<SUPPLEMENT-III>

MAINTENANCE

SECTION MA

MODIFICATION NOTICE:

- KA24DE engine information has been added. Refer to the Service Manual of D22 Supplement-II (SM9E-D22BE0E) for the maintenance procedure not included here.
- YD25DDTi engine has been added.

CONTENTS

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

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

Maintenance Schedule for Petrol Engines (Annual Mileage < 30,000 km/year)

KA24DE ENGINE

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

MAINTENANCE OPERATION		MAINTENANCE INTERVAL								Reference pages
Perform on a kilometer basis, but on an annual basis when driving less than 15,000 km (9,000 miles) per year	km x 1,000 (miles x 1,000) Months	15 (9) 12	30 (18) 24	45 (27) 36	60 (36) 48	75 (45) 60	90 (54) 72	105 (63) 84	120 (72) 96	
Engine compartment and under vehicle										
Engine oil (Use API SG, SH or SJ oil)★		R	R	R	R	R	R	R	R	—
Engine oil filter (Use NISSAN genuine part or equivalent)★		R	R	R	R	R	R	R	R	—
Drive belts		I	I	I	I	I	I	I	I	—
Cooling system		I	I	I	I	I	I	I	I	—
Engine anti-freeze coolant (Use genuine NISSAN Anti-Freeze Coolant (L250) or equivalent)	See NOTE (1)			I			R		I	—
Air cleaner filter (Viscous paper type)★					R				R	3010
Positive crankcase ventilation (PCV) filter★			R		R		R		R	3010
Intake and exhaust valve clearance	See NOTE (2)									—
Fuel and EVAP vapour lines			I		I		I		I	—
Spark plugs			R		R		R		R	—
Ignition wires				I			I			—
Fuel filter★							R			—

NOTE: (1) First replace at 90,000 km (54,000 miles)/60 months, then every 60,000 km (36,000 miles)/48 months. Perform "I" (Checking the mixture ratio and correcting the mixture ratio if necessary) at the middle of replacement interval.
(2) Periodic maintenance is not required. However, if valve noise increases, check valve clearance.
★ Maintenance items with "★" should be performed more frequently according to "Maintenance Under Severe Driving Conditions".

Maintenance Schedule for Diesel Engines (Annual Mileage < 30,000 km/year)

YD25DDTi ENGINE

Abbreviations: R = Replace I = Inspect: Correct or replace if necessary, C = Clean D = Check filter and drain water

MAINTENANCE OPERATION		MAINTENANCE INTERVAL						Reference pages
Perform on a kilometer basis, but on an annual basis when driving less than 20,000 km (12,000 miles) per year.	km x 1,000 (miles x 1,000) Months	20 (12) 12	40 (24) 24	60 (36) 36	80 (48) 48	100 (60) 60	120 (72) 72	
Engine compartment and under vehicle								
Engine oil (For 2WD or 4WD appearance 2WD models, use API CF-4 oil)★		R	R	R	R	R	R	3012
Engine oil (For 4WD use API CF-4 oil)★		Replace every 10,000 km (6,000 miles) or 12 months						3012
Engine oil filter (Use Eco filter or equivalent)★	See NOTE (1)	R	R	R	R	R	R	3013
Drive belts		I	I	I	I	I	I	3011
Cooling system		I	I	I	I	I	I	3016
Engine anti-freeze coolant (Use genuine NISSAN Anti-freeze Coolant (L250) or equivalent)	See NOTE (2)		I			R		3014
Air cleaner filter (Viscous paper type)★			R		R		R	3019
Air cleaner filter (Dry paper type)★		C	R	C	R	C	R	3019
Cyclone pre-air cleaner★		I	I	I	I	I	I	3019
Intake & exhaust valve clearance	See NOTE (3)							*1
Fuel lines			I		I		I	3019
Injection nozzles	See NOTE (4)							*2
Fuel filter★		D	R	D	R	D	R	3018

NOTE: (1) Oil filter element assembly (Part No. 15208 AD200) and O-ring seal (Part No. 15226 AD200) are replacement parts.
(2) First replace at 100,000 km (60,000 miles)/60 months, then every 60,000 km (36,000 miles)/36 months. After first replacement, perform "I" (checking the mixture ratio and correcting the mixture ratio if necessary) at the middle of replacement interval.
(3) If valve noise increases, check valve clearance.
(4) If engine power decreases, black exhaust smoke is emitted or engine noise increases, check injection nozzles and if necessary, replace injection nozzle assembly.
★ Maintenance items with "★" should be performed more frequently according to "Maintenance Under Severe Driving Conditions".

*1: "Valve Clearance Inspection and Adjustment" in EM section
*2: "Injection Tube and Injection Nozzle" in EC section

Maintenance Under Severe Driving Conditions (Annual Driving Distance < 30,000 km/year)

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

A — Driving in dusty conditions
B — Repeatedly driving short distances
C — Towing a trailer or caravan
D — Extensive idling
E — Driving in extremely adverse weather conditions or in areas where ambient temperatures are either extremely low or extremely high
F — Repeated driving at high speeds and/or at high engine load

