

SECTION MA

MODIFICATION NOTICE:

- KA24DE engine has been added.
- A/T model information has been added.

CONTENTS

| | |
|--|---|
| PRECAUTIONS AND PREPARATION | 2 |
| Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"..... | 2 |
| Special Service Tools (KA24DE engine)..... | 3 |
| Commercial Service Tool (KA24DE engine)..... | 3 |
| PERIODIC MAINTENANCE (Except for Europe) | 4 |
| Engine and Emission Control Maintenance..... | 4 |
| Chassis and Body Maintenance..... | 5 |
| Maintenance Under Severe Driving Conditions..... | 6 |
| RECOMMENDED FLUIDS AND LUBRICANTS | 7 |
| Fluids and Lubricants..... | 7 |
| SAE Viscosity Number..... | 8 |

| | |
|----------------------------------|----|
| ENGINE MAINTENANCE | 9 |
| Checking Drive Belts..... | 9 |
| Changing Engine Coolant..... | 10 |
| Checking Cooling System..... | 11 |
| Checking Fuel Lines..... | 12 |
| Changing Fuel Filter..... | 12 |
| Changing Air Cleaner Filter..... | 13 |

| | |
|--|----|
| Checking Cyclone Pre-air Cleaner (Built into air cleaner)..... | 13 |
| Changing Engine Oil..... | 14 |
| Changing Oil Filter..... | 14 |
| Checking and Changing Spark Plugs..... | 15 |
| Checking Ignition Wires..... | 16 |
| Checking Positive Crankcase Ventilation (PCV) System..... | 16 |
| Changing Positive Crankcase Ventilation (PCV) Filter..... | 16 |
| Checking Vacuum Hoses and Connections..... | 17 |
| Checking EVAP Vapor Lines..... | 17 |
| Checking Heated Oxygen Sensor (HO2S)..... | 18 |

| | |
|--|----|
| CHASSIS AND BODY MAINTENANCE | 19 |
| Checking A/T Fluid..... | 19 |
| Changing A/T Fluid..... | 20 |
| Checking Differential Gear Oil..... | 20 |
| Changing Differential Gear Oil..... | 20 |
| Checking Disc Brake..... | 20 |
| SERVICE DATA AND SPECIFICATIONS (SDS) | 21 |
| Engine Maintenance (KA24DE engine)..... | 21 |

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

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER” used along with a seat belt, helps to reduce the risk or severity of injury to the driver and front passenger in a frontal collision. The SRS system composition which is available to NISSAN MODEL D22 is as follows (The composition varies according to the destination and optional equipment.):

Driver air bag module (located in the center of the steering wheel), front passenger air bag module (located on the instrument panel on passenger side), seat belt pre-tensioner, a diagnosis sensor unit, warning lamp, wiring harness and spiral cable.

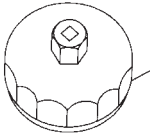
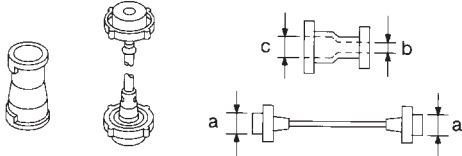
Information necessary to service the system safely is included in the **RS section** of this Service Manual.

WARNING:

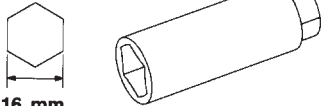
- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the RS section.
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. Spiral Cable and wiring harnesses (except “SEAT BELT PRE-TENSIONER”) covered with yellow insulation either just before the harness connectors or for the complete harness are related to the SRS.

PRECAUTIONS AND PREPARATION

Special Service Tools (KA24DE engine)

| Tool number Tool name | Description |
|--|---|
| KV10115801 Oil filter wrench | <p>Removing oil filter</p>  <p>14 faces, Inner span: 64.3 mm (2.531 in) (Face to opposite face)</p> <p>NT362</p> |
| EG17650301 Radiator cap tester adapter |  <p>NT564</p> <p>a: 28 (1.10) dia. b: 31.4 (1.236) dia. c: 41.3 (1.626) dia. Unit: mm (in)</p> |

Commercial Service Tool (KA24DE engine)

| Tool name | Description |
|-------------------|---|
| Spark plug wrench | <p>Wrench with a magnet to hold spark plug</p>  <p>16 mm (0.63 in)</p> <p>NT047</p> |

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

GASOLINE ENGINE (KA24DE engine)

