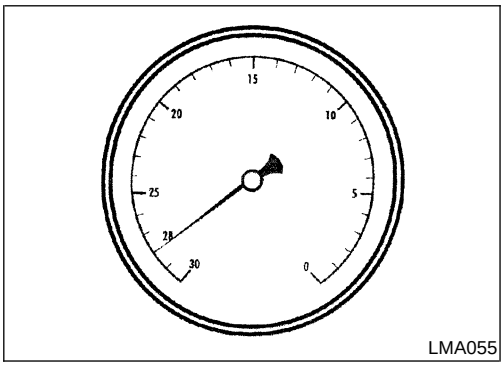
6. Install an air hose to the venturi assembly; the air pressure must be with specification.

Compressed air supply pressure
5.7 - 8.5 kPa (5.6 - 8.4 kg/cm^2, 80 - 120 psi)

CAUTION:
The compressed air supply must be equipped with an air dryer.

7. The vacuum gauge will begin to rise and there will be an audible hissing noise. During this process, open the ball valve

on the refill hose slightly. Coolant will be visible rising in the refill hose. Once the refill hose is full of coolant, close the ball valve. This will purge any air trapped in the refill hose.



LMA055

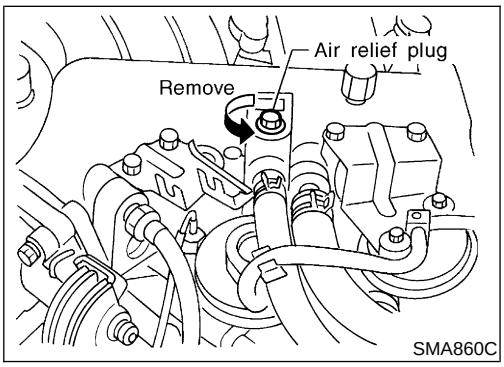
8. Continue to draw the vacuum until the gauge reaches 28 inches of vacuum. The gauge may not reach 28 inches in high altitude locations; refer to the vacuum specifications based on the altitude above sea level.

Altitude above sea level	Vacuum gauge reading
0 - 100 m (328 ft)	28 inches of vacuum
300 m (984 ft)	27 inches of vacuum
500 m (1,641 ft)	26 inches of vacuum
1,000 m (3,281 ft)	24 - 25 inches of vacuum

9. When the vacuum gauge has reached the specified amount, disconnect the air hose and wait 20 seconds to see if the system loses any vacuum. If the vacuum level drops , perform any necessary repairs to the system and repeat steps 6 - 8 to bring the vacuum to the specified amount. Recheck for any leaks.
10. Place the coolant container (with the refill hose inserted) at the same level as the top of the radiator. Then open the ball valve on the refill hose so the coolant will be drawn up to fill the cooling system. The cooling system is full when the vacuum gauge reads zero.

CAUTION:
Do not allow the coolant container to get too low when filling , to avoid air from being drawn into the cooling system.

11. Remove the Tool from the radiator neck opening.
12. Fill the cooling system reservoir tank to the specified level. Run the engine to warm up the cooling system and top up the system as necessary before installing the radiator cap.

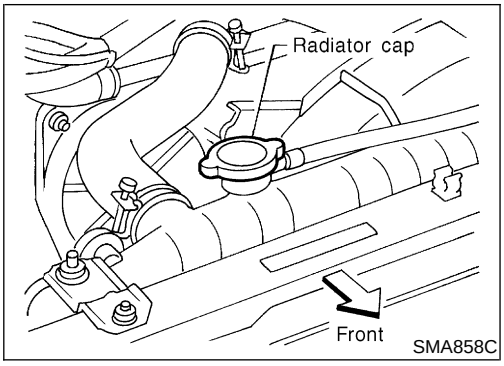


SMA860C

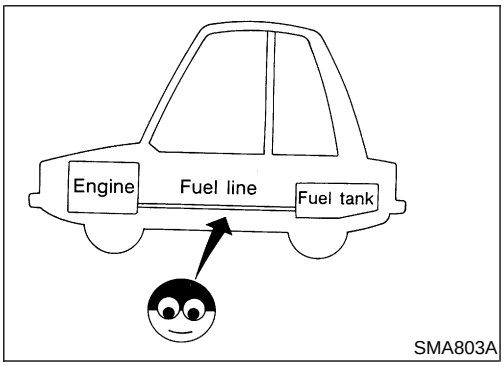
—FLUSHING COOLING SYSTEM—

NGMA0017S04

1. Open air relief plug.



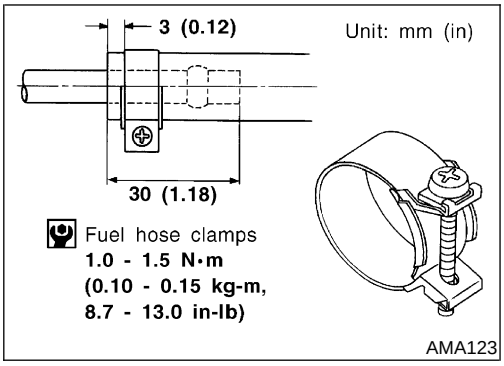
2. Fill radiator with water until water spills from the air relief hole, then close air relief plug. Fill radiator and reservoir tank with water and reinstall radiator cap.
3. Run engine and warm it up to normal operating temperature.
4. Rev engine two or three times under no-load.
5. Stop engine and wait until it cools down.
6. Drain the water.
7. Repeat steps 1 through 6 until clear water begins to drain from radiator.



Checking Fuel Lines

NGMA0018

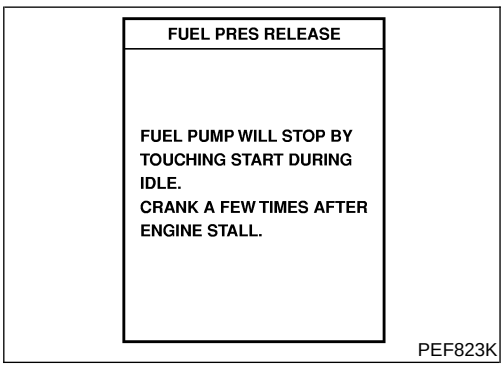
Inspect fuel lines and tank for improper attachment, leaks, cracks, damage, loose connections, chafing or deterioration.
If necessary, repair or replace faulty parts.



Changing Fuel Filter

NGMA0019

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.

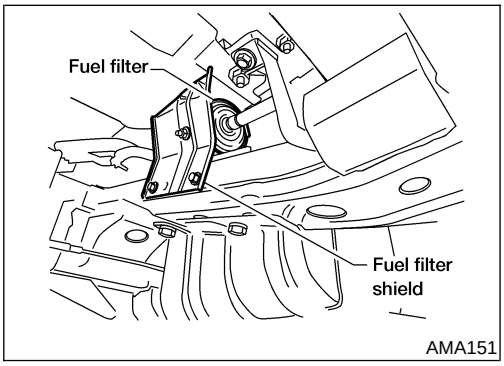


WARNING:
Before removing fuel filter, release fuel pressure from fuel line.

