

# SECTION MA

## MODIFICATION NOTICE:

- KA24DE engine has been added for Europe. Refer to the Service Manual of D22 Supplement-II (SM9E-D22BG0) for the maintenance procedure not included here.
- YD25DDTi engine has been added.
- ZD30DDT engine has been added except for Europe.

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## PERIODIC MAINTENANCE (Except for Europe)

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

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

### Engine and Emission Control Maintenance (Diesel engine, YD25DDTi and ZD30DDT)

Abbreviations: I = Inspect and correct or replace as necessary, R= Replace, A = Adjust, C = Clean, D = Drain water and inspect, E = Check and correct the engine coolant mixture ratio.

MAINTENANCE OPERATION	MAINTENANCE INTERVAL																	Reference page			
	Months	—	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45		48		
	km x 1,000	1	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		80		
Perform at the specified months or mileage whichever comes first.	(Miles x 1,000)	(0.6)	(3)	(6)	(9)	(12)	(15)	(18)	(21)	(24)	(27)	(30)	(33)	(36)	(39)	(42)	(45)	(48)			
<b>Engine compartment and under vehicle</b>																		YD	ZD		
Torque of manifolds & exhaust tube nuts		I																	13	22	
Drive belts		I				I				I									13	22	
Intake & exhaust valve clearance	NOTE (2)																		*2	22	
Engine oil level			I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	14	23		
Engine oil (For YD engine 2WD models, use recommended oil)★	NOTE (3)					R				R				R				R	14	—	
Engine oil (For 4WD or 4WD appearance 2WD models, use recommended oil)★	NOTE (3)					Replace every 10,000 km (6,000 miles) or 12 months												14	23		
Engine oil filter (Use Eco filter or equivalent)★*1						R				R				R				R	15	24	
Engine coolant (Use Nissan genuine engine coolant or equivalent in its quality)	NOTE (4)																		R	16	25
Cooling system						I				I				I				I	18	27	
Air cleaner filter (Dry paper type)★				C		C		C		R		C		C		C		R	21	29	
Air cleaner filter (Viscous paper type)★										R								R	21	29	
Cyclone pre-air cleaner★				I		I		I		I		I		I		I		I	21	30	
Fuel filter★				D		D		D		R		D		D		D		R	20	28	
Fuel lines										I								I	21	29	
Injection nozzles	NOTE (5)																		*3		

**NOTE: (1) Maintenance items with “★” should be performed more frequently according to “Maintenance Under Severe Driving Conditions”.**

**(2) If valve noise increases, check valve clearance.**

**(3) Never use CG-4 oil.**

**(4) Use Nissan Genuine Engine Coolant, 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. After first replacement, replace every 40,000 km (24,000 miles) or 24 months.**

**(5) If engine power decreases, black exhaust smoke is emitted or engine noise increases, check injection nozzle and, if necessary, replace injection nozzle assembly.**

\*1: For YD25DDTi engine, oil filter element assembly (Part No. 15208 AD200) and O-ring seal (Part No. 15226 AD200) are replacement parts. For ZD30DDT engine, oil filter element assembly (Part No. 15209 2W200) and O-ring seal (Part No. 15226 2W200) are replacement parts.

\*2: “Valve Clearance Inspection and Adjustment” in EM section

\*3: “Injection Tube and Injection Nozzle” in EC section

# PERIODIC MAINTENANCE (Except for Europe)

## Maintenance Under Severe Driving Conditions

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

### Severe driving conditions

A — Driving 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

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

Driving condition					Maintenance item	Maintenance operation	Maintenance interval	Reference page	
								YD	ZD
A	B	C	D	.	Engine oil (For YD engine 2WD models)	Replace	Every 10,000 km (6,000 miles) or 6 months	14	—
					Engine oil (For 4WD or 4WD appearance 2WD models)	Replace	Every 5,000 km (3,000 miles) or 6 months	14	23
A	B	C	D	.	Engine oil filter Diesel engine	Replace	Every 10,000 km (6,000 miles) or 6 months	15	24
A	.	.	.	.	Air cleaner filter				
					Dry paper type	Clean or Replace	More frequently	21	29
					Viscous paper type	Replace		21	29
					Cyclone pre-air cleaner	Check		21	30
A	.	.	.	E	Fuel filter	Replace	Every 20,000 km (12,000 miles) or 12 months	20	28

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## PERIODIC MAINTENANCE (For Europe)

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
	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	
<b>Engine compartment and under vehicle</b>										
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 (L2N) or equivalent)	See NOTE (1)			I			R		I	—
Air cleaner filter (Viscous paper type)★					R				R	12
Positive crankcase ventilation (PCV) filter★			R		R		R		R	12
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".**

# PERIODIC MAINTENANCE (For Europe)

## 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

MAINTENANCE OPERATION		MAINTENANCE INTERVAL						Reference pages
		20	40	60	80	100	120	
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	20	40	60	80	100	120	
	(miles x 1,000)	(12)	(24)	(36)	(48)	(60)	(72)	
	Months	12	24	36	48	60	72	
<b>Engine compartment and under vehicle</b>								
Engine oil (For 2WD models, use API CF-4 oil)★	See NOTE (1)	R	R	R	R	R	R	14
Engine oil (For 4WD or 4WD appearance 2WD models, use API CF-4 oil)★	See NOTE (1)	Replace every 10,000 km (6,000 miles) or 12 months						14
Engine oil filter (Use Eco filter or equivalent)★	See NOTE (2)	R	R	R	R	R	R	15
Drive belts		I	I	I	I	I	I	13
Cooling system		I	I	I	I	I	I	18
Engine anti-freeze coolant (Use genuine NISSAN Anti-freeze Coolant (L2N) or equivalent)	See NOTE (3)		I			R		16
Air cleaner filter (Viscous paper type)★			R		R		R	21
Air cleaner filter (Dry paper type)★		C	R	C	R	C	R	21
Cyclone pre-air cleaner★		I	I	I	I	I	I	21
Intake & exhaust valve clearance	See NOTE (4)							*1
Fuel lines			I		I		I	21
Injection nozzles	See NOTE (5)							*2
Fuel filter★			R		R		R	20

- NOTE:** (1) Inspect engine oil level every 5,000 km (3,000 miles) or 3 months.  
 (2) Oil filter element assembly (Part No. 15208 AD200) and O-ring seal (Part No. 15226 AD200) are replacement parts.  
 (3) 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.  
 (4) If valve noise increases, check valve clearance.  
 (5) 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

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## PERIODIC MAINTENANCE (For Europe)

### 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

Driving condition					Maintenance item	Maintenance operation	Maintenance interval	Reference pages	
A	B	C	D	.	<b>Engine oil</b>				
					Petrol models (KA engine)		Replace	Every 7,500 km (4,500 miles) or 6 months	—
					Diesel models (YD engine)	2WD models	Replace	Every 10,000 km (6,000 miles) or 6 months	14
						4WD or 4WD appearance 2WD models	Replace	Every 5,000 km (3,000 miles) or 6 months	14
A	B	C	D	.	<b>Engine oil filter</b>				
					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	15
A	.	.	.	.	<b>Air cleaner filter (Viscous paper type)</b>				
					Petrol models (KA engine)		Replace	Every 30,000 km (18,000 miles) or 24 months	12
					Diesel models (YD engine)		Replace	Every 20,000 km (12,000 miles) or 12 months	21
A	.	.	.	.	<b>Air cleaner filter (Dry paper type)</b>				
					Diesel models (YD engine)	Clean	Every 10,000 km (6,000 miles) or 6 months	21	
						Replace	Every 20,000 km (12,000 miles) or 12 months	21	
A	.	.	.	.	<b>Cyclone pre-air cleaner</b>				
					Diesel models (YD engine)		Inspect	More frequently	21
A	.	.	.	.	<b>Positive crankcase ventilation (PCV) filter</b>				
					Petrol models (KA engine)		Replace	Every 15,000 km (9,000 miles) or 12 months	12
A	.	.	.	E	<b>Fuel filter</b>				
					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	20

# PERIODIC MAINTENANCE (For Europe)

## 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								Refer- ence pages
		15 (9)	30 (18)	45 (27)	60 (36)	75 (45)	90 (54)	105 (63)	120 (72)	
Perform on a kilometer basis only.	km x 1,000 (miles x 1,000)									
<b>Engine compartment and under vehicle</b>										
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 (L2N) or equivalent)	See NOTE (1)			I			R		I	—
Air cleaner filter (Viscous paper type)★					R				R	12
Positive crankcase ventilation (PCV) filter★					R				R	12
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”.