Driving condition						Maintenance item		Maintenance operation	Maintenance interval	Reference pages
						Engine oil				
A	B	C	D	.	.	Petrol models (KA engine)		Replace	Every 7,500 km (4,500 miles) or 6 months	—
						Diesel models (YD engine)	2WD models or 4WD appearance 2WD models	Replace	Every 10,000 km (6,000 miles) or 6 months	3012
							4WD models	Replace	Every 5,000 km (3,000 miles) or 6 months	3012
.	.	.	.	.	F	Diesel models (YD engine)	All 2WD and 4WD versions	Check oil level, correct if necessary	Every 5,000 km (3,000 miles)	—
						Engine oil filter				
A	B	C	D	.	.	Petrol models (KA engine)		Replace	Every 7,500 km (4,500 miles) or 6 months	—
						Diesel models (YD engine)		Replace	Every 10,000 km (6,000 miles) or 6 months	3013
						Air cleaner filter (Viscous paper type)				
A	.	.	.	.	.	Petrol models (KA engine)		Replace	Every 30,000 km (18,000 miles) or 24 months	3010
						Diesel models (YD engine)		Replace	Every 20,000 km (12,000 miles) or 12 months	3019
						Air cleaner filter (Dry paper type)				
A	.	.	.	.	.	Diesel models (YD engine)		Clean	Every 10,000 km (6,000 miles) or 6 months	3019
								Replace	Every 20,000 km (12,000 miles) or 12 months	3019
						Cyclone pre-air cleaner				
A	.	.	.	.	.	Diesel models (YD engine)		Inspect	More frequently	3019
						Positive crankcase ventilation (PCV) filter				
A	.	.	.	.	.	Petrol models (KA engine)		Replace	Every 15,000 km (9,000 miles) or 12 months	3010
						Fuel filter				
A	.	.	.	E	.	Petrol models (KA engine)		Replace	Every 45,000 km (27,000 miles) or 36 months	—
						Diesel models (YD engine)		Replace	Every 20,000 km (12,000 miles) or 12 months	3018
								Check & drain water	Every 10,000 km (6,000 miles) or 6 months	3018

Maintenance Schedule for Petrol Engines (Annual Mileage > 30,000 km/year)

KA24DE ENGINE

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

MAINTENANCE OPERATION		MAINTENANCE INTERVAL								Reference pages
Perform on a kilometer basis only.	km x 1,000 (miles x 1,000)	15 (9)	30 (18)	45 (27)	60 (36)	75 (45)	90 (54)	105 (63)	120 (72)	
Engine compartment and under vehicle										
Engine oil (Use SG, SH or SJ oil)★		R	R	R	R	R	R	R	R	—
Engine oil filter (Use NISSAN genuine part or equivalent)★		R	R	R	R	R	R	R	R	—
Drive belts		I	I	I	I	I	I	I	I	—
Cooling system			I		I		I		I	—
Engine anti-freeze coolant (Use genuine NISSAN Anti-Freeze Coolant (L250) or equivalent)	See NOTE (1)			I			R		I	—
Air cleaner filter (Viscous paper type)★					R				R	3010
Positive crankcase ventilation (PCV) filter★					R				R	3010
Intake & exhaust valve clearance	See NOTE (2)									—
Fuel and EVAP vapor lines					I				I	—
Spark plugs			R		R		R		R	—
Ignition wires							I			—
Fuel filter★							R			—

NOTE: (1) First replace at 90,000 km (54,000 miles), then every 60,000 km (36,000 miles). Perform "I" (checking the mixture ratio and correcting the mixture ratio if necessary) at the middle of replacement interval.
(2) Periodic maintenance is not required. However, if valve noise increases, check valve clearance.
★ Maintenance items with "★" should be performed more frequently according to "Maintenance Under Severe Driving Conditions".

Maintenance Schedule for Diesel Engines (Annual Mileage > 30,000 km/year)

YD25DDTi ENGINE

Abbreviations: R = Replace I = Inspect: Correct or replace if necessary, C = Clean D = Check filter and drain water

MAINTENANCE OPERATION		MAINTENANCE INTERVAL						Reference pages
Perform on a kilometer basis only.	km x 1,000 (miles x 1,000)	20 (12)	40 (24)	60 (36)	80 (48)	100 (60)	120 (72)	
Engine compartment and under vehicle								
Engine oil (For 2WD models or 4WD appearance 2WD models, use API CF-4 oil)★		R	R	R	R	R	R	3012
Engine oil (For 4WD models, use API CF-4 oil)★		Replace every 10,000 km (6,000 miles)						3012
Engine oil filter (Use Eco filter or equivalent)★	See NOTE (1)	R	R	R	R	R	R	3013
Drive belts		I	I	I	I	I	I	3011
Cooling system		I	I	I	I	I	I	3016
Engine anti-freeze coolant (Use genuine NISSAN Anti-Freeze Coolant (L250) or equivalent)	See NOTE (2)		I			R		3014
Air cleaner filter (Viscous paper type)★				R			R	3019
Air cleaner filter (Dry paper type)★		C	R	C	R	C	R	3019
Cyclone pre-air cleaner★		I	I	I	I	I	I	3019
Intake & exhaust valve clearance	See NOTE (3)							*1
Fuel lines				I			I	3019
Injection nozzles	See NOTE (4)							*2
Fuel filter★		D	D	R	D	D	R	3018

NOTE: (1) Oil filter element assembly (Part No. 15208 AD200) and O-ring seal (Part No. 15226 AD200) are replacement parts.
(2) First replace at 100,000 km (60,000 miles), then every 60,000 km (36,000 miles). After first replacement, perform "I" (checking the mixture ratio and correcting the mixture ratio if necessary) at the middle of replacement interval.
(3) If valve noise increases, check valve clearance.
(4) If engine power decreases, black exhaust smoke is emitted or engine noise increases, check injection nozzles and if necessary, replace injection nozzle assembly.
★ Maintenance items with "★" should be performed more frequently according to "Maintenance Under Severe Driving Conditions".

*1: "Valve Clearance Inspection and Adjustment" in EM section
*2: "Injection Tube and Injection Nozzle" in EC section

Maintenance Under Severe Driving Conditions (Annual Driving Distance > 30,000 km/year)

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

A — Driving in dusty conditions
B — Repeatedly driving short distances
C — Towing a trailer or caravan
D — Extensive idling
E — Driving in extremely adverse weather conditions or in areas where ambient temperatures are either extremely low or extremely high
F — Repeated driving at high speeds and/or at high engine load