WITH CONSULT-II

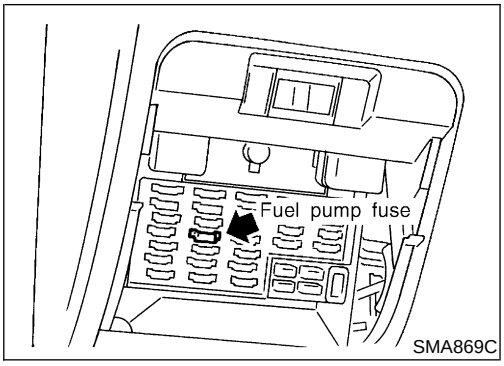
NGMA0019S01

1. Start engine.
2. Perform "FUEL PRES RELEASE" in "WORK SUPPORT" mode to release fuel pressure to zero.
3. After engine stalls, crank engine two or three times to make sure that fuel pressure is released.
4. Turn ignition switch "OFF".



5. Remove the fuel filter shield.
6. Loosen fuel hose clamps.
7. Replace fuel filter.

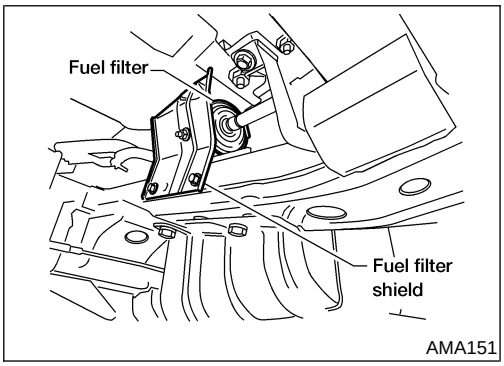
- **Use a high-pressure type fuel filter. Do not use a synthetic resinous fuel filter.**
- **Properly tighten fuel hose clamps. Refer to "Checking Fuel Lines", MA-31.**



WITHOUT CONSULT-II

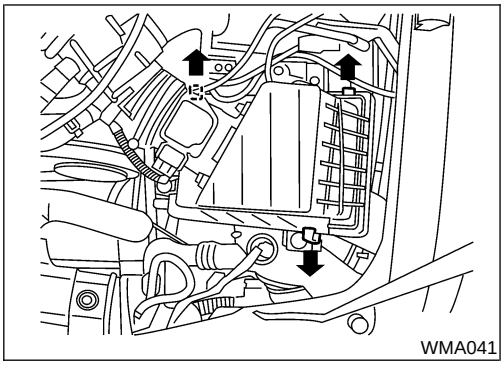
NGMA0019S02

1. Remove fuel pump fuse.
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 fuel pump fuse.



5. Remove the fuel filter shield
6. Loosen fuel hose clamps.
7. Replace fuel filter.

- **Use a high-pressure type fuel filter. Do not use a synthetic resinous fuel filter.**
- **Properly tighten fuel hose clamps. Refer to "Checking Fuel Lines", MA-31.**



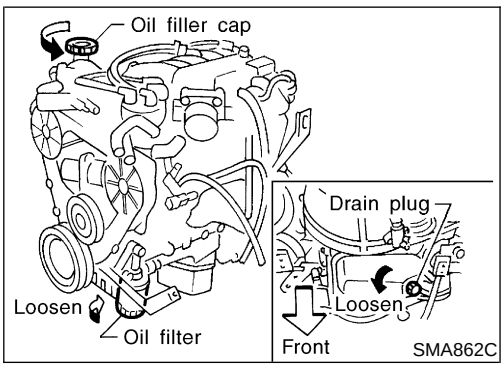
Changing Air Cleaner Filter

NGMA0020

VISCOUS PAPER TYPE

NGMA0020S01

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



Changing Engine Oil

NGMA0021

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 SG/SH and Energy Conserving I & II or API grade SJ, Energy Conserving
- API Certification Mark
- ILSAC grade GF-I & GF-II
- See "RECOMMENDED FLUIDS AND LUBRICANTS", MA-13.

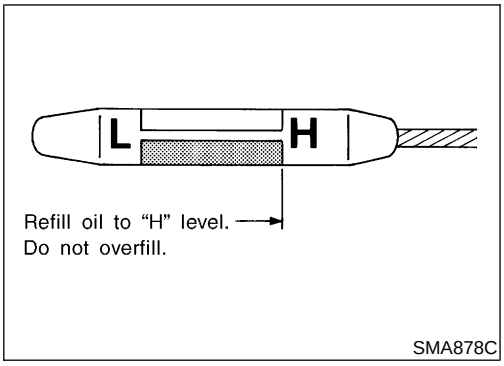
Refill oil capacity (Approximately) :

Unit: ℓ (US qt, Imp qt)

Drain and refill		
	with oil filter change	3.3 (3-1/2, 2-7/8)
	without oil filter change	3.0 (3-1/8, 2-5/8)
Dry engine (engine overhaul)		3.8 (4, 3-3/8)

CAUTION:

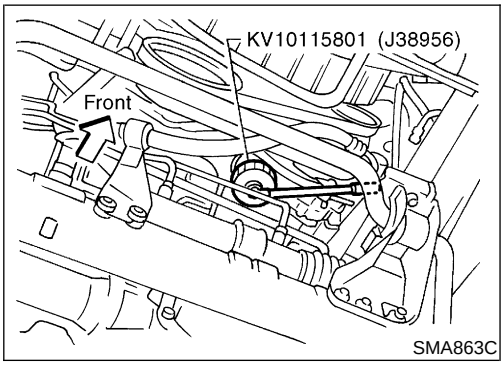
- **Be sure to clean drain plug and install with new washer.**
  Oil pan drain plug:
  : 29 - 39 N·m (3.0 - 4.0 kg-m, 22 - 29 ft-lb)
- **The refill capacity depends on the oil temperature and drain time; use the "Refill oil capacity" values as a reference and be certain to check with the dipstick when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



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

Changing Oil Filter

NGMA0022

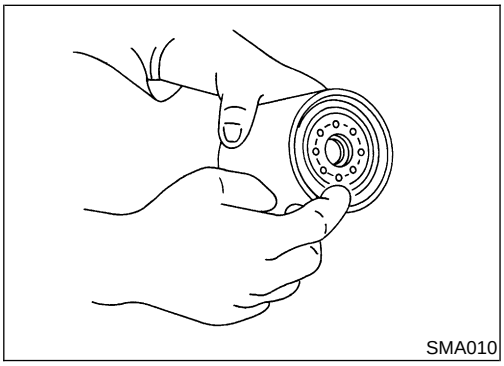


1. Remove oil filter with Tool.

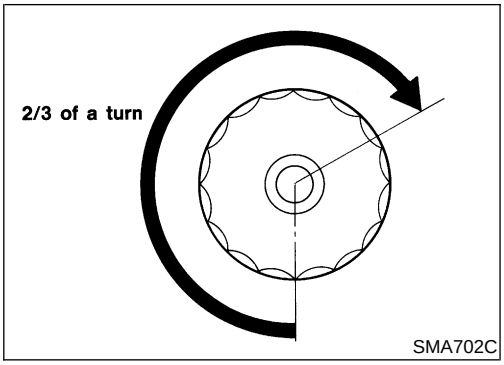
WARNING:

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

The filter is a full-flow cartridge type and is provided with a relief valve.



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 turn.
4. Add engine oil.

Refer to "Changing Engine Oil", MA-32.