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## PERIODIC MAINTENANCE (For Europe)

### 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

MAINTENANCE OPERATION		MAINTENANCE INTERVAL						Refer- ence 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)	
<b>Engine compartment and under vehicle</b>								
Engine oil (For 2WD models, use API CF-4 oil)★	See NOTE (1)	R	R	R	R	R	R	14
Engine oil (For 4WD or 4WD appearance 2WD models, use API CF-4 oil)★	See NOTE (1)	Replace every 10,000 km (6,000 miles)						14
Engine oil filter (Use Eco filter or equivalent)★	See NOTE (2)	R	R	R	R	R	R	15
Drive belts		I	I	I	I	I	I	13
Cooling system		I	I	I	I	I	I	18
Engine anti-freeze coolant (Use genuine NISSAN Anti-Freezing Coolant (L2N) or equivalent)	See NOTE (3)		I			R		16
Air cleaner filter (Viscous paper type)★				R			R	21
Air cleaner filter (Dry paper type)★		C	R	C	R	C	R	21
Cyclone pre-air cleaner★		I	I	I	I	I	I	21
Intake & exhaust valve clearance	See NOTE (4)							*1
Fuel lines				I			I	21
Injection nozzles	See NOTE (5)							*2
Fuel filter★				R			R	20

**NOTE: (1)** Inspect engine oil level every 5,000 km (3,000 miles).

**(2)** Oil filter element assembly (Part No. 15208 AD200) and O-ring seal (Part No. 15226 AD200) are replacement parts.

**(3)** 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.

**(4)** If valve noise increases, check valve clearance.

**(5)** 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



## PERIODIC MAINTENANCE (For Europe)

### 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

Driving condition					Maintenance item	Maintenance operation	Maintenance interval	Reference pages	
A	B	C	D	.	<b>Engine oil</b>				
					Petrol models (KA engine)		Replace	Every 7,500 km (4,500 miles)	—
					Diesel models (YD engine)	2WD models	Replace	Every 10,000 km (6,000 miles)	14
						4WD or 4WD appearance 2WD models	Replace	Every 5,000 km (3,000 miles)	14
A	B	C	D	.	<b>Engine oil filter</b>				
					Petrol models (KA engine)		Replace	Every 7,500 km (4,500 miles)	—
					Diesel models (YD engine)		Replace	Every 10,000 km (6,000 miles)	15
A	.	.	.	.	<b>Air cleaner filter (Viscous paper type)</b>				
					Petrol models (KA engine)		Replace	Every 30,000 km (18,000 miles)	12
					Diesel models (YD engine)		Replace	Every 30,000 km (18,000 miles)	21
A	.	.	.	.	<b>Air cleaner filter (Dry paper type)</b>				
					Diesel models (YD engine)		Clean	Every 10,000 km (6,000 miles)	21
						Replace	Every 20,000 km (12,000 miles)	21	
A	.	.	.	.	<b>Cyclone pre-air cleaner</b>				
					Diesel models (YD engine)		Inspect	More frequently	21
A	.	.	.	.	<b>Positive crankcase ventilation (PCV) filter</b>				
					Petrol models (KA engine)		Replace	Every 30,000 km (18,000 miles)	12
A	.	.	.	E	<b>Fuel filter</b>				
					Petrol models (KA engine)		Replace	Every 45,000 km (27,000 miles)	—
					Diesel models		Replace	Every 30,000 km (18,000 miles)	20

# RECOMMENDED FLUIDS AND LUBRICANTS

## Fluids and Lubricants

	Capacity (Approximate)		Recommended Fluids/Lubricants	
	Liter	Imp measure		
<b>Engine oil (Refill)</b>				
With oil filter				
Z24S	2WD 3.8	3-3/8 qt	Except for Europe: Gasoline engine: API SE, SF, SG, SH or SJ*1 ILSAC grade GF-I or GF-II*1 Diesel engine: API CC, CD, CE, CF, CF-4 for TD and QD engine*1, *7 API CD, CE, CF, CF-4 for YD engine*1, *7 API CE, CF, CF-4 for ZD engine*1, *7 For Europe: 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, *7 ACEA B3-96, 98 or ACEA B3/E3 96, 98 for TD engine*6 API CF-4 for YD engine*1, *7 ACEA 98-B1 for YD engine	
	4WD 4.3	3-3/4 qt		
KA24DE	2WD 3.6	3-1/8 qt		
	4WD 4.1	3-5/8 qt		
VG30E	2WD 3.9	3-3/8 qt		
	4WD 3.3	2-7/8 qt		
TD25 & TD27	6.0	5-1/4 qt		
QD32 & TD25Ti	6.7	5-7/8 qt		
ZD30DDT	6.7	5-7/8 qt		
YD25DDTi	2WD 5.6	4-7/8 qt		
	4WD 4.3*9	3-3/4 qt*9		
Without oil filter				
Z24S	2WD 3.3	2-7/8 qt		
	4WD 3.8	3-3/8 qt		
KA24DE	2WD 3.3	2-7/8 qt		
	4WD 3.8	3-3/8 qt		
VG30E	2WD 3.6	3-7/8 qt		
	4WD 3.0	2-5/8 qt		
TD25 & TD27	5.3	4-5/8 qt		
QD32 & TD25Ti	6.0	5-1/4 qt		
ZD30DDT	6.2	5-1/2 qt		
YD25DDTi	2WD 5.3	4-5/8 qt		
	4WD 4.0*9	3-1/2 qt*9		
<b>Cooling system (With reservoir)</b>				
Z24S	With A/C 8.9	7-7/8 qt	Except for Europe: Nissan Genuine Engine Coolant, or equivalent in its quality*8 For Europe: Genuine Nissan Anti-freeze Coolant (L2N) or equivalent*8	
	Without A/C 8.7	7-5/8 qt		
KA24DE	6.9	6-1/8 qt		
VG30E	9.0	7-7/8 qt		
TD25 & TD27	9.5	8-3/8 qt		
TD25Ti	10.6	9-3/8 qt		
QD32	9.4, 10.2*4	8-1/4 qt, 9 qt*4		
ZD30DDT	11.0	9-5/8 qt		
YD25DDTi	8.6	7-5/8 qt		
<b>Manual transmission gear oil</b>				
FS5R30A	2WD 2.8	4-7/8 pt	API GL-4, Viscosity SAE 75W-85 only	
	4WD 5.1	9 pt		
	2WD 2.0	3-1/2 pt		
FS5W71C	4WD 4.9	8-5/8 pt		
<b>Automatic transmission fluid</b>				
RE4R01A	8.1	7-1/8 qt	Genuine Nissan ATF or equivalent*2	
<b>Transfer fluid</b>				
TX10A	2.2	2 qt	Genuine Nissan ATF or equivalent*2 or API GL-4*1	
<b>Differential gear oil</b>				
Front	R180A	1.3	2-1/4 pt	Standard differential gear: API GL-5*1 Limited-slip differential (LSD) gear: Gear Oil Hypoid LSD (Part No.: KLD31-14002) or equivalent*3
Rear	C200	1.3	2-1/4 pt	
<b>Power steering fluid</b>				
—				Type DEXRON <sup>TM</sup> III or equivalent
<b>Brake and clutch fluid</b>				
—				Except for Europe: DOT 3 (U.S. FMVSS No. 116) For Europe: DOT 3 or DOT 4 (U.S. FMVSS No. 116)*5
<b>Propeller shaft grease</b>				
—				NLGI No. 2 (Lithium soap base)
<b>Multi-purpose grease</b>				
—				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<sup>TM</sup>III/MERCON<sup>TM</sup> Automatic Transmission Fluid.