Driving condition						Maintenance item		Maintenance operation	Maintenance interval	Reference pages
A	B	C	D	.	.	Engine oil				
						Petrol models (KA engine)		Replace	Every 7,500 km (4,500 miles)	—
						Diesel models (YD engine)	2WD models or 4WD appearance 2WD models	Replace	Every 10,000 km (6,000 miles)	3012
							4WD models	Replace	Every 5,000 km (3,000 miles)	3012
.	.	.	.	.	F	Diesel models (YD engine)	All 2WD and 4WD versions	Check oil level, correct if necessary	Every 5,000 km (3,000 miles)	—
A	B	C	D	.	.	**Engine oil filter**				
						Petrol models (KA engine)		Replace	Every 7,500 km (4,500 miles)	—
						Diesel models (YD engine)		Replace	Every 10,000 km (6,000 miles)	3013
A	.	.	.	.	.	**Air cleaner filter (Viscous paper type)**				
						Petrol models (KA engine)		Replace	Every 30,000 km (18,000 miles)	3010
						Diesel models (YD engine)		Replace	Every 30,000 km (18,000 miles)	3019
A	.	.	.	.	.	**Air cleaner filter (Dry paper type)**				
						Diesel models (YD engine)		Clean	Every 10,000 km (6,000 miles)	3019
								Replace	Every 20,000 km (12,000 miles)	3019
A	.	.	.	.	.	**Cyclone pre-air cleaner**				
						Diesel models (YD engine)		Inspect	More frequently	3019
A	.	.	.	.	.	**Positive crankcase ventilation (PCV) filter**				
						Petrol models (KA engine)		Replace	Every 30,000 km (18,000 miles)	3010
A	.	.	.	E	.	**Fuel filter**				
						Petrol models (KA engine)		Replace	Every 45,000 km (27,000 miles)	—
						Diesel models		Replace	Every 30,000 km (18,000 miles)	3018
								Check & drain water	Every 10,000 km (6,000 miles)	3018

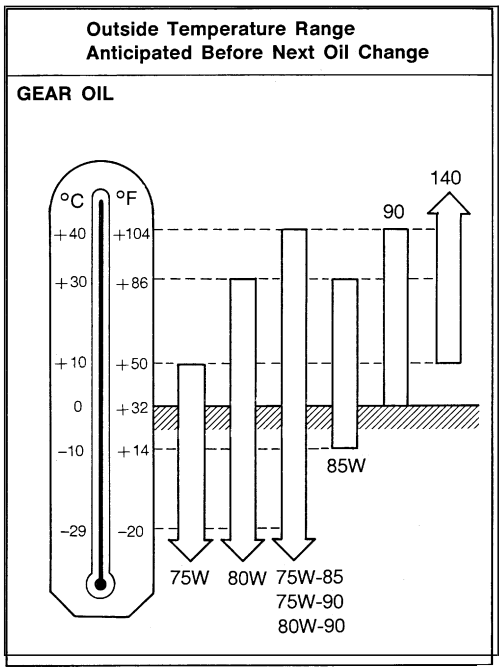
Fluids and Lubricants

		Capacity (Approximate)		Recommended Fluids/Lubricants
		Liter	Imp measure	
Engine oil (Refill)				
With oil filter				
	KA24DE	2WD 3.6 4WD 4.1	3-1/8 qt 3-5/8 qt	Gasoline engine: API SG, SH or SJ*1 ILSAC grade GF-I or GF-II*1 Diesel engine: API CD, CE, CF, CF-4 for TD engine*1, *5 ACEA B3-96, 98 or ACEA B3/E3 96, 98 for TD engine*4 API CF-4 for YD engine*1, *5 ACEA 98-B1 for YD engine
	YD25DDTi	2WD 5.6 *7 4WD 4.3	4-7/8 qt *7 3-3/4 qt	
Without oil filter				
	KA24DE	2WD 3.3 4WD 3.8	2-7/8 qt 3-3/8 qt	
	YD25DDTi	2WD 5.3 *7 4WD 4.0	4-5/8 qt *7 3-1/2 qt	
Cooling system (With reservoir)				
	KA24DE	6.9	6-1/8 qt	Genuine Nissan Anti-freeze Coolant (L250) or equivalent*6
	YD25DDTi	8.6	7-5/8 qt	
Manual transmission gear oil	FS5R30A	2WD 2.8 4WD 5.1	4-7/8 pt 9 pt	API GL-4, Viscosity SAE 75W-85 only
	FS5W71C	2WD 2.0 4WD 4.9	3-1/2 pt 8-5/8 pt	
Transfer fluid	TX10A	2.2	2 qt	Genuine Nissan ATF or equivalent*2 or API GL-4*1
Differential gear oil				
Front	R180A	1.3	2-1/4 pt	Standard differential gear: API GL-5*1 Limited-slip differential (LSD) gear: Gear Oil Hypoid LSD or equivalent*3
Rear	C200	1.3	2-1/4 pt	
Power steering fluid		—	—	Type DEXRON™III or equivalent
Brake and clutch fluid		—	—	DOT 3 or DOT 4 (U.S. FMVSS No. 116)
Propeller shaft grease		—	—	NLGI No. 2 (Lithium soap base)
Multi-purpose grease		—	—	NLGI No. 2 (Lithium soap base)

*1: For further details, see “SAE Viscosity Number”.
*2: Contact a NISSAN dealership for more information regarding suitable fluid, including recommended brand(s) of DEXRON™III/MERCON™ Automatic Transmission Fluid.
*3: API GL-5, SAE 140 and 10% volume of LSD Friction Modifier (Part No.: 38469-C6000) is an equivalent.
*4: If ACEA B3-96, 98 oils are not available, API CD, CE, CF, CF-4 oil may be used. However, ACEA oils are strongly recommended if at all possible.
*5: Never use CG-4 grade oil.
*6: Use Nissan Genuine Anti-freeze Coolant (L250), or equivalent in its quality, in order to avoid possible aluminum corrosion within the engine cooling system caused by the use of non-genuine engine coolant.
Note that any repairs for the incidents within the engine cooling system while using non-genuine engine coolant may not be covered by the warranty even if such incidents occurred during the warranty period.

*7: Including 4WD appearance 2WD models.