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

| MAINTENANCE OPERATION | MAINTENANCE INTERVAL | | | | | | | | | | Reference page |
|--|---|------------|-----|------|------|------|------|------|------|------|----------------------|
| | Months | — | 6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | |
| | Perform at the specified months or mileage whichever comes first. | km x 1,000 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | |
| | (Miles x 1,000) | (0.6) | (6) | (12) | (18) | (24) | (30) | (36) | (42) | (48) | |
| Engine compartment and under vehicle | | | | | | | | | | | |
| Intake & exhaust valve clearance*2 | | | | A | | A | | A | | A | Refer to EM section. |
| Drive belts | I*1 | | I*1 | | I | | I*1 | | I | | MA-9 |
| Engine oil (Use API SE, SF, SG, SH or SJ oil)★ | | R | R | R | R | R | R | R | R | R | MA-14 |
| Engine oil filter (Use part No. 15208 31U01 or 15208 31U00)★ | | R | R | R | R | R | R | R | R | R | MA-14 |
| Engine anti-freeze coolant (Ethylene glycol base) | | | | | | R | | | | R | MA-10 |
| Cooling system | | | I | | I | | I | | I | | MA-11 |
| Fuel filter★ | | | | | | R | | | | R | MA-12 |
| Fuel lines | | | | | | I | | | | I | MA-12 |
| Air cleaner filter (Dry paper type)★ | | C | C | C | R | C | C | C | R | | MA-13 |
| Air cleaner filter (Viscous paper type)★ | | | | | R | | | | R | | MA-13 |
| Cyclone pre-air cleaner★ | | I | I | I | I | I | I | I | I | I | MA-13 |
| Positive crankcase ventilation (PCV) system | | | I*1 | | I | | I*1 | | I | | MA-16 |
| Positive crankcase ventilation (PCV) filter★ | | | | | | R | | | | R | MA-16 |
| Spark plugs | *3 | | | | | R | | | | R | MA-15 |
| | *1 | | I | R | I | R | I | R | I | R | MA-15 |
| Ignition wires | | | | | | I | | | | I | MA-16 |
| Vacuum hoses & connections*1 | | | I | | I | | I | | I | | MA-17 |
| Heated oxygen sensor (Exhaust gas sensor) | | | | | | I | | | | I | MA-18 |
| EVAP vapor lines | | | | | | I | | | | I | MA-17 |

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

*1: Models without three way catalyst

*2: For three way catalyst models, periodic maintenance is not required. However, if valve noise increases, check valve clearance.

*3: Models with three way catalyst

PERIODIC MAINTENANCE (Except for Europe)

Chassis and Body Maintenance

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

| MAINTENANCE OPERATION | MAINTENANCE INTERVAL | | | | | | | | | | Reference page | |
|---|--|------------|-----|------|------|------|------|------|------|------|-------------------|----|
| | Months | — | 6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | | |
| | Perform at the specified months or mileage whichever comes first. | km x 1,000 | 1 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | | 80 |
| | (Miles x 1,000) | (0.6) | (6) | (12) | (18) | (24) | (30) | (36) | (42) | (48) | | |
| Underhood and under vehicle | | | | | | | | | | | | |
| Brake, clutch, automatic transmission & manual steering gear fluid (For level & leaks)★ | | | I | I | I | I | I | I | I | I | MA-19 | |
| Brake fluid★ | | | | | | | R | | | R | — | |
| Brake booster vacuum hoses, connections & check valve | | | | | | I | | | | I | — | |
| Power steering fluid & lines | | | I*1 | I | I*1 | I | I*1 | I | I*1 | I | — | |
| Brake, clutch & exhaust systems | | | I | I | I | I | I | I | I | I | — | |
| Manual transmission gear oil (For leaks)*3 | | | I | I | I | I | I | I | I | I | — | |
| Transfer fluid & differential gear oil (For level and leaks) | | | I | I | I | R | I | I | I | R | — | |
| Steering gear box & linkage, axle & suspension parts, propeller shafts★ | | | I | I | I | I | I | I | I | I | — | |
| Body mountings | | | T | | T | | T | | T | | — | |
| Outside and inside | | | | | | | | | | | | |
| Wheel alignment (if necessary, rotate & balance wheels) | | | | | I | | I | | I | | — | |
| Brake pads, rotors & other brake components★ | | | I | I | I | I | I | I | I | I | — | |
| Brake linings, drums & other brake components★ | | | | I | | I | | I | | I | — | |
| Front wheel bearing grease (4x2) | | | | | | I | | | | I | — | |
| Front wheel bearing grease (4x4)★ | | | | I* | | R | | I* | | R | — | |
| Free-running hub grease★ | | | | I | | I | | I | | I | — | |
| Locks, hinges & hood latch★ | | | L*1 | L | L*1 | L | L*1 | L | L*1 | L | — | |
| Seat belts, buckles, retractors, anchors & adjuster | | | | I | | I | | I | | I | — | |
| Foot brake, parking brake & clutch (for free play stroke & operation) | | | I*1 | I | I*1 | I | I*1 | I | I*1 | I | — | |
| Air bag system*2 | | | | | | | | | | | | |

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

*1: Except for models for Australia

*2: Inspect at the first 10 years, and then every 2 years.

*3: Replace oil at 100,000 km (60,000 miles).