\*3: API GL-5, SAE 140 and 10% volume of LSD Friction Modifier (Part No.: 38469-C6000) is an equivalent.

\*4: For Australia or models with air conditioner.

\*5: Never mix DOT 3 and DOT 4. (DOT 3 is filled at factory.)

\*6: 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.

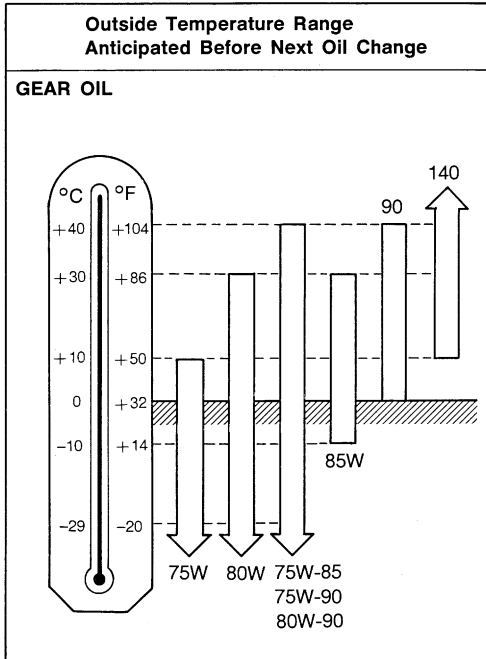
\*7: Never use CG-4 grade oil.

\*8: Use Nissan Genuine Engine Coolant, 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.**

\*9: Including 4WD appearance 2WD models

## SAE Viscosity Number



SLIA0015E

- 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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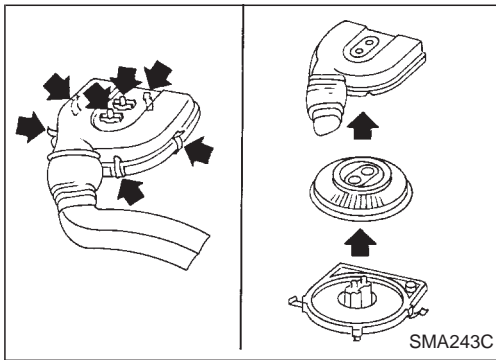
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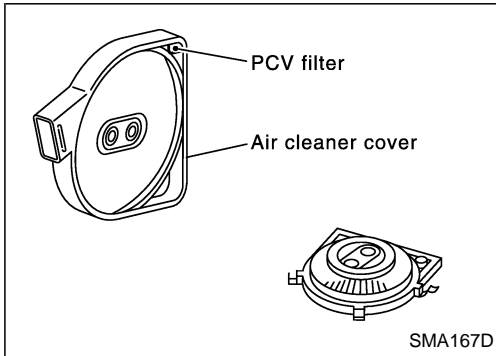
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### Changing Air Cleaner Filter (For Europe)

#### VISCOUS PAPER TYPE

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



### Changing Positive Crankcase Ventilation (PCV) Filter (For Europe)


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

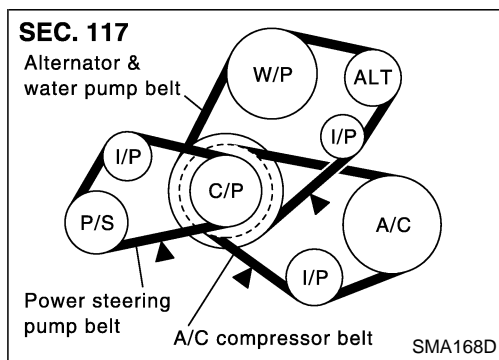
: 19.7 - 23.5 N·m (2.0 - 2.3 kg·m, 15 - 17 ft·lb)

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.

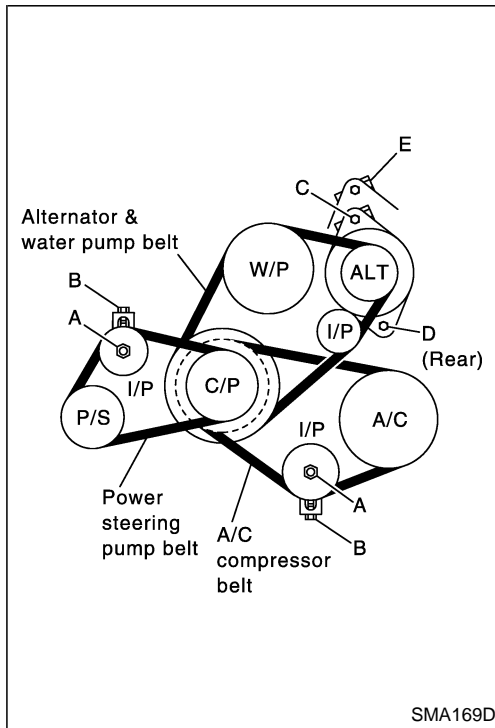
Applied belt	Belt tightening method for adjustment
Air conditioner compressor belt	Adjusting bolt on idler pulley
Alternator water pump belt	Adjusting bolt on alternator
Power steering pump belt	Adjusting bolt on idler pulley

#### 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-13, "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

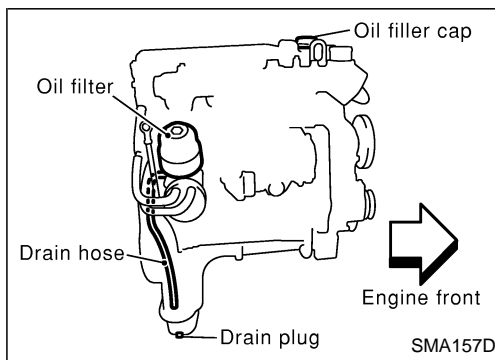
1. Loosen adjuster lock nut (C).
2. Loosen alternator fixing nut (D) (Rear).
3. Turn adjusting bolt (E) to adjust.
- Refer to MA-13, "Inspection" for adjustment values.
4. Tighten nut (C) and nut (D) in this order.