SAE Viscosity Number



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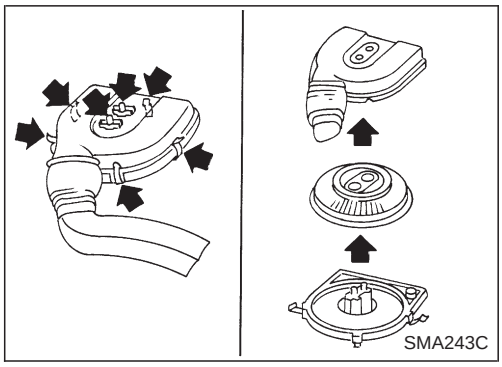
- **For warm and cold areas: 75W-90 for transfer and 80W-90 for differential are preferable.**
- **For hot areas: 90 is suitable for ambient temperatures below 40°C (104°F).**
- **For extremely hot areas:**
  140 for differential is preferable.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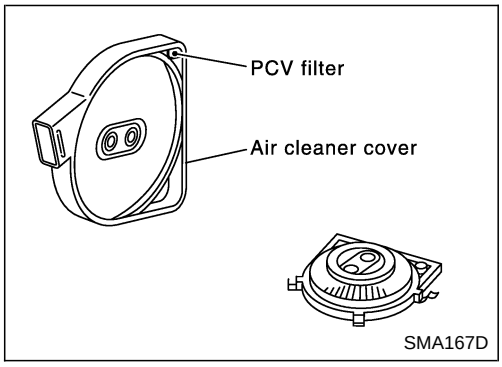
Changing Air Cleaner Filter

VISCOUS PAPER TYPE

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



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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.

Checking Tightening Torque

Checking should be performed while engine is cold.

MANIFOLD BOLTS AND NUTS

Intake

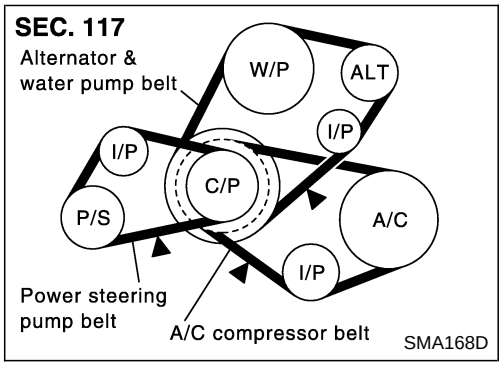
: 19.7 - 23.5 N·m (2.0 - 2.3 kg-m, 15 - 17 ft-lb)

Exhaust

: 28.5 - 33.3 N·m (2.9 - 3.3 kg-m, 21 - 24 ft-lb)

EXHAUST TUBE NUTS

: 41 - 48.0 N·m (4.1 - 4.9 kg-m, 30 - 35 ft-lb)



Checking Drive Belts

INSPECTION

- Before inspecting the engine, make sure the engine has cooled down; wait approximately 30 minutes after the engine has been stopped.
- Visually inspect all belts for wear, damage, or cracks on contacting surfaces and edge areas.
- When measuring deflection, apply 98 N (10 kg, 22 lb) at the ▼ marked point.
- **When checking belt deflection immediately after installation, first adjust it to the specified value. Then, after turning the crankshaft two turns or more, re-adjust to the specified value to avoid variation in deflection between pulleys.**
- **Tighten idler pulley lock nut and measure deflection without looseness.**

Drive Belt Deflection:

Applied belt	Belt deflection with 98 N (10 kg, 22 lb) force applied* mm (in)		
	New	Adjusted	Limit for re-tightening
Air conditioner compressor belt	7 - 8 (0.28 - 0.31)	9.5 - 10.5 (0.374 - 0.413)	12.0 (0.472)
Alternator & water pump belt	6.5 - 7.5 (0.256 - 0.295)	8 - 9.5 (0.315 - 0.413)	12.5 (0.492)
Power steering pump belt	6.5 - 7.5 (0.256 - 0.295)	8 - 10 (0.31 - 0.39)	11.5 (0.453)

*: When engine is cold.

ADJUSTMENT

- Adjust belts with the parts shown below.

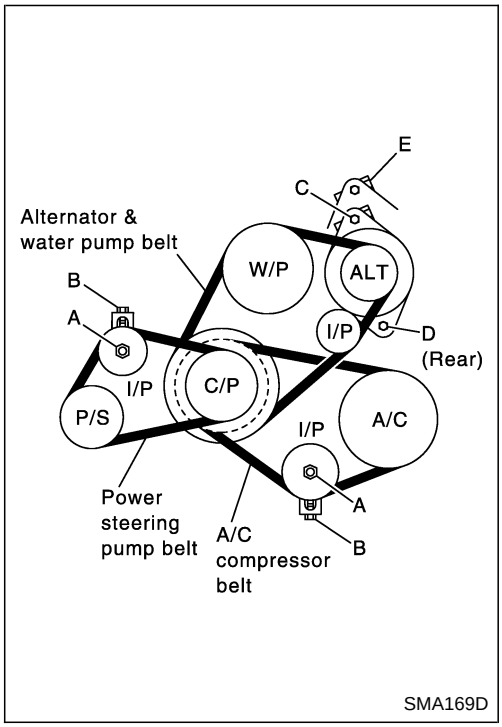
Applied belt	Belt tightening method for adjustment
Air conditioner compressor belt	Adjusting bolt on idler pulley
Alternator water pump belt	Adjusting bolt on alternator
Power steering pump belt	Adjusting bolt on idler pulley

CAUTION:

- **When a new belt is installed as a replacement, adjust it to the value specified under "New" accommodations because of insufficient adaptability with pulley grooves.**
- **If the belt deflection of the current belt is out of the "Limit for re-tightening", adjust to the "Adjusted value".**

Checking Drive Belts (Cont'd)

- **When checking belt deflection immediately after installation, first adjust it to the specified value. Then, after turning crankshaft two turns or more, re-adjust it to the specified value to avoid variation in deflection between pulleys.**
- **Make sure the belts are fully fitted into the pulley grooves during installation.**
- **Handle with care to avoid smearing the belts with oil or cooling water etc.**
- **Do not twist or bend the belts with strong force.**



Air conditioner compressor belt and power steering pump belt

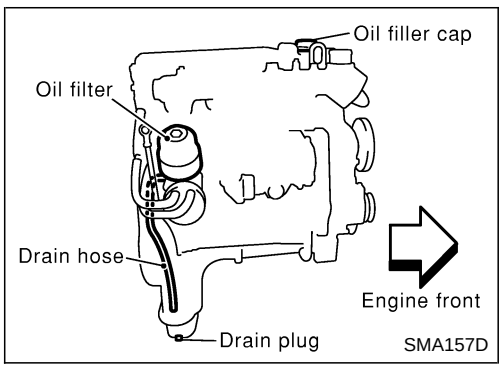
1. Loosen idler pulley lock nut (A).
2. Turn adjusting bolt (B) to adjust.
   - Refer to MA-3011, "Inspection" for adjustment values.
3. Tighten lock nut (A).