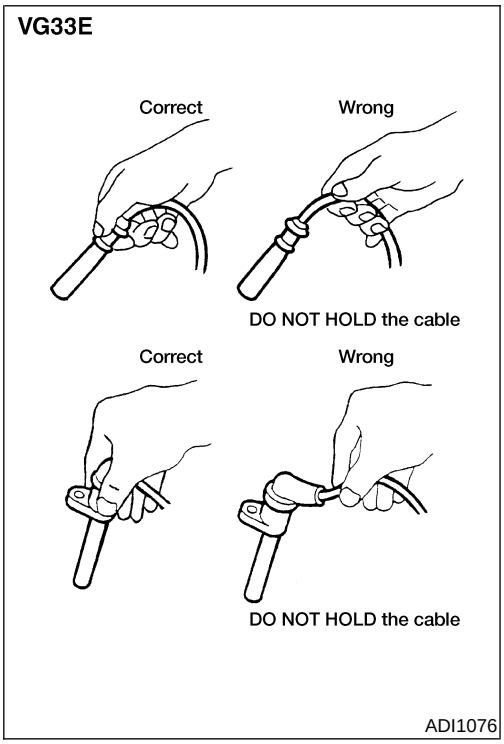
- **Clean excess oil from engine.**

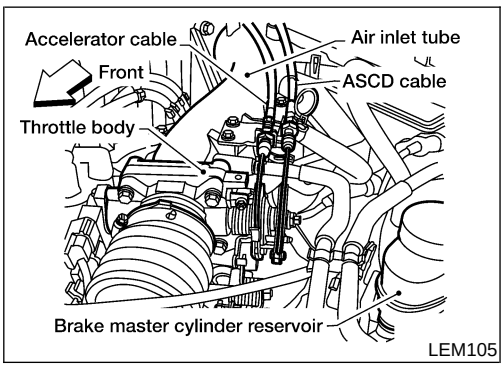
Changing Spark Plugs

NGMA0023

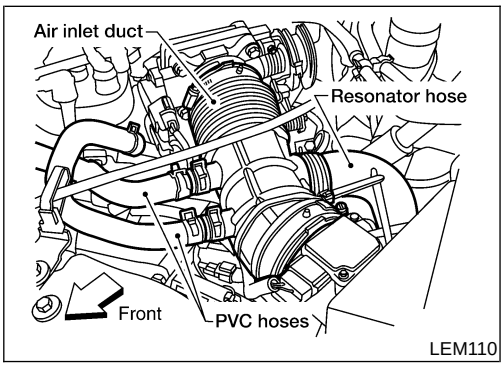
1. Disconnect ignition wires from spark plugs at boot. Do not pull on the wire.
2. Remove spark plugs with 16 mm (0.63 in) spark plug wrench.

- For VG33ER engine only; to remove the No. 2, and 4 spark plugs, the following components must be removed:



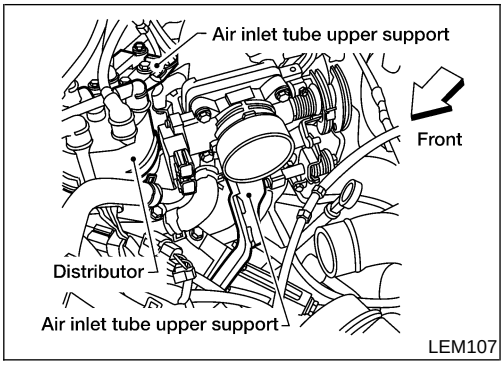


a) Disconnect the accelerator cable from the throttle body.
b) Disconnect the ASCD cable from the throttle body.
c) Remove air inlet tube bracket from air inlet tube (with cables attached) and position aside.

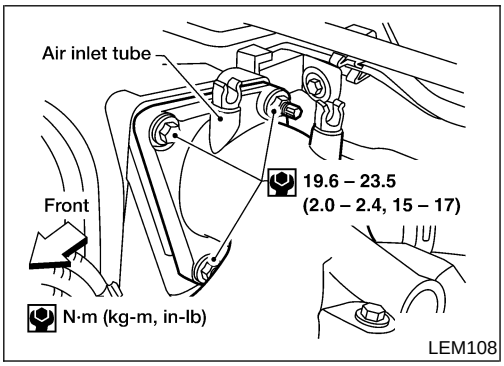


d) Remove the air inlet duct.

- Disconnect the PCV hoses.
- Disconnect the resonator hose.



e) Remove the air inlet tube upper and lower supports.



f) Remove the air inlet tube bolts, nuts, and studs. Position the air inlet tube aside.

- Disconnect the evaporative emission vacuum hose.
- Disconnect the brake booster vacuum hose.
- Disconnect the TPS sensor electrical connector.
- Disconnect the TPS switch electrical connector.

3. Check type and gap of new spark plug.

Spark plug (VG33E):

Description	NGK (Double Platinum Tipped)
Hot type	PFR4G-11
Standard type	PFR5G-11
Cold type	PFR6G-11
Spark Plug Gap (nominal)	1.1 mm (0.043 in)

Spark plug (VG33ER):

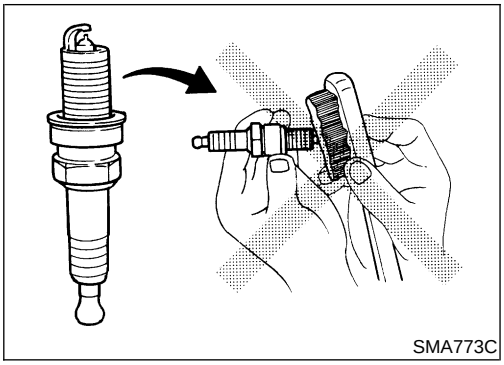
Description	NGK (Double Platinum Tipped)
Hot type	PFR5G-11
Standard type	PFR6G-11
Cold type	PFR7G-11
Spark Plug Gap (nominal)	1.1 mm (0.043 in)

Use standard type spark plug under normal conditions.
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

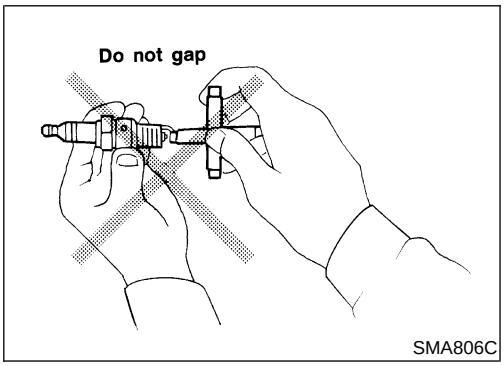
The cold type spark plug is suitable when spark knock occurs with the standard type spark plug under conditions such as:

- extended highway driving
- frequent high engine revolution


SMA773C

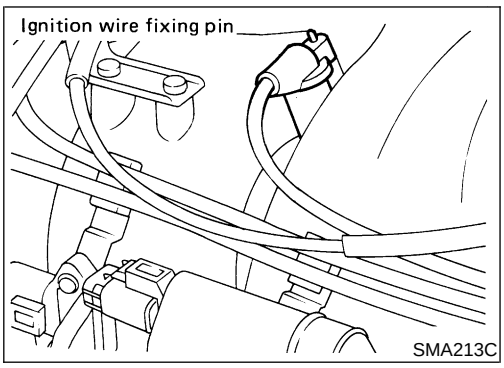
- **Do not use a wire brush for cleaning.**
- **If plug tip is covered with carbon, spark plug cleaner may be used.**

Cleaner air pressure:
Less than 588 kPa (6 kg/cm^2, 85 psi)
Cleaning time:
Less than 20 seconds



SMA806C

- **Checking and adjusting plug gap is not required between spark plug change intervals.**