#### 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-10, "RECOMMENDED FLUIDS AND LUBRICANTS".

Changing Engine Oil (Cont'd)


Refill oil capacity (Approximately):

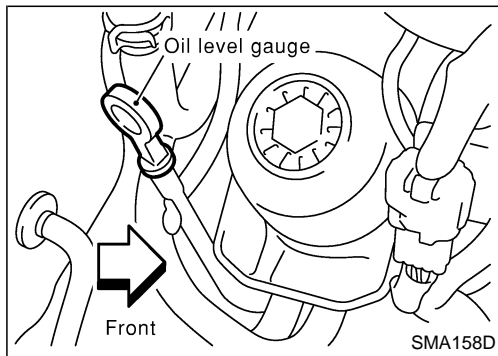
Unit: ℓ (Imp qt)

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

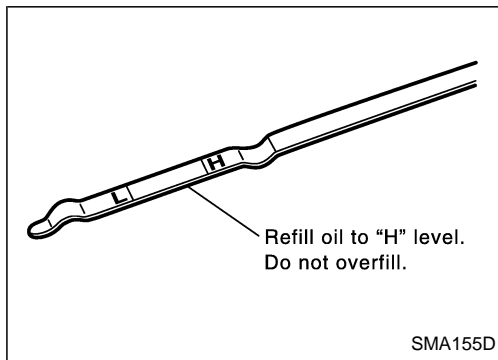
**CAUTION:**

- 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.

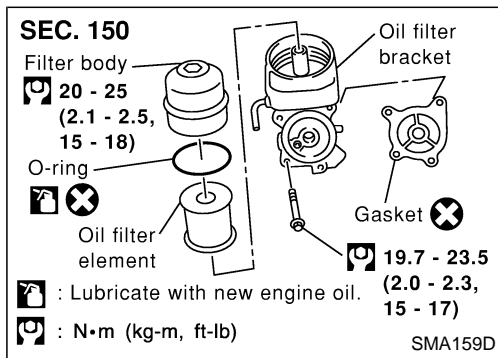


SMA158D

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.



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Changing Oil Filter

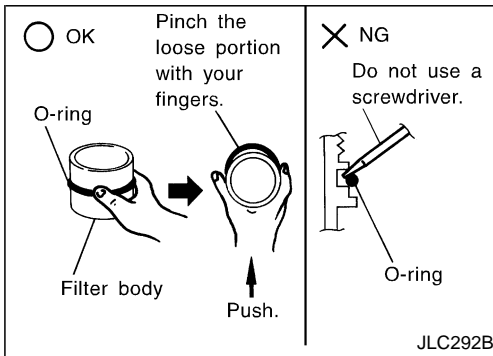
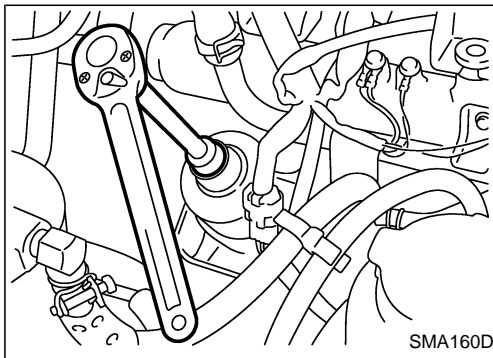
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**Changing Oil Filter (Cont'd)****REMOVAL**

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:**

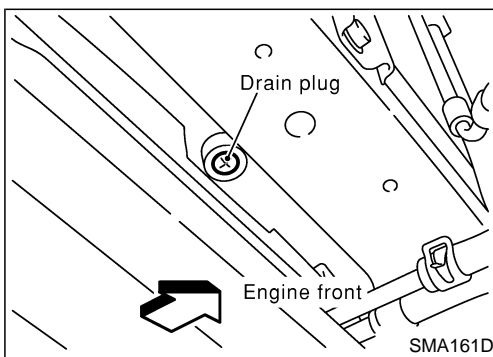
**Completely wipe clean any engine oil remaining on the filter body or vehicle.**

**Changing Engine Coolant**

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

**— DRAINING ENGINE COOLANT —**

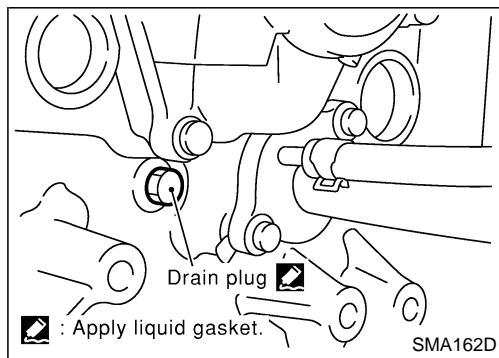
1. Set air conditioning system as follows to prevent coolant from remaining in the system.
  - a. Turn ignition switch ON and set temperature controller to maximum hot position.
  - b. Wait 10 seconds before turning ignition switch OFF.
2. Open radiator drain plug at the bottom of radiator and remove 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-18, "FLUSHING COOLING SYSTEM".

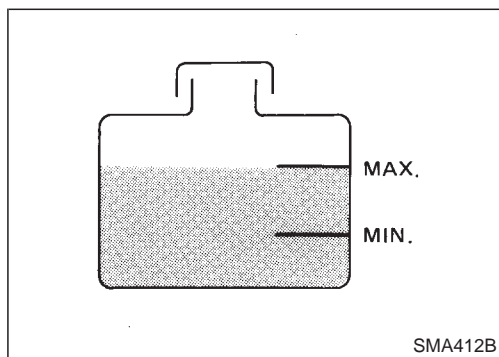
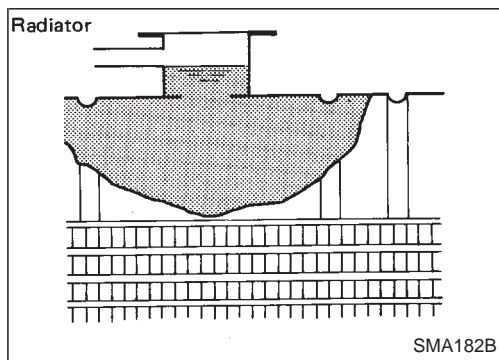
**— REFILLING ENGINE COOLANT —**

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-10, "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.
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.

## Changing Engine Coolant (Cont'd)

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<sup>2</sup>, 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:**

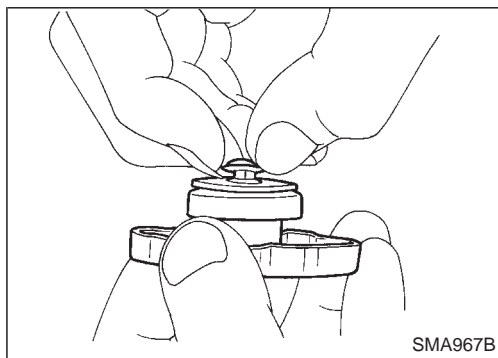
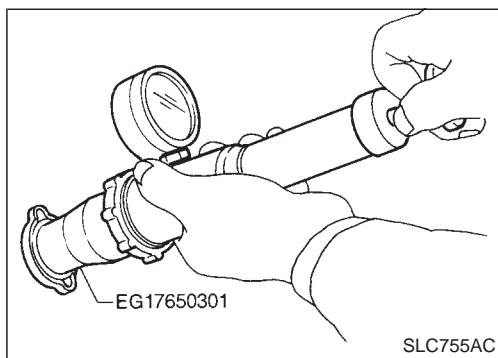
**Standard**

78 - 98 kPa

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

**Limit**

59 kPa (0.59 bar, 0.6 kg/cm<sup>2</sup>, 9 psi)



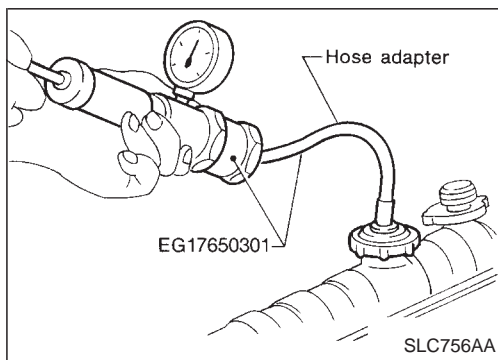
Pull the negative pressure valve to open it.