Nut A:
: 30.4 - 39.2 N·m (3.1 - 3.9 kg-m, 23 - 28 ft-lb)

Alternator & water pump belt

1. Loosen adjuster lock nut (C).
2. Loosen alternator fixing nut (D) (Rear).
3. Turn adjusting bolt (E) to adjust.
   - Refer to MA-3011, "Inspection" for adjustment values.
4. Tighten nut (C) and nut (D) in this order.

Nut C:
: 19.6 - 23.4 N·m (2.0 - 2.3 kg-m, 15 - 17 ft-lb)
Bolt D:
: 45.1 - 59.7 N·m (4.6 - 6.0 kg-m, 34 - 44 ft-lb)



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

Oil Specification and Viscosity:

- **API CD, CE, CF or CF-4 (Except for Europe)**
- **API CF-4 or ACEA 98-B1 (For Europe)**

Refer to MA-3008, "RECOMMENDED FLUIDS AND LUBRI CANTS".

Changing Engine Oil (Cont'd)

Refill oil capacity (Approximately):

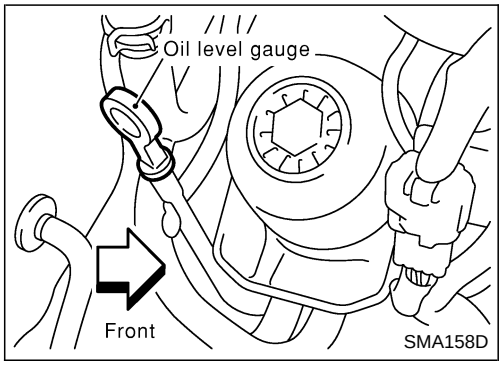
Unit: ℓ (Imp qt)

Item		2WD *	4WD
Drain and refill	Without oil filter change	5.3 (4-5/8)	4.0 (4-1/4)
	With oil filter change	5.6 (4-7/8)	4.3 (4-1/2)
Dry engine (engine overhaul)		6.3 (5-1/2)	5.0 (4-3/4)

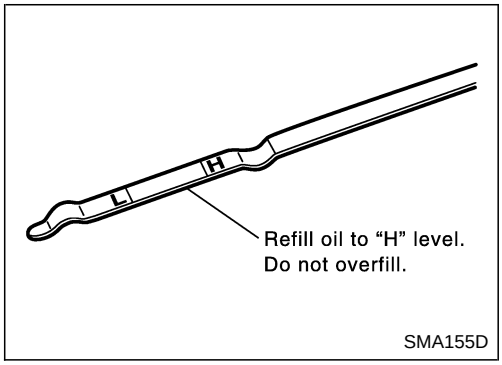
* : Including 4WD appearance 2WD models.

CAUTION:

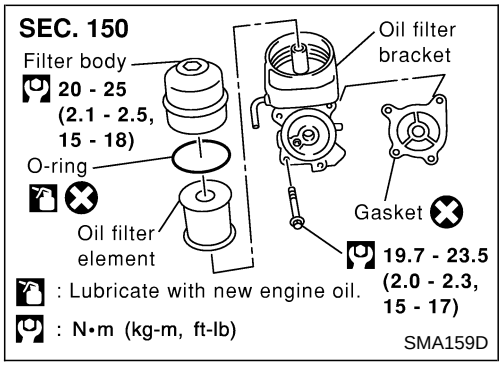
- **Be sure to clean drain plug and install with new washer.**
  Drain plug:
  : 29 - 39 N·m (3.0 - 4.0 kg-m, 22 - 29 ft-lb)
- **The refill capacity depends on the oil temperature and drain time. Use these specifications for reference only. Always use the dipstick to determine when the proper amount of oil is in the engine.**



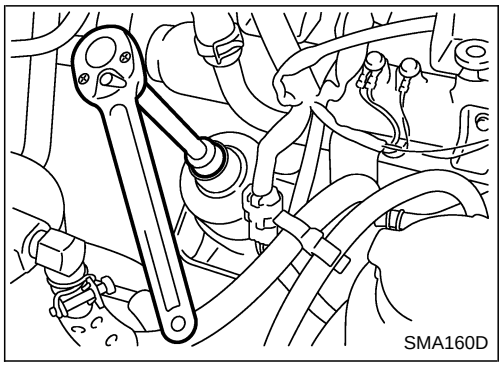
6. Check oil level as follows.
a. Start engine and check area around drain plug and oil filter for oil leakage.
b. Run engine for a few minutes, then turn it off. After more than 10 minutes, check oil level.

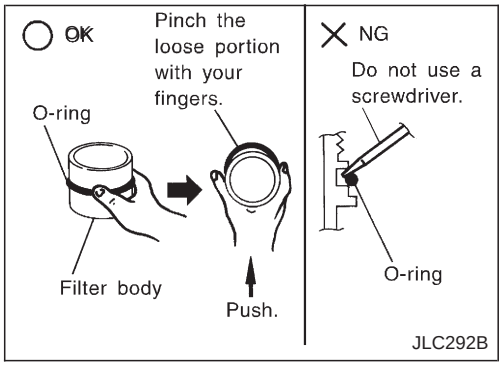


Changing Oil Filter



Changing Oil Filter (Cont'd)


SMA160D



JLC292B

REMOVAL

1. Place a pan to catch the oil under the lower part of drain hose outlet before removing filter body.
2. Using a hexagonal socket wrench [plane-to-plane width: 24 mm (0.94 in)], loosen the filter body approximately four turns.
3. Remove the filter body, then remove the oil filter element.
4. Remove the O-ring from the filter body.