SMA213C

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

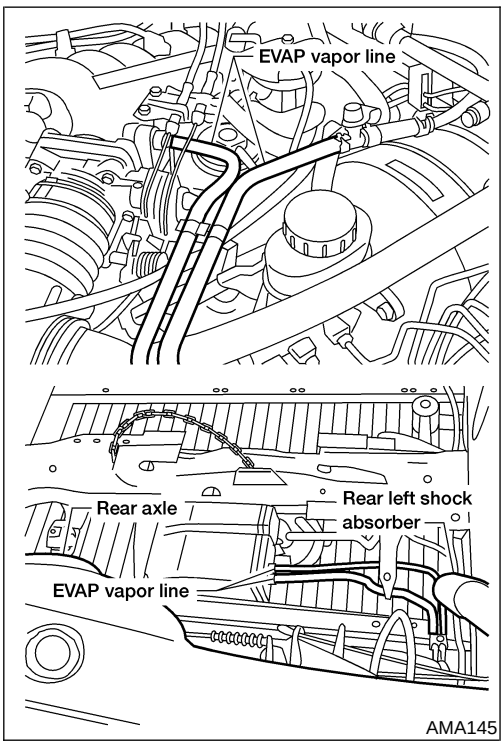
Spark plug:
: 20 - 29 N·m (2.0 - 3.0 kg-m, 14 - 22 ft-lb)

Checking EVAP Vapor Lines

NGMA0024

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

Refer to *EC-626*, "EVAPORATIVE EMISSION SYSTEM".



AMA145

Engine Maintenance

VG33E AND VG33ER

Drive Belt Deflection and Tension

NGMA0054

NGMA0054S01

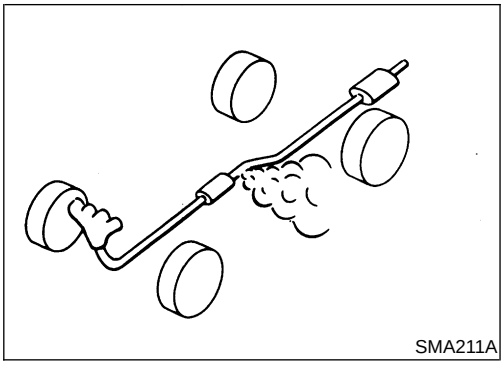
	Deflection adjustment Unit: mm (in)			Tension adjustment *1 Unit: N (kg, lb)		
	Used belt		New belt	Used belt		New belt
	Limit	After adjustment		Limit	After adjustment	
Generator	11 (0.43)	7 - 8 (0.24 - 0.31)	6 - 7 (0.24 - 0.28)	226 (23, 51)	554.1 - 642.4 (56.5 - 65.5, 124.6 - 144.4)	671.8 - 760.0 (68.5 - 77.5, 151.0 - 170.9)
Air conditioner compressor (VG33E)	18 (0.71)	12 - 13 (0.47 - 0.51)	10.5 - 11.5 (0.413 - 0.435)	196 (20, 44)	495.3 - 583.5 (50.5 - 59.5, 111.4 - 131.2)	603.1 - 691.4 (61.5 - 70.5, 135.6 - 155.5)
Air conditioner compressor and supercharger (VG33ER)	16.5 (0.65)	9.5 - 10.5 (0.374 - 0.413)	8.5 - 9.5 (0.33 - 0.39)	294 (30, 66)	730 - 818 (75.5 - 83.5, 166.5 - 184.1)	838 - 926 (85.5 - 94.5, 188.5 - 208.4)
Power steering oil pump	15 (0.59)	9.5 - 10.5 (0.374 - 0.413)	8 - 9 (0.31 - 0.35)	275 (28, 62)	554.1 - 642.4 (56.5 - 65.5, (124.6 - 144.4)	671.8 - 760.0 (68.5 - 77.5, 151.0 - 170.9)
Applied pushing force	98 N (10 kg, 22 lb)			—		

*1: If belt tension gauge cannot be installed at check point shown, check belt tension at a different location on the belt.

Spark Plug

NGMA0054S02

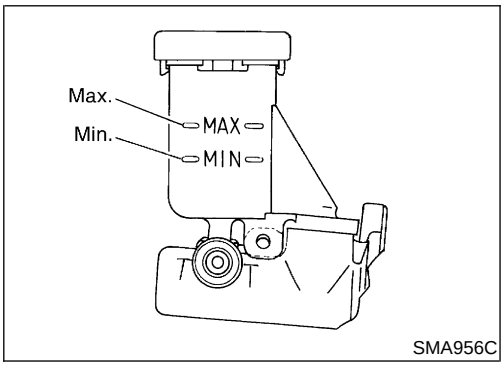
NGK - Double Platinum-tipped	VG33E	VG33ER
Hot type	PFR4G-11	PFR5G-11
Standard type	PFR5G-11	PFR6G-11
Cold type	PFR6G-11	PFR7G-11
Gap (nominal)	1.1 mm (0.043 in)	


SMA211A

Checking Exhaust System

NGMA0025

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

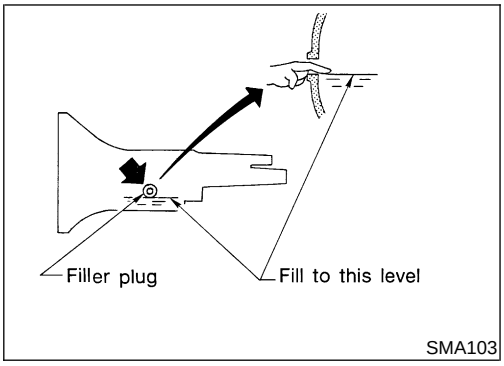


SMA956C

Checking Clutch Fluid Level and Leaks

NGMA0026

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



SMA103

Checking M/T Oil

NGMA0027

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

NGMA0028

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-13.

Oil capacity:

FS5W71C

2WD 2.0 ℓ (4-1/4 US pt, 3-1/2 Imp pt)

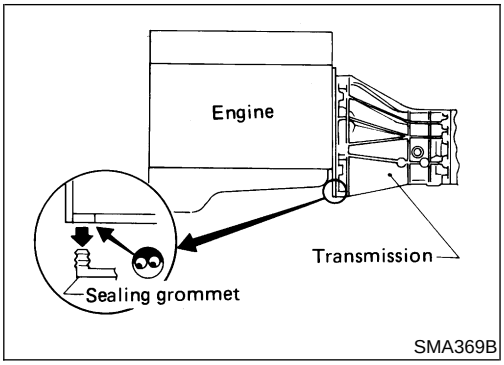
FS5R30A

2WD 2.8 ℓ (5-7/8 US pt, 4-7/8 Imp pt)

4WD 5.1 ℓ (10-3/4 US pt, 9 Imp pt)

Drain plug:

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

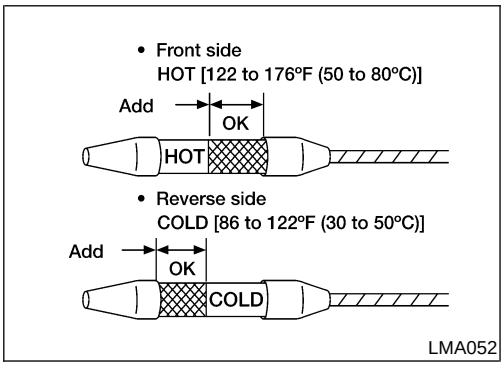


SMA369B

Checking Water Entry — For 4WD models with M/T

NGMA0029

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



LMA052

Checking A/T Fluid

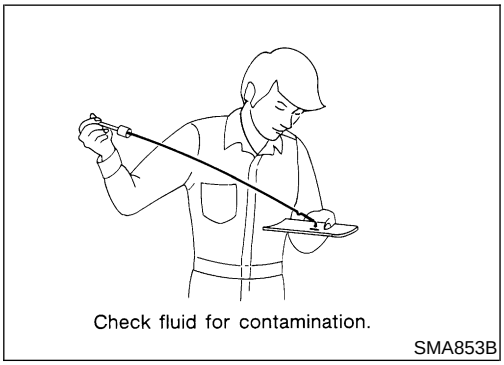
NGMA0030

1. Warm up engine.
2. Check for fluid leakage.
3. Before driving, fluid level can be checked at fluid temperatures of 30 to 50°C (86 to 122°F) using “COLD” range on dipstick.

a. Park vehicle on level surface and set parking brake.
b. Start engine and move selector lever through each gear position. Leave selector lever in “P” position.
c. Check fluid level with engine idling.
d. Remove dipstick and note reading. If level is at low side of either range, and fluid to the charging pipe.
e. Re-insert dipstick into charging pipe as far as it will go.
f. Remove dipstick and note reading. If reading is at low side of range, add fluid to the charging pipe.

Do not overfill.

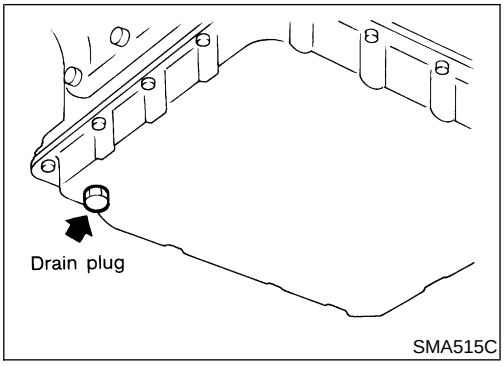
4. Drive vehicle for approximately 5 minutes in urban areas.
5. Re-check fluid level at fluid temperatures of 50 to 80°C (122 to 176°F) using “HOT” range on dipstick.



SMA853B

6. Check fluid condition.

- If fluid is very dark or smells burned, refer to ***AT-62***, “FLUID CONDITION CHECK”. Flush cooling system after repair of A/T.
- If A/T fluid contains frictional material (clutches, bands, etc.), replace radiator and flush cooler line using cleaning solvent and compressed air after repair of A/T. Refer to ***LC-14*** (KA24DE), ***LC-32*** (VG33E and VG33ER), “REMOVAL AND INSTALLATION”.



Changing A/T Fluid

=NGMA0031

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.

Fluid grade:

NISSAN Matic "D" (Continental U.S. and Alaska) or Canada NISSAN Automatic Transmission Fluid. Refer to "RECOMMENDED FLUIDS AND LUBRICANTS", MA-13.

Fluid capacity (With torque converter):

VG33E and VG33ER

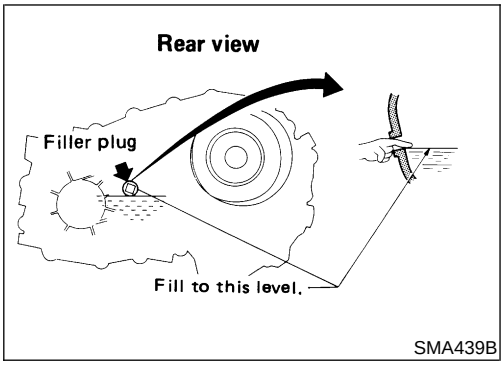
2WD 8.3 ℓ (8-3/4 US qt, 7-1/4 Imp qt)

4WD 8.5 ℓ (9 US qt, 7-1/2 Imp qt)

Drain plug:

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

4. Run engine at idle speed for five minutes.
5. Check fluid level and condition. Refer to "Checking A/T Fluid", MA-39. If fluid is still dirty, repeat steps 2 through 5.



Checking Transfer Fluid

NGMA0032

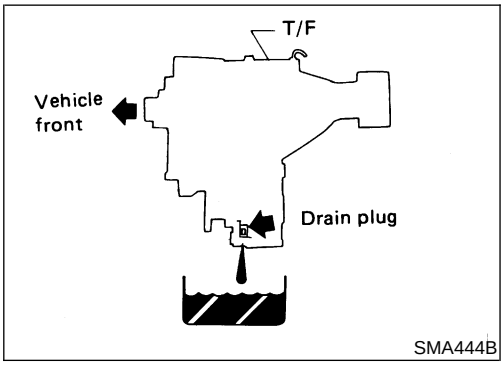
Check for fluid leakage and fluid level.

A/T 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

NGMA0033

When changing transfer fluid completely, A/T fluid may be used.

Fluid grade:

NISSAN Matic "D" (Continental U.S. and Alaska) or Canada NISSAN Automatic Transmission Fluid or API GL-4.

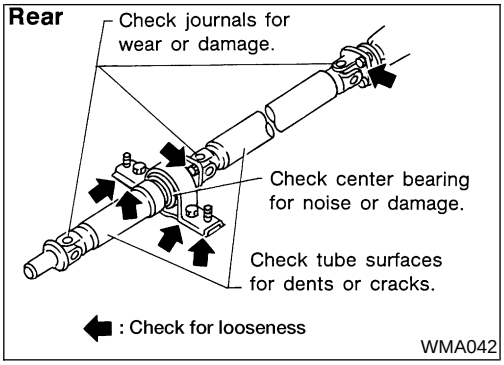
Refer to "RECOMMENDED FLUIDS AND LUBRICANTS", MA-13.

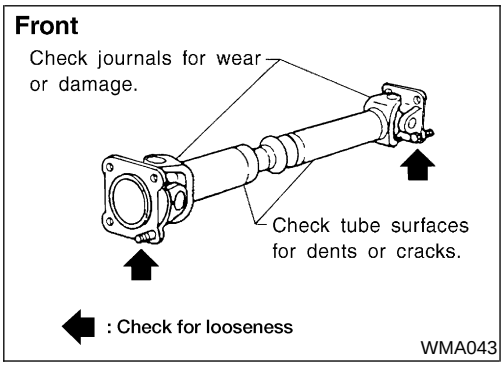
Fluid capacity:

2.2 ℓ (2-3/8 US qt, 2 Imp qt)

Drain plug:

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

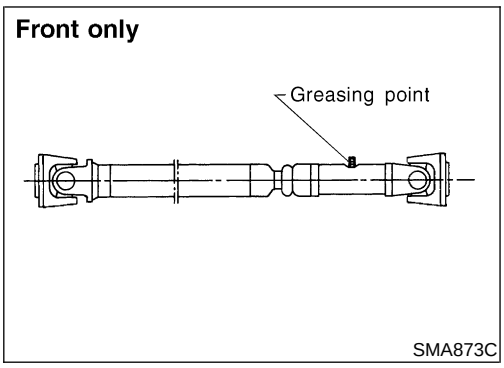




Checking Propeller Shaft

NGMA0034

Check propeller shaft for damage, looseness or grease leakage.