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<sup>2</sup>, 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.**

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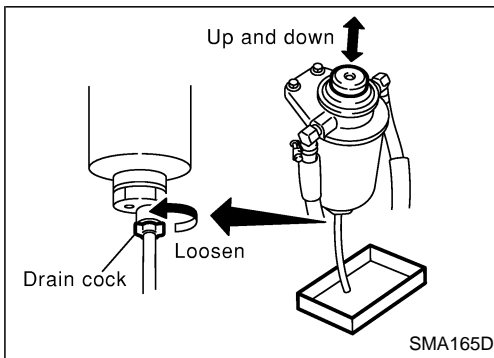
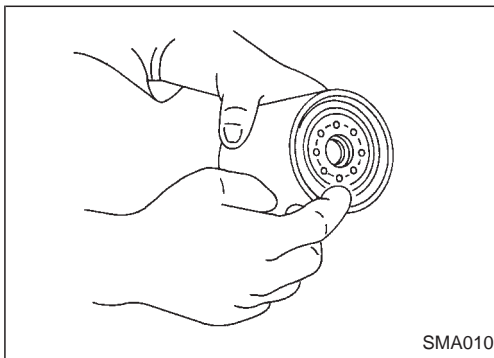
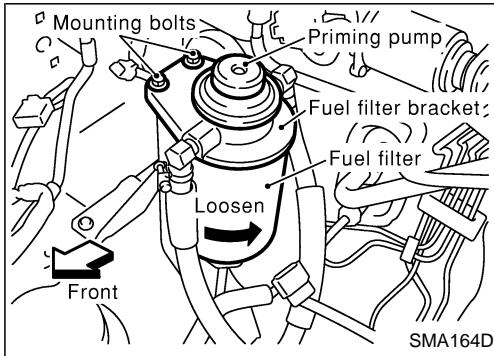
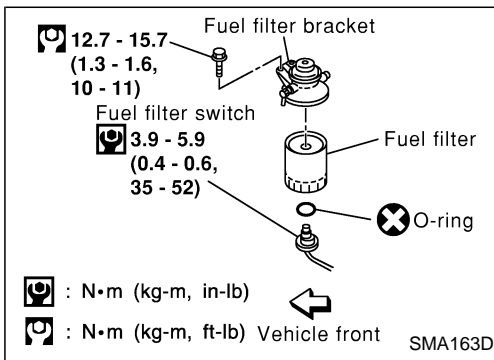
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## Checking and Replacing Fuel Filter and Draining Water

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.

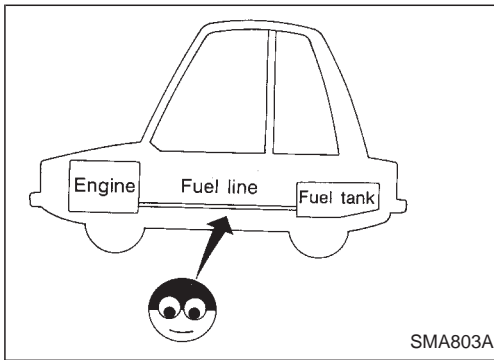
Refer to "Air Bleeding" in EC section.

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:**

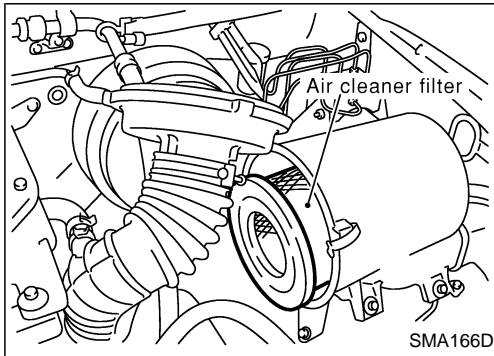
Keep clean parts with compressed air when assembling.

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### Cleaning and Replacing Air Cleaner Filter

#### VISCOUS PAPER TYPE

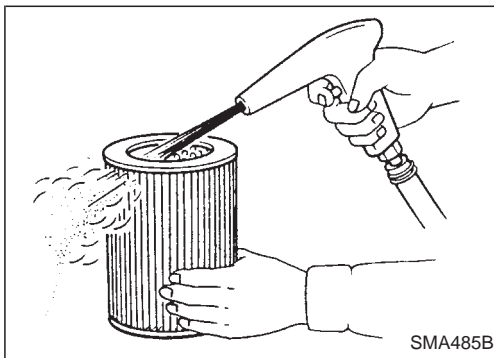
The viscous paper type air cleaner filter does not require any cleaning operation between renewal.

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#### DRY PAPER TYPE

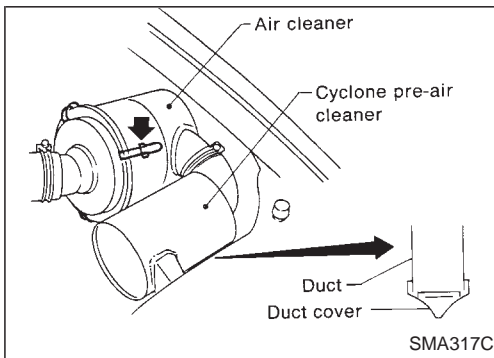
Clean or replace element more often under dusty driving conditions.

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### Checking Cyclone Pre-air Cleaner

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

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### Checking Tightening Torque


Checking should be performed while engine is cold.

#### MANIFOLD BOLTS AND NUTS


Intake

: 25 - 28 N·m (2.5 - 2.9 kg-m, 18 - 20 ft-lb)

Exhaust

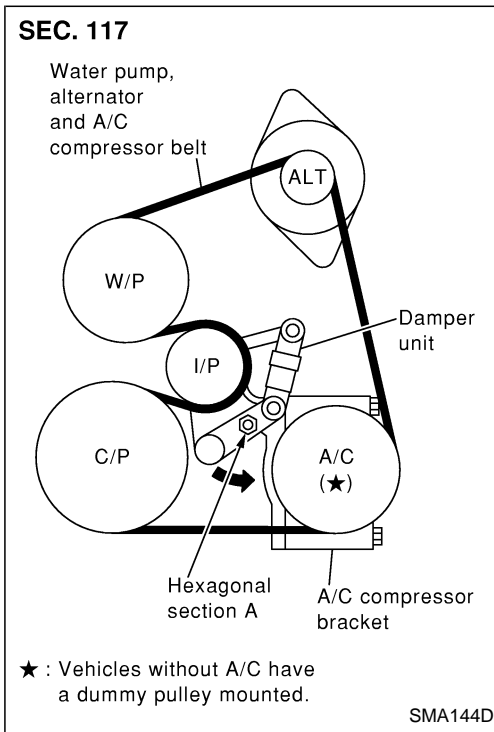
: 40 - 44 N·m (4.0 - 4.5 kg-m, 29 - 32 ft-lb)

#### EXHAUST TUBE NUTS

: 41 - 48 N·m (4.1 - 4.9 kg-m, 30 - 35 ft-lb)

### Adjusting Intake and Exhaust Valve Clearance

Refer to EM section.