- Push the O-ring in one direction, lift the slack part using fingers, and remove the O-ring from the filter body.

CAUTION:

Do not use wires or flat-bladed screwdrivers etc. as they may cause damage to the filter body.

INSTALLATION

1. Completely remove all foreign objects adhering to the inside of the filter body or O-ring mounting area (filter body side and bracket side).
2. Install the oil filter element and O-ring to the filter body.

- Push the oil filter element into the filter body completely.

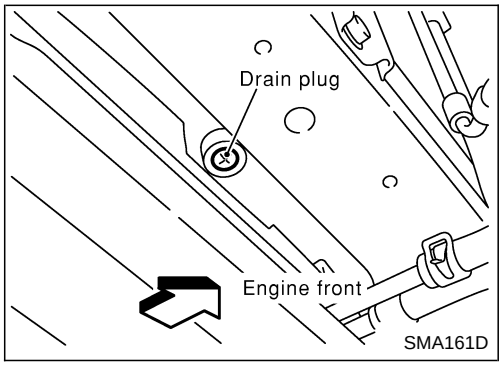
3. Install the filter body to the oil filter bracket.

: 20 - 25 N·m (2.0 - 2.6 kg-m, 15 - 18 ft-lb)

4. After warming up the engine, check for engine oil leakage and oil level.

CAUTION:

Completely wipe clean any engine oil remaining on the filter body or vehicle.



SMA161D

Changing Engine Coolant

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

— DRAINING ENGINE COOLANT —

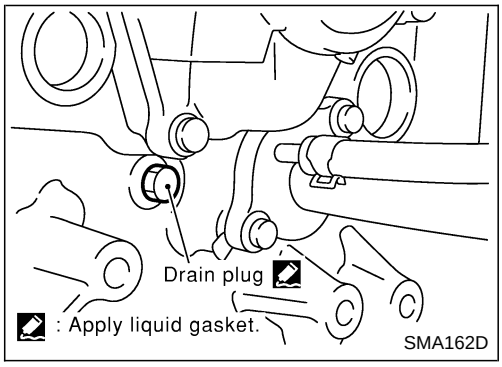
1. Set air conditioning system as follows to prevent coolant from remaining in the system.

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 to drain coolant.

Changing Engine Coolant (Cont'd)

3. Remove reservoir tank, drain coolant, then clean reservoir tank.
- **Be careful not to allow coolant to contact drive belts.**
4. Remove drain plug of cylinder block.
5. Check drained coolant for contaminants such as rust, corrosion or discoloration. If contaminated flush engine cooling system, refer to MA-3016, "FLUSHING COOLING SYSTEM".



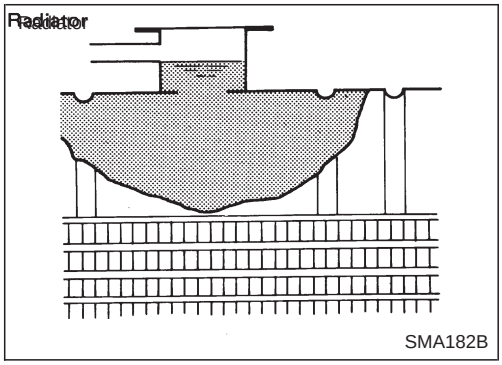
— REFILLING ENGINE COOLANT —

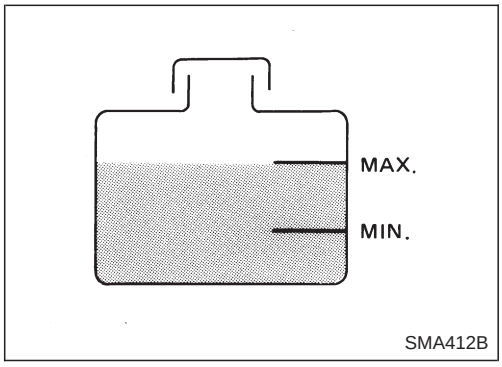
1. Install reservoir tank, radiator drain plug and cylinder block drain plug.
- Apply sealant to the thread of cylinder block drain plugs.
  : 8 - 11 N·m (0.8 - 1.2 kg-m, 70 - 104 in-lb)
2. Fill radiator with coolant to the filler neck of the radiator cap at a rate of 2ℓ (1-3/4 Imp qt)/min or lower.
- **Use genuine Nissan Anti-freeze Coolant or equivalent mixed with water (distilled or demineralized).**

Refer to MA-3008, "RECOMMENDED FLUIDS AND LUBRICANTS".

CAUTION:

If the filling rate is too fast, this could lead to air being mixed in the coolant. Be sure to fill the coolant slowly according to the rate indicated above.





Engine coolant capacity (With reservoir tank):
8.6 ℓ (7-5/8 Imp qt)
Reservoir tank capacity:
0.7 ℓ (5/8 Imp qt)

3. Fill reservoir tank to the MAX level.
4. Warm up engine to normal operating temperature without radiator cap installed.
- **If coolant overflows radiator filler hole, install radiator cap.**
5. Run engine at 3,000 rpm for 10 seconds and return to idle speed with radiator cap installed.
- Repeat two or three times.

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

6. Stop engine and cool it down.
- Cool down using a fan to reduce the time.
- If necessary, refill radiator up to filler neck with coolant.
7. Refill reservoir tank to MAX level line with coolant.
8. Repeat steps 4 through 7 two or more times with radiator cap installed until coolant level no longer drops.
9. Check cooling system for leaks with engine running.

Changing Engine Coolant (Cont'd)

10. Warm up engine, and check for sound of coolant flow while running engine from idle up to 3,000 rpm with heater temperature controller set at several positions between COOL and HOT.
- Sound may be noticeable at heater water cock.