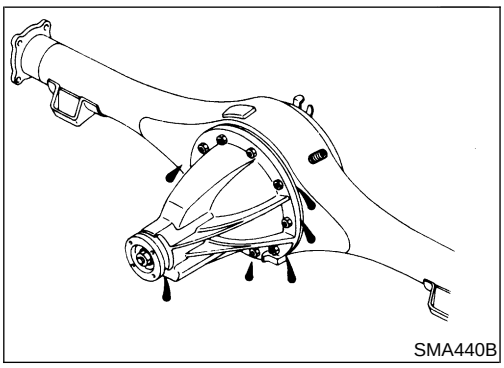
Greasing Propeller Shaft

NGMA0035

Apply specified grease to nipples provided on propeller shaft.

Grease grade:

Refer to "RECOMMENDED FLUIDS AND LUBRICANTS", MA-13.



Checking Differential Gear Oil

NGMA0036

Check for oil leakage and oil level.

Filler plug:

Front – R200A

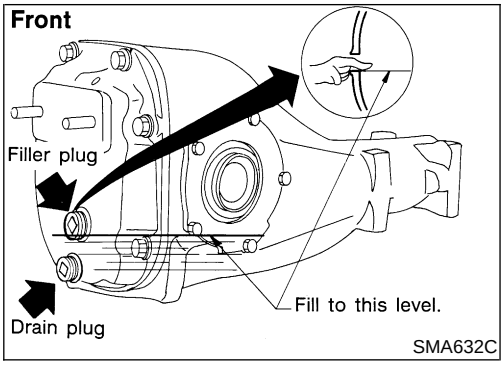
: 59 - 98 N·m (6 - 10 kg-m, 43 - 72 ft-lb)

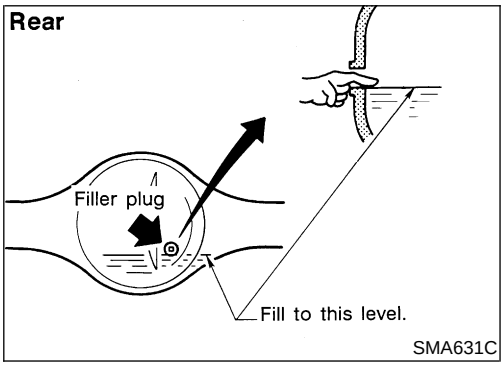
Rear – H233B

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

Rear – C200

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





Changing Differential Gear Oil

NGMA0037

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-13, 14.
Oil capacity:
Front — R200A
1.75ℓ (3-3/4 US pt, 3-1/8 Imp pt)
Rear — H233B
2.8ℓ (5-7/8 US pt, 4-7/8 Imp pt)
Rear — C200
1.3ℓ (2-3/4 US pt, 2-1/4 Imp pt)
Filler plug:
Front — R200A
: 59 - 98 N·m (6 - 10 kg-m, 43 - 72 ft-lb)
Rear — H233B
: 59 - 98 N·m (6 - 10 kg-m, 43 - 72 ft-lb)
Rear — C200
: 39 - 59 N·m (4 - 6 kg-m, 29 - 43 ft-lb)
Drain plug:
Front — R200A
: 59 - 98 N·m (6 - 10 kg-m, 43 - 72 ft-lb)
Rear — H233B
: 59 - 98 N·m (6 - 10 kg-m, 43 - 72 ft-lb)
Rear — C200
: 59 - 98 N·m (6 - 10 kg-m, 43 - 72 ft-lb)

LIMITED-SLIP DIFFERENTIAL GEAR

NGMA0037S01

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

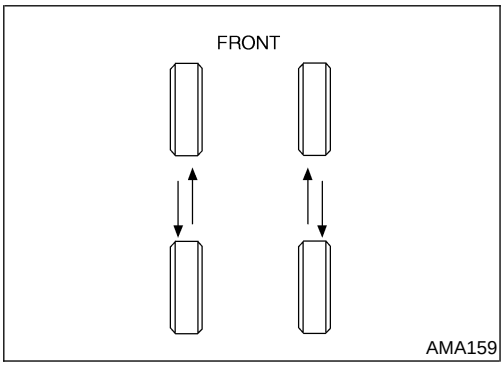
1. Lift both rear wheels off the ground.
2. Turn one rear wheel by hand.
3. If both rear wheels turn in the same direction simultaneously, vehicle is equipped with limited-slip differential.

Balancing Wheels

=NGMA0038

Adjust wheel balance using the road wheel center.

Wheel balance (Maximum allowable unbalance):
Refer to “WHEEL BALANCE”, MA-49.



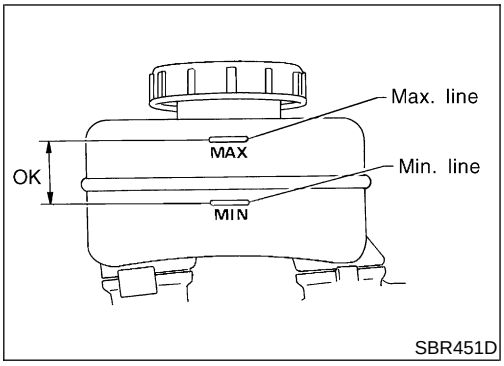
AMA159

Tire Rotation

NGMA0039

- **After rotating the tires, adjust the tire pressure.**
- **Retighten the wheel nuts when the vehicle has been driven for 600 miles (1000 km) (also in cases of a flat tire, etc.)**

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

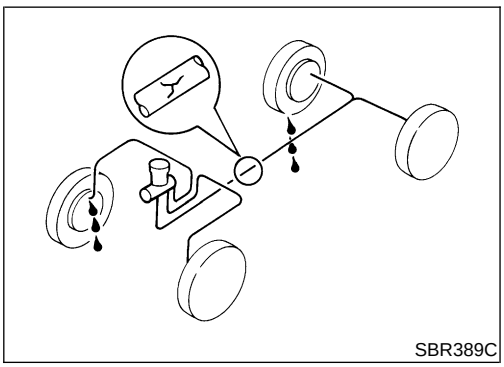


SBR451D

Checking Brake Fluid Level and Leaks

NGMA0040

- Check fluid level in reservoir tank. It should be between Max and Min lines on reservoir tank.
- If fluid level is extremely low, check brake system.
- If the brake warning lamp comes on, check brake fluid level switch and parking brake switch.

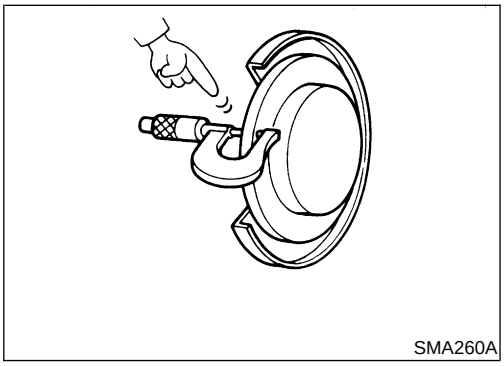

SBR389C

Checking Brake Lines and Cables

NGMA0041

CAUTION:
If leakage occurs around joints, retighten or, if necessary, replace damaged parts.

1. Check brake lines (tubes and hoses) for cracks, deterioration and other damage. Replace any damaged parts.
2. Check for oil leakage by fully depressing brake pedal while engine is running.