### Checking Drive Belt

#### INSPECTION

- Because an auto tensioner adjustment mechanism is provided, it is not necessary to check or adjust the tension of accessory belt.

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

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

2. Check the damper unit of the auto-tensioner for oil leaks.

Applied belt	Belt specifications	Tension	Belt deflection
Water pump, alternator and air conditioner compressor belt	V-ribbed belt (7 ribs)	Automatic adjustment by auto tensioner	Automatic adjustment by auto tensioner

**Checking Drive Belt (Cont'd)****REMOVAL**

1. Remove radiator under guard.
2. Contract and hold the auto-tensioner using the following procedure.
  - a. Securely hold the 19 mm (0.75 in) hexagonal portion A of auto-tensioner with a closed wrench.
    - Preferably use a tool with a handhold of 500 mm (19.69 in) or more in length.
    - No bolts or nuts are required to be loosened during the operation.
  - b. Turn the hexagonal portion A in the direction shown by the arrow to contract the damper unit of the auto-tensioner.

**CAUTION:**

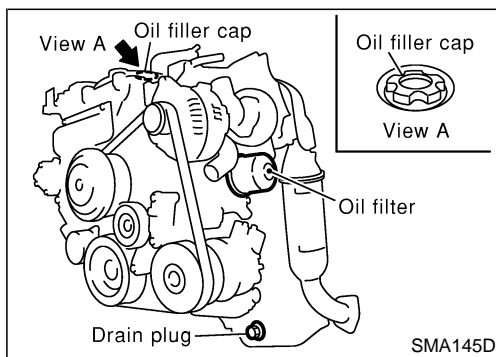
- **Because the tensioner has a high tension, it shall be securely held and turned with a closed wrench.**
  - **Because the hexagonal portion A of the tensioner is made of aluminum and may be damaged by sudden input, turn it slowly to contract the damper unit.**
3. Remove the belt from the alternator pulley first, and then remove it from the other pulleys.
    - If the tensioner is not held firmly, your finger may get caught between the belt and the pulleys. Confirm the holding of the tensioner, and then hold the belt side in the place away from the pulleys to attach or remove the belt, paying attention to prevent your finger from being caught.

**CAUTION:**

- **When handling the belt, pay attention to prevent the oil or coolant from adhering to the belt.**
- **Do not distort or bend the belt intensively.**

**INSTALLATION**

- Install the belt in the reverse order of removal.
- After installation of the belt, confirm that the belt engages the pulleys securely.
- Depending on the engagement between the belt and the idler pulley, noise (belt noise) may be heard when the engine is started just after installation. This noise will stop with time.

**Changing Engine Oil****WARNING:**

- **Be careful not to burn yourself, as engine oil is hot.**
  - **Prolonged and repeated contact with used engine oil may cause skin cancer; try to avoid direct skin contact with used oil. If skin contact is made, wash thoroughly with soap or hand cleaner as soon as possible.**
1. Warm up engine, and check for oil leakage from engine components.
  2. Remove drain plug and oil filler cap.

**Changing Engine Oil (Cont'd)**

3. Drain oil and fill with new engine oil.

Oil grade: API CE, CF, CF-4

Viscosity:

See "RECOMMENDED FLUIDS AND LUBRICANTS", MA-10.

Refill oil capacity (approximate):

Without oil filter change

6.2ℓ (5-1/2 Imp qt)

With oil filter change


6.7ℓ (5-7/8 Imp qt)

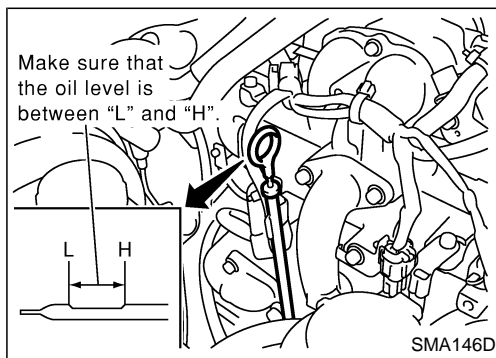
Dry engine (engine overhaul) oil capacity

(approximate):

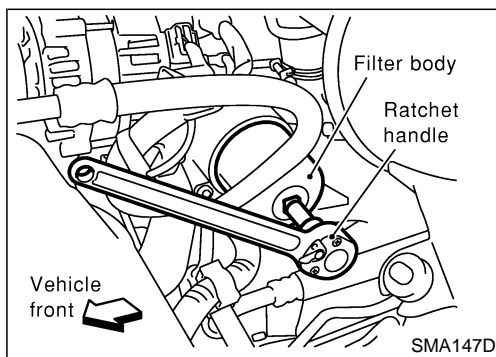
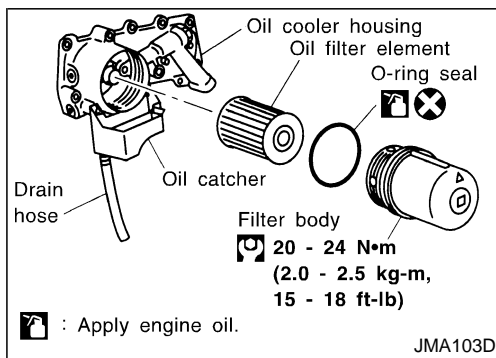
7.4 ℓ (6-1/2 Imp qt)

**CAUTION:**

- Be sure to clean and install oil pan drain plug with washer.  
Drain plug:  
: 54 - 58 N·m (5.5 - 6.0 kg-m, 40 - 43 ft-lb)
- The refill capacity changes depending on the oil temperature and drain time; use these values as a reference and be certain to check with the dipstick when changing the oil.



4. Check oil level.
5. Start engine. Check area around drain plug and oil filter for any sign of oil leakage.
6. Run engine for a few minutes, then turn it off. After 10 minutes check oil level.

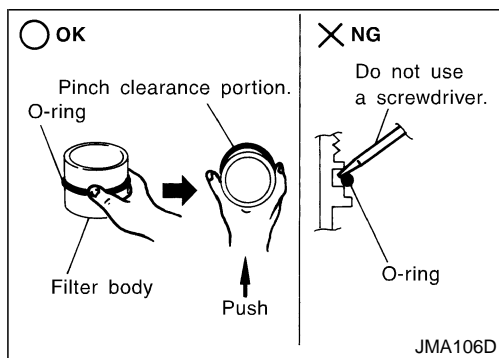
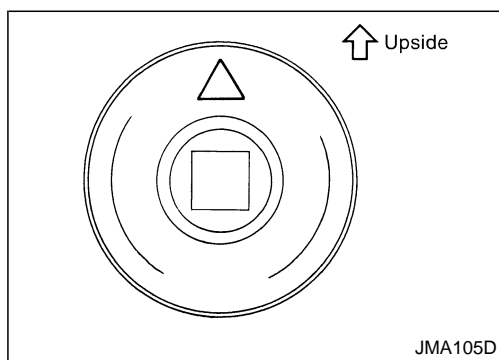
**Changing Engine Oil Filter****REMOVAL**

1. Insert a suitable tool with a 12.7 mm square (1/2 inch square) such as an extension bar and ratchet handle into the filter body, and loosen the body by approximately 4 turns.

**WARNING:**

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





## Changing Engine Oil Filter (Cont'd)

- Set the ▲ mark of the filter body to the top position and discharge the oil.
  - Receive the oil discharged from the drain hose in a tray.
  - About 500 cc (17.6 Imp fl oz) of oil will be discharged in about 3 minutes.
  - The oil is discharged from the oil catcher to under the vehicle through the drain hose.