11. If sound is heard, bleed air from cooling system by repeating steps 4 through 7 until coolant level no longer drops
- **Clean excess coolant from engine.**

— FLUSHING COOLING SYSTEM —

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

Checking Cooling System

WARNING:
Never remove the radiator cap when the engine is hot; serious burns could be caused by high pressure fluid escaping from the radiator.
Wrap a thick cloth around the cap and carefully remove it by turning it a quarter turn to allow built-up pressure to escape and then turn the cap all the way off.

CHECKING COOLING SYSTEM HOSES AND CLAMPS

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

CHECKING RADIATOR

Check radiator for mud or clogging. If necessary, clean radiator as follows.

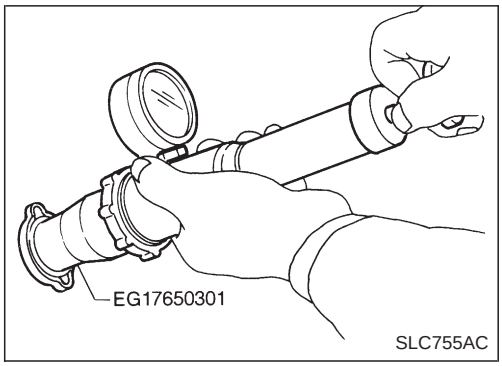
- Be careful not to bend or damage the radiator fins.
- When radiator is cleaned without removal, remove all surrounding parts such as cooling fan, radiator shroud and horns. Then tape the harness and connectors to prevent water from entering.

1. Apply water by hose to the back side of the radiator core vertically downward.
2. Apply water again to all radiator core surfaces once per minute.
3. Stop washing if any stains no longer flow out from the radiator.
4. Blow air into the back side of radiator core vertically downward.
- Use compressed air lower than 490 kPa (4.9 bar, 5 kg/cm^2, 71 psi) and keep distance more than 30 cm (11.8 in).

5. Blow air again into all the radiator core surfaces once per minute until no water sprays out.

Checking Cooling System (Cont'd)

CHECKING RADIATOR CAP



To check radiator cap, apply pressure to cap with a tester.

Radiator cap relief pressure:

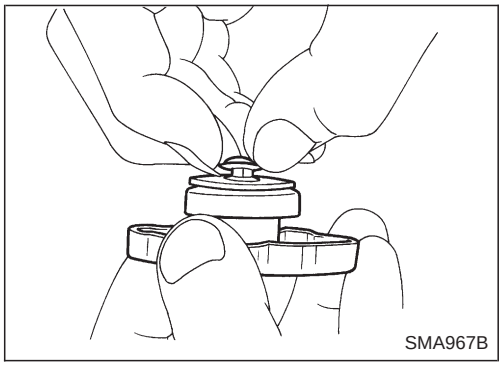
Standard

78 - 98 kPa

(0.78 - 0.98 bar, 0.8 - 1.0 kg/cm^2, 11 - 14 psi)

Limit

59 kPa (0.59 bar, 0.6 kg/cm^2, 9 psi)

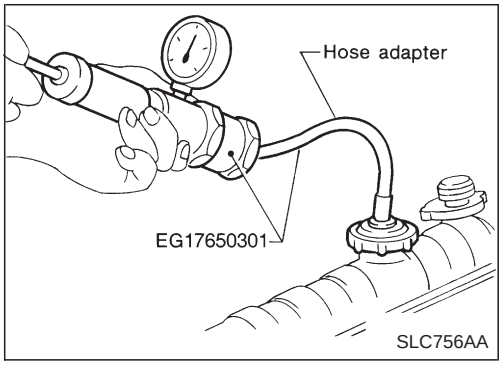


Pull the negative pressure valve to open it.
Check that it closes completely when released.

- Check the radiator cap negative pressure valve for contamination or damage to the valve seat.
- Move the negative pressure valve to check for unusualness to the opening/shutting operation.

CAUTION:

- **Be sure to perform the inspections after cooling down the engine.**
- **Before connecting the radiator cap to the tester, apply water or LLC to the cap sealing.**
- Replace the radiator cap if unusualness is found with the negative pressure valve, or if the valve opening pressure is out of the standard range.



CHECKING COOLING SYSTEM FOR LEAKS

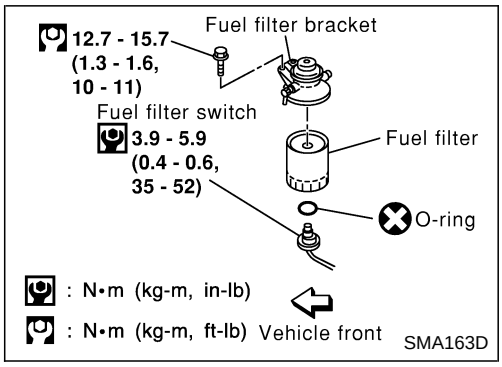
To check for leakage, apply pressure to the cooling system with a tester.

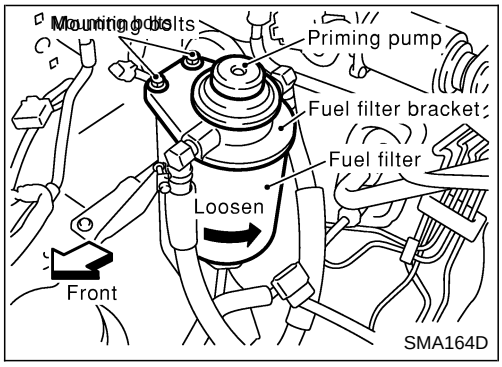
Testing pressure:

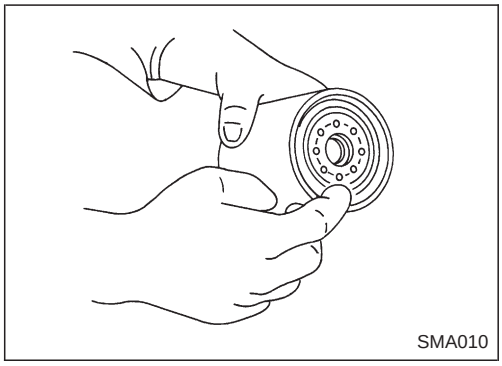
157 kPa (1.57 bar, 1.6 kg/cm^2, 23 psi)