SMA260A

Checking Disc Brake

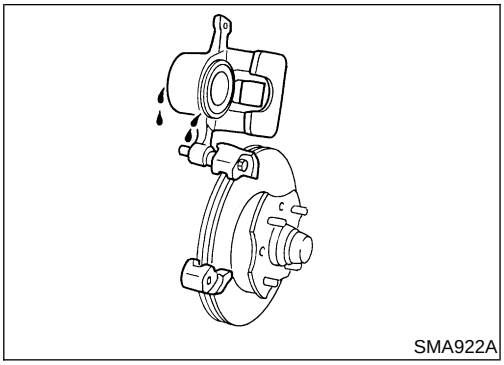
NGMA0042

ROTOR

NGMA0042S01

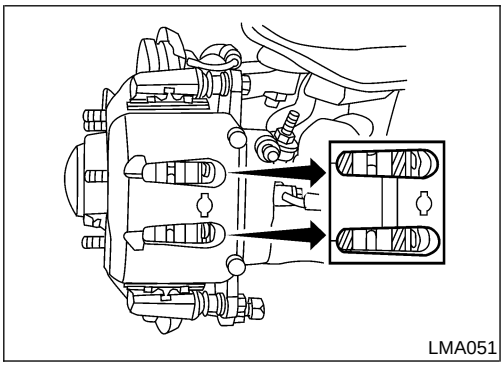
Check condition, wear and damage.

Standard thickness:
28 mm (1.10 in)
Minimum thickness:
26 mm (1.024 in)


SMA922A

CALIPER
NGMA0042S02

Check for leakage.


LMA051

PAD
NGMA0042S03

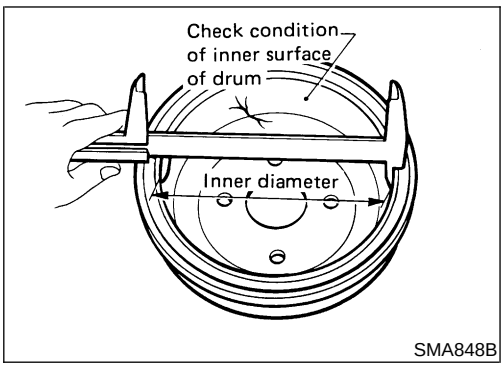
Check wear or damage.

Standard thickness:
10 mm (0.39 in)
Minimum thickness: 2.0 mm (0.079 in)

Checking Drum Brake
NGMA0043

WHEEL CYLINDER
NGMA0043S01

Check for leakage.

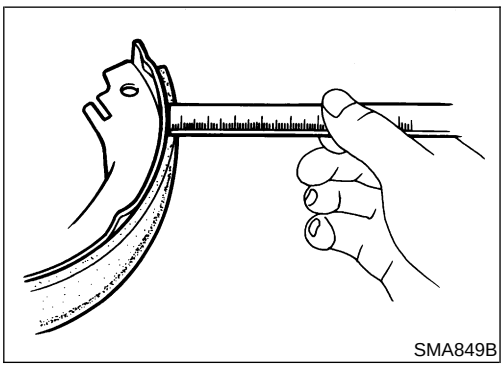


SMA848B

DRUM
NGMA0043S02

Check condition and inner surface.

Standard inner diameter:
295.0 mm (11.61 in)
Drum repair limit (Inner diameter):
296.5 mm (11.67 in)


SMA849B

LINING
NGMA0043S03

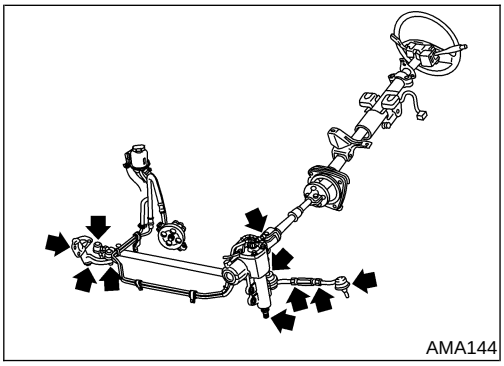
Check wear or damage.

Standard thickness:
5.8 mm (0228 in)
Lining wear limit (Minimum thickness):
1.5 mm (0.059 in)

Checking Steering Gear and Linkage
NGMA0044

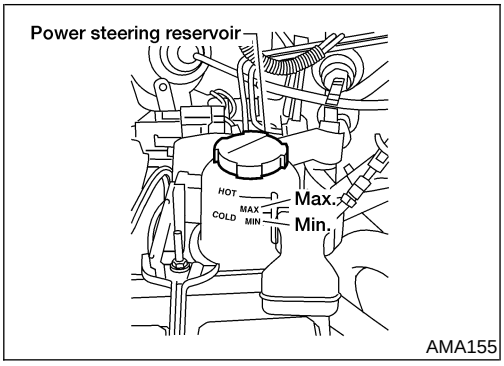
STEERING GEAR
NGMA0044S01

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


AMA144

STEERING LINKAGE
NGMA0044S02

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



AMA155

Checking Power Steering Fluid and Lines

NGMA0045

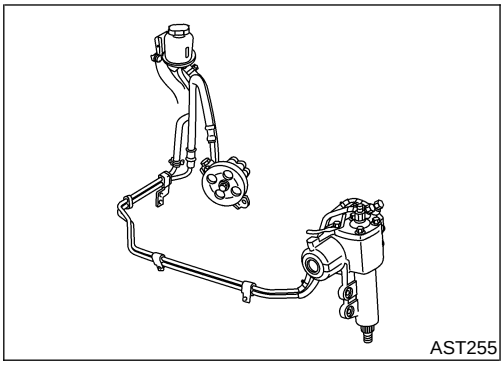
CHECKING FLUID LEVEL

NGMA0045S01

- Check fluid level with engine off.
- Check fluid level on reservoir. 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 Genuine NISSAN PSF II, Canada NISSAN Automatic Transmission Fluid, DEXRON™III, MERCON™, or equivalent ATF may also be used.**
  Refer to “RECOMMENDED FLUIDS AND LUBRICANTS”, MA-13.


AST255

CHECKING LINES

NGMA0045S02

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

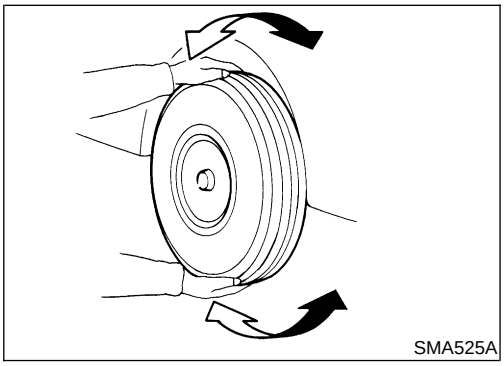
Checking Axle and Suspension Parts

NGMA0067

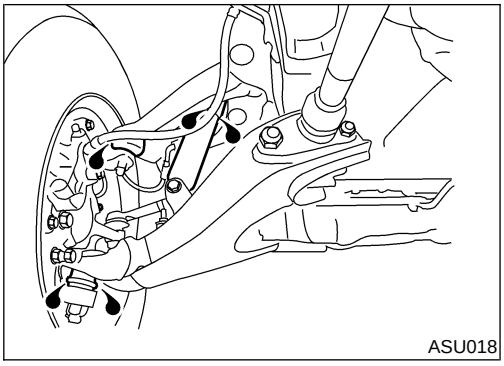
FRONT AND REAR AXLE AND SUSPENSION PARTS

NGMA0067S01

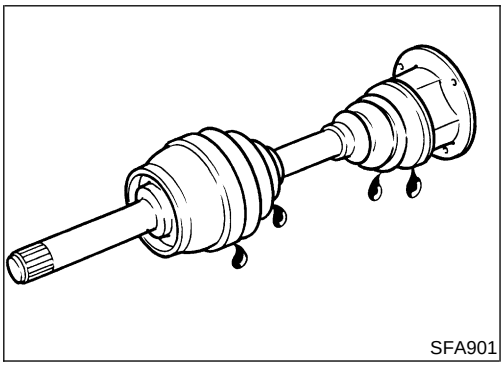
Check front and rear axle and suspension parts for excessive play, cracks, wear or other damage.