- Remove the filter body, and then remove the oil filter element.

### CAUTION:

- If the engine oil gets on the engine or vehicle, thoroughly wipe it off.
- Thoroughly wipe off the oil remaining in the oil catcher. (This is to prevent misidentifying oil leaking from the oil catcher as oil leaking from the engine.)

- Remove the O-ring from the filter body.
  - Press the O-ring in any direction with your finger, and pull on the portion of the O-ring separated from the filter body to remove it.

### CAUTION:

Because wire and screwdrivers may cause damage to the filter body, do not use such tools.

## INSTALLATION

- Thoroughly remove foreign matter adhering to the inside of filter body and O-ring mounting areas (of the body and oil cooler).
- Install the oil filter element and O-ring to the filter body.
  - Securely press the oil filter element into the filter body.
- Install the filter body.
  - : 20 - 24 N·m (2.0 - 2.5 kg-m, 15 - 18 ft-lb)
- After warming up the engine, check that no engine oil leaks.

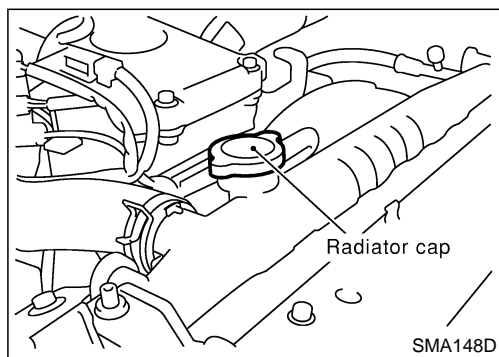
## Changing Engine Coolant

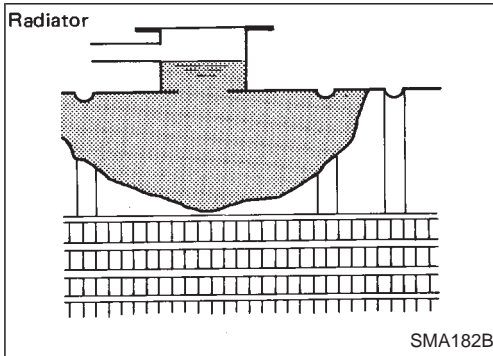
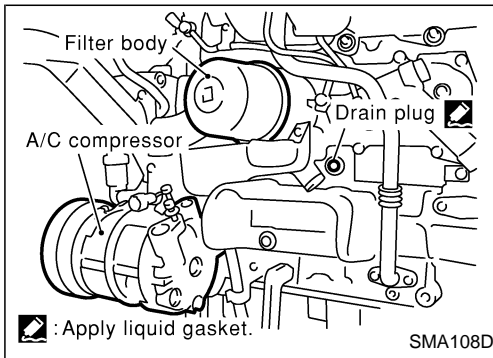
### WARNING:

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

### —DRAINING ENGINE COOLANT—

- Move heater TEMP control knob all the way to HOT.
- Remove undercover and open radiator drain plug at the bottom of radiator.
- Remove radiator filler cap.



**Changing Engine Coolant (Cont'd)**

4. Remove cylinder block drain plug located at left center of cylinder block.
5. Remove reservoir tank and drain coolant.

**—REFILLING ENGINE COOLANT—**

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

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

**Cylinder block drain plug:**

☐: 24 - 26 N·m (2.4 - 2.7 kg-m, 18 - 19 ft-lb)

7. Move heater TEMP control knob all the way to HOT.
8. Fill radiator with coolant up to the filler neck.

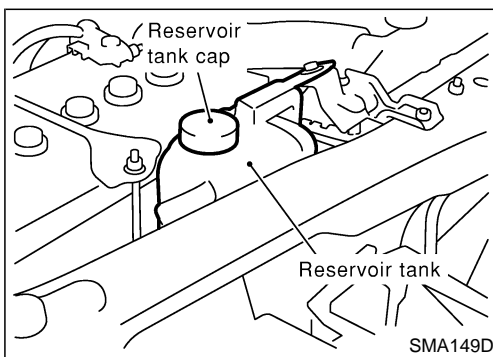
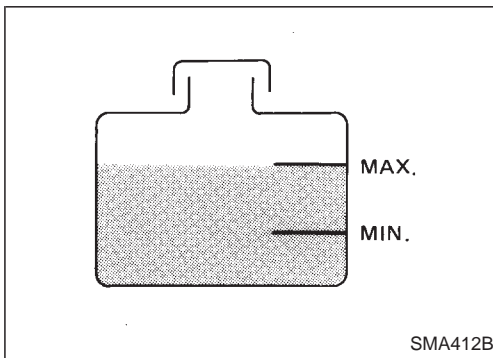
**Coolant capacity (With reservoir tank):**

11.0 ℓ (9-5/8 Imp qt)

**Reservoir tank capacity (for MAX level):**

0.7 ℓ (5/8 Imp qt)

- **Pour coolant through coolant filler neck slowly to allow air in system to escape.**
- **Use genuine Nissan anti-freeze coolant or equivalent mixed with water (distilled or demineralized). Refer to MA-10, "RECOMMENDED FLUIDS AND LUBRICANTS".**



9. Fill reservoir tank with coolant up to the MAX level.
10. Install radiator cap.
11. Warm up engine to normal operating temperature.
12. Run engine at 2,000 rpm for 10 seconds and return to idle speed.

- Repeat 2 or 3 times.

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

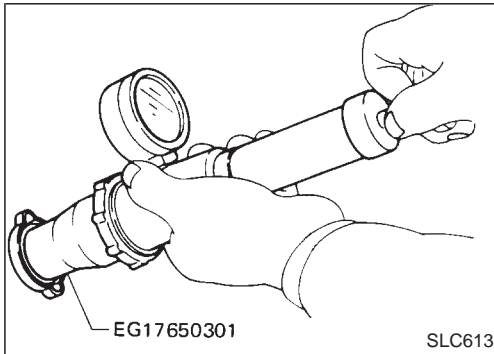
13. Stop engine and cool it down.
14. Remove the radiator cap and check coolant level.
15. Refill reservoir tank to Max line with coolant.
16. Repeat step 9 through step 15 two or more times.
17. Warm up engine, and check for sound of coolant flow while running engine from idle up to 2,000 rpm with heater temperature control set at several positions between COOL and HOT.
18. If sound is heard, bleed air from cooling system by repeating steps 11 through 17 until coolant level no longer drops.