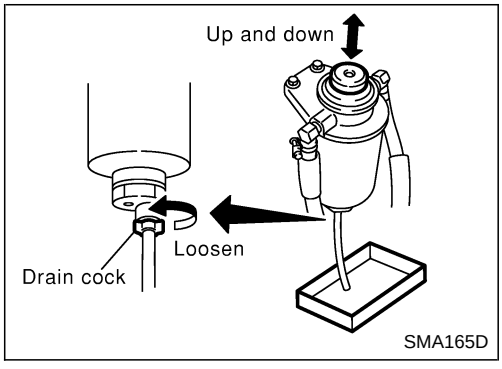
CAUTION:

- **Higher than the specified pressure may cause radiator damage.**
- **Be sure to perform the inspections after cooling down the engine.**
- **Use a hose adapter between the cap tester and filler neck to prevent the radiator filler neck from deforming.**
- **If any abnormalities are found, repair or replace the malfunctioning parts.**









Checking and Replacing Fuel Filter and Draining Water

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

CHECKING FUEL FILTER

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

REPLACING FUEL FILTER

1. Disconnect harness connector and drain fuel.
2. Remove two installation bolts. Remove fuel filter and fuel filter bracket assembly from vehicle-side bracket. (It is not necessary to disconnect fuel hose.)
3. Remove fuel filter using band-type filter wrench.
4. Remove fuel filter and fuel filter sensor.

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

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

Refer to “Air Bleeding” in EC section.

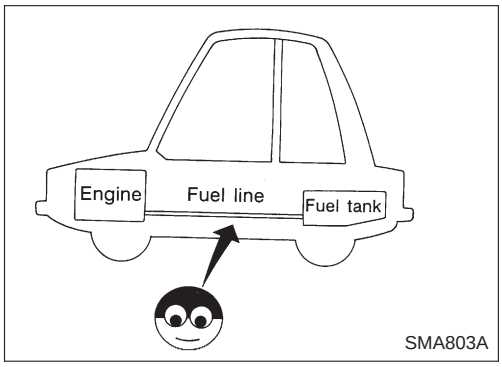
9. Start engine and check for leaks.

DRAINING WATER

1. Drain water as follows.
   Loosen drain cock and drain water by operating priming pump.
   Loosening drain cock four to five turns causes water to start draining. Do not remove drain cock by loosening it excessively.

2. Bleed air.

Refer to “Air Bleeding” in EC section.

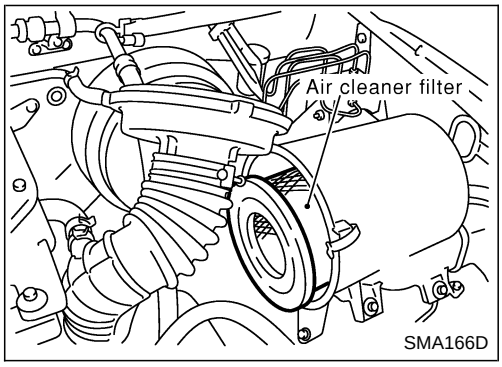


Checking Fuel Lines

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

CAUTION:

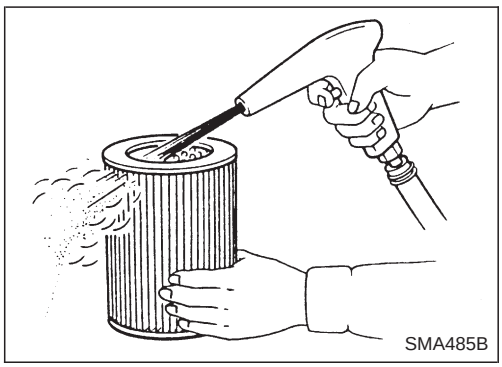
Keep clean parts with compressed air when assembling.



Cleaning and Replacing Air Cleaner Filter

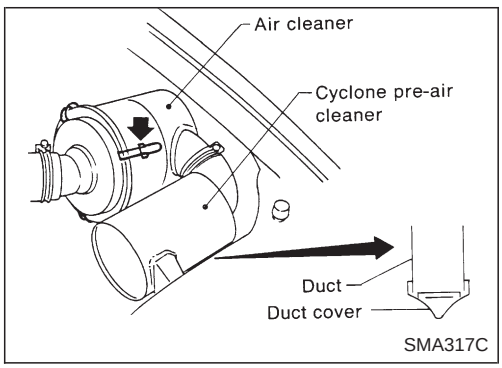
VISCOUS PAPER TYPE

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



DRY PAPER TYPE

Clean or replace element more often under dusty driving conditions.



Checking Cyclone Pre-air Cleaner

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

Engine Maintenance

INSPECTION AND ADJUSTMENT

Drive belt deflection

Applied belt	Belt deflection with 98 N (10 kg, 22 lb) force applied* mm (in)		
	New	Adjusted	Limit for re-tightening
Air conditioner compressor belt	7 - 8 (0.28 - 0.31)	9.5 - 10.5 (0.374 - 0.413)	12.0 (0.472)
Alternator & water pump belt	6.5 - 7.5 (0.256 - 0.295)	8 - 9.5 (0.315 - 0.413)	12.5 (0.492)
Power steering pump belt	6.5 - 7.5 (0.256 - 0.295)	8 - 10 (0.31 - 0.39)	11.5 (0.453)

*: When engine is cold.

Cooling system check

Unit: kPa (bar, kg/cm^2, psi)

Cooling system testing pressure		157 (1.57, 1.6, 23)
Radiator cap relief pressure	Standard	78 - 98 (0.78 - 0.98, 0.8 - 1.0, 11 - 14)
	Limit	59 (0.59, 0.6, 9)