SMA525A

- Shake each wheel to check for excessive play.
- Rotate each wheel to check for abnormal noise.
- Check axle and suspension nuts and bolts for looseness.


ASU018

- Check strut (shock absorber) for oil leakage or other damage.
- Check suspension ball joint for grease leakage and ball joint dust cover for cracks or other damage.


SFA901

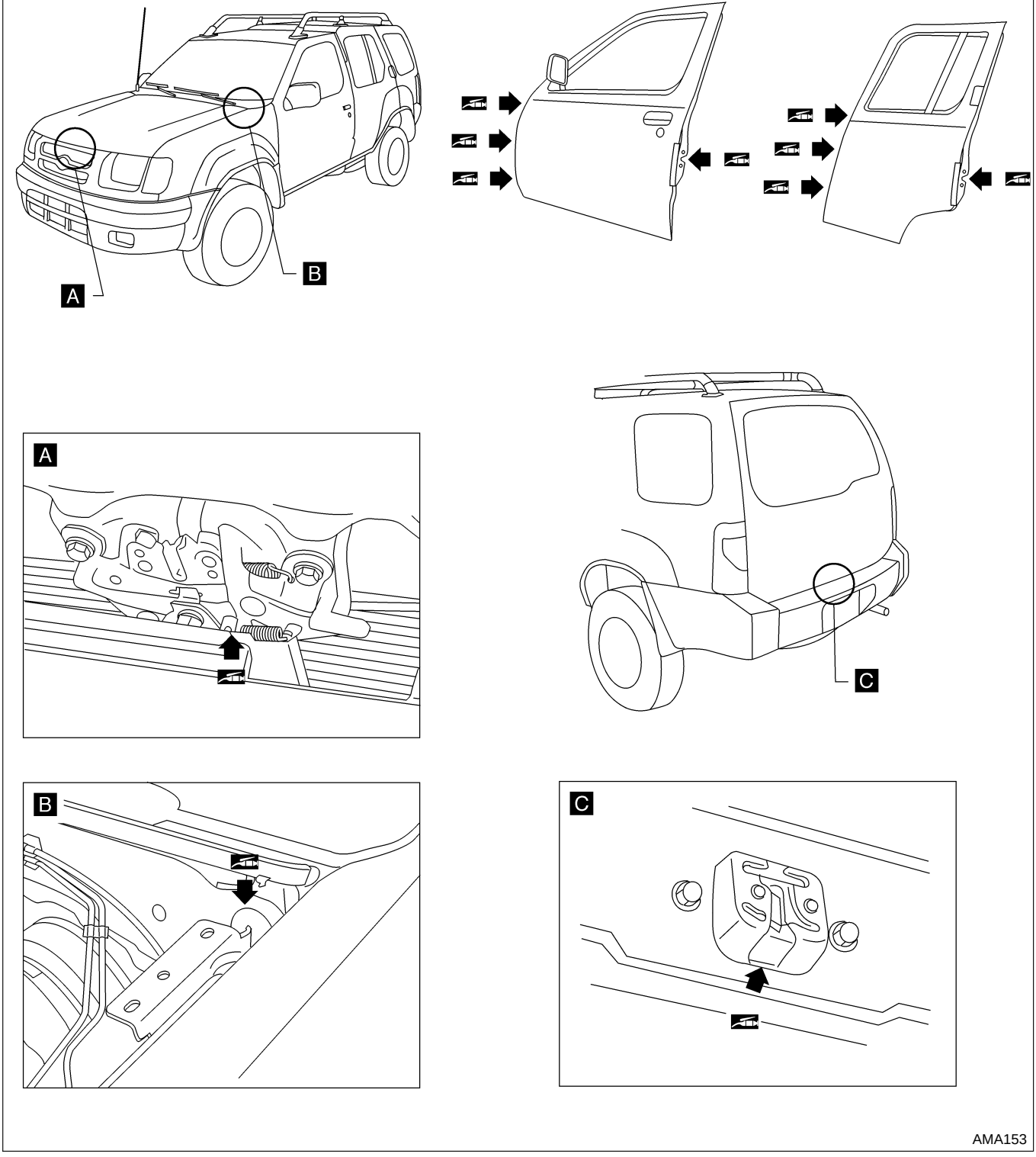
DRIVE SHAFT

NGMA0067S02

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

Lubricating Locks, Hinges and Hood Latches

NGMA0046



AMA153

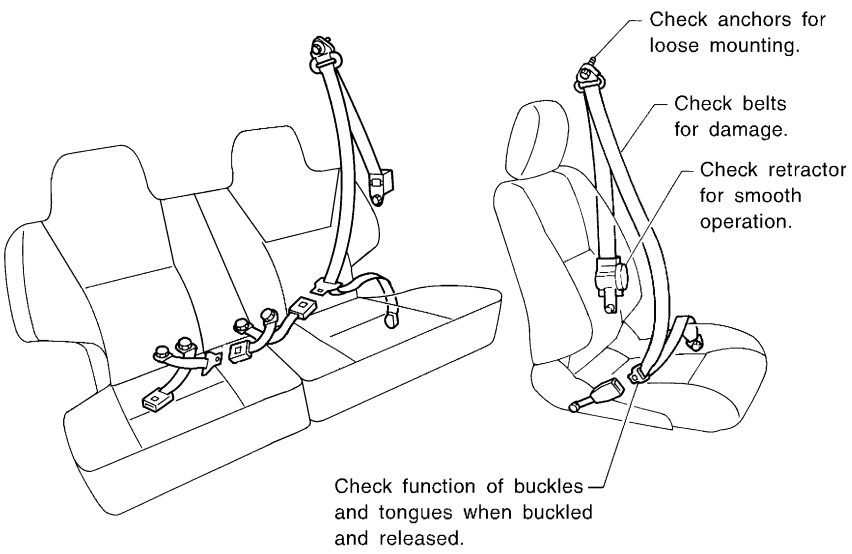
Checking Seat Belts, Buckles, Retractors, Anchors and Adjusters

NGMA0047

CAUTION:

- **After any collision, inspect all seat belt assemblies, including retractors and other attached hardwares (i.e. guide rail set). Nissan recommends to replace all seat belt assemblies in use during a collision, unless not damaged and properly operating after minor collision.**
  Also inspect seat belt assemblies not in use during a collision, and replace if damaged or improperly operating.
  Seat belt pre-tensioner should be replaced even if the seat belts are not in use during a frontal collisiion where the driver and passenger air bags are deployed.
- **If any component of seat belt assembly is questionable, do not repair. Replace as seat belt assembly.**
- **If webbing is cut, frayed, or damaged, replace belt assembly.**
- **Never oil tongue and buckle.**
- **Use a genuine seat belt assembly.**

For details, refer to "Seat Belt Inspection", "SEAT BELTS" in RS section.



Anchor bolt

43 – 55 (4.4 – 5.6, 32 – 41)

: N·m (kg-m, ft-lb)

WMA034

Chassis and Body Maintenance

WHEEL BALANCE

NGMA0050

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

NOTES