- **Clean excess coolant from engine.**

## Checking Cooling System

### CHECKING HOSES AND CLAMPS

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



### CHECKING RADIATOR CAP

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

#### Radiator cap relief pressure:

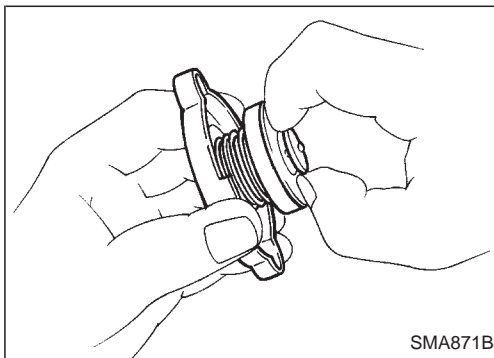
##### Standard

78 - 98 kPa

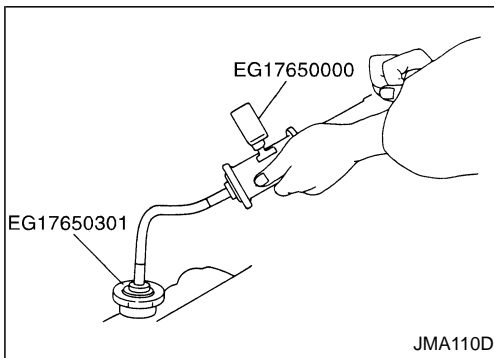
(0.78 - 0.98 bar, 0.8 - 1.0 kg/cm<sup>2</sup>, 11 - 14 psi)

##### Limit

59 kPa (0.59 bar, 0.6 kg/cm<sup>2</sup>, 9 psi)



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



### CHECKING COOLING SYSTEM FOR LEAKS

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

#### Testing pressure:

157 kPa (1.57 bar, 1.6 kg/cm<sup>2</sup>, 23 psi)

#### **CAUTION:**

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

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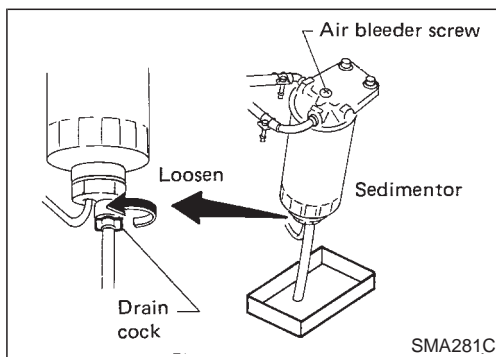
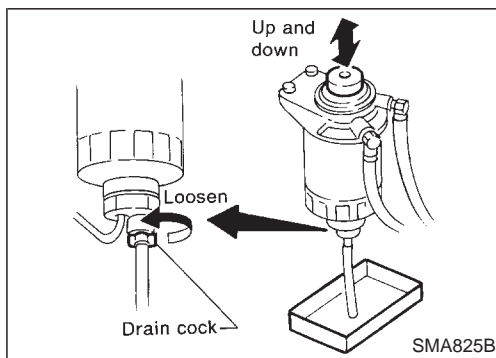
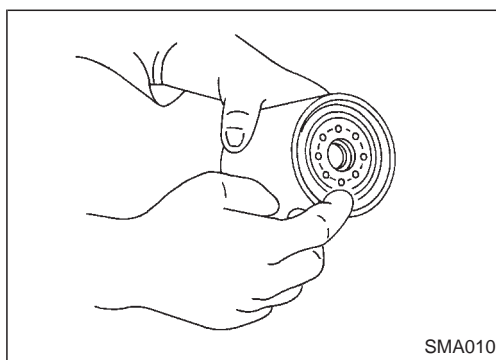
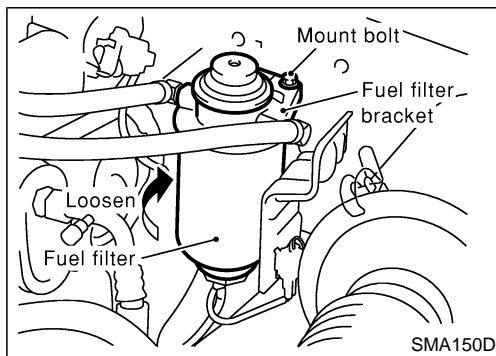
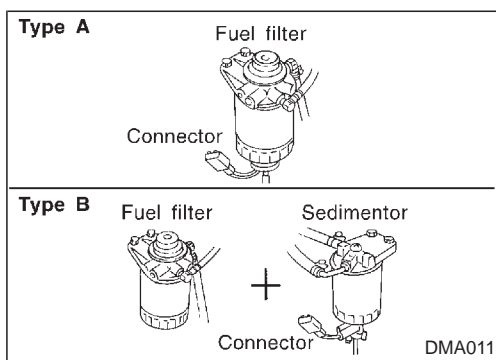
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## Checking and Replacing Fuel Filter and Draining Water

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. (Type A)
8. Bleed air from fuel filter.
9. Start engine and check for leaks.

Refer to "Air Bleeding" in EC section.

### DRAINING WATER

1. Drain water as follows.

#### Type A

Loosen drain cock and drain water.

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

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

#### Type B

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

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

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

2. Bleed air.  
Refer to "Air Bleeding" in EC section.
3. Start engine and check for leaks.

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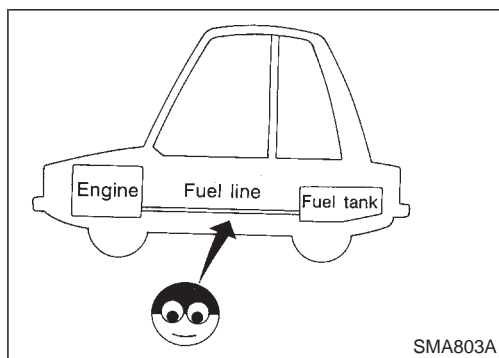
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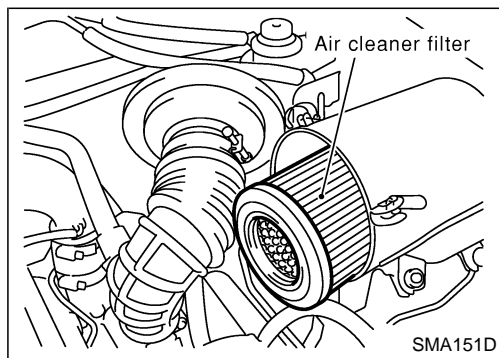
### Checking Fuel Lines

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

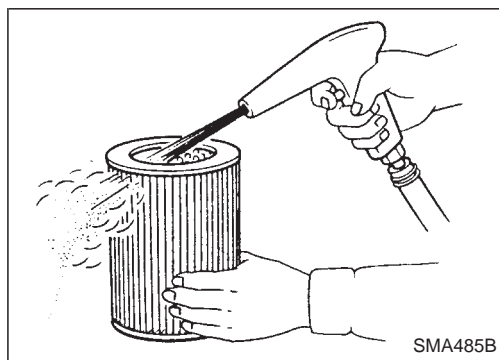
**CAUTION:**

Keep clean parts with compressed air when assembling.

### Cleaning and Replacing Air Cleaner Filter



SMA151D



SMA485B

#### DRY PAPER TYPE

Clean or replace element more often under dusty driving conditions.

#### VISCOUS PAPER TYPE

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

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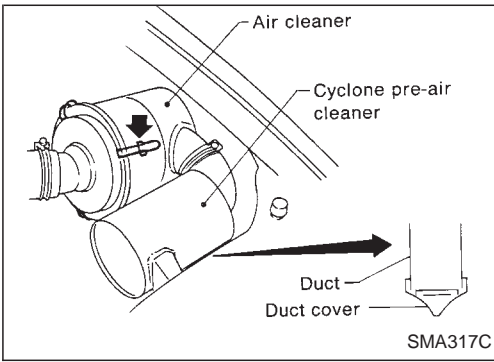
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### Checking Cyclone Pre-air Cleaner

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

# SERVICE DATA AND SPECIFICATIONS (SDS)

## Engine Maintenance (YD)

### 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<sup>2</sup>, 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)

## Engine Maintenance (ZD)

### INSPECTION AND ADJUSTMENT

#### Drive belt deflection

Applied belt	Tension and deflection
Water pump, alternator and air conditioner compressor belt	Automatic adjustment by auto-tensioner

#### Cooling system check

Unit: kPa (bar, kg/cm<sup>2</sup>, psi)

Leakage test 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)

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