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 (KA24DE engine models)

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

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

| Maintenance operation: Check | | | | | | | | | | Check and correct or replace as necessary. | Driving condition | Maintenance item | Maintenance operation | Maintenance interval | Reference page |
|------------------------------|---|---|---|---|---|---|---|---|---|---|-------------------|------------------|---|----------------------|----------------|
| A | B | C | D | . | . | . | . | . | . | Engine oil & oil filter | Gasoline engine | Replace | Every 3 months or 5,000 km (3,000 miles) | MA-14, 14 | |
| A | . | . | . | . | . | . | . | . | . | Air cleaner filter | Dry paper type | Clean | More frequently | MA-13 | |
| | | | | | | | | | | Viscous paper type | Replace | | | MA-13 | |
| | | | | | | | | | | Cyclone pre-air cleaner | Check | | | MA-13 | |
| | | | | | | | | | | Positive crankcase ventilation (PCV) filter | Replace | | | MA-16 | |
| A | . | . | . | E | . | . | . | . | . | Fuel filter | | Replace | Every 20,000 km (12,000 miles) or 12 months | MA-12 | |
| . | . | . | . | . | F | . | . | . | . | Brake fluid | | Replace | | — | |
| . | . | C | . | . | . | . | . | H | . | Automatic transmission fluid | | Replace | Every 40,000 km (24,000 miles) or 24 months | MA-20 | |
| . | . | . | . | . | . | G | H | . | . | Steering gear & linkage, axle & suspension parts & propeller shaft & front drive shafts | | Check | Every 10,000 km (6,000 miles) or 6 months | — | |
| A | . | C | . | . | . | G | H | I | . | Brake pads, rotors & other brake components | | Check | Every 5,000 km (3,000 miles) or 3 months | — | |
| . | . | . | . | . | . | G | . | . | . | Lock, hinges & hood latch | | Lubricate | | — | |
| . | . | . | . | . | . | . | . | . | J | Front wheel bearing grease & free-running hub grease (4×4) | | Check | | — | |
| A | . | C | . | . | . | G | H | I | . | Brake linings, drums & other brake components | | Check | Every 6 months or 10,000 km (6,000 miles) | — | |

RECOMMENDED FLUIDS AND LUBRICANTS

Fluids and Lubricants

| | | Capacity (Approximate) | | Recommended Fluids/Lubricants | MA |
|---------------------------------|------------------|---------------------------------|----------------------|---|----|
| | | Liter | Imp measure | | |
| Engine oil (Refill) | | | | | |
| With oil filter | | | | | |
| | Z24S | 2WD 3.8 4WD 4.3 | 3-3/8 qt 3-3/4 qt | For Europe: Gasoline engine: API SG, SH or SJ*1 Diesel engine: API CD*1 Except for Europe: Gasoline engine: API SE, SF, SG, SH or SJ*1 Diesel engine: API CC or CD*1 | EM |
| | KA24DE | 2WD 3.6 4WD 4.1 | 3-1/8 qt 3-5/8 qt | | LC |
| | TD25 & TD27 | 6.0 | 5-1/4 qt | | EC |
| | QD32 & TD25Ti | 6.7 | 5-7/8 qt | | FE |
| Without oil filter | | | | | |
| | Z24S | 2WD 3.3 4WD 3.8 | 2-7/8 qt 3-3/8 qt | | CL |
| | KA24DE | 2WD 3.3 4WD 3.8 | 2-7/8 qt 3-3/8 qt | | MT |
| | TD25 & TD27 | 5.3 | 4-5/8 qt | | AT |
| | QD32 & TD25Ti | 6.0 | 5-1/4 qt | | |
| Cooling system (With reservoir) | | | | | |
| | Z24S | With A/C 8.9 Without A/C 8.7 | 7-7/8 qt 7-5/8 qt | Anti-freeze coolant (Ethylene glycol base) | TF |
| | KA24DE | 6.9 | 6-1/8 qt | | PD |
| | 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 | | FA |
| Manual transmission gear oil | FS5R30A | 4WD 5.1 | 9 pt | API GL-4, Viscosity SAE 75W-90 only | RA |
| | FS5W71C | 2WD 2.0 4WD 4.9 | 3-1/2 pt 8-5/8 pt | | |
| Automatic transmission fluid | RE4R01A | 8.1 | 7-1/8 qt | Genuine Nissan ATF or equivalent*2 | BR |
| Transfer fluid | TX10A | 2.2 | 2 qt | Nissan Matic "D" or Equivalent Automatic Transmission Fluid*2 or API GL-4*1 | |
| Differential gear oil | | | | | |
| Front: | R180A | 1.3 | 2-1/4 pt | Standard differential gear: API GL-5*1 Limited-slip differential (LSD) gear: Gear Oil Hypoid LSD (Part No.: KLD31-14002) or equivalent*3 | ST |
| Rear: | C200 | 1.3 | 2-1/4 pt | | RS |
| | H233B | 2.8 | 4-7/8 pt | | |
| Power steering fluid | | — | — | Type DEXRON™IIE, DEXRON™III or equivalent | |
| Brake and clutch fluid | | — | — | For Europe: DOT 3 or DOT 4 (US FMVSS No. 116)*5 Except for Europe: DOT 3 (US FMVSS No. 116) | BT |
| Propeller shaft grease | | — | — | NLGI No. 2 (Molybdenum disulphide lithium soap base) | |
| Multi-purpose grease | | — | — | NLGI No. 2 (Lithium soap base) | HA |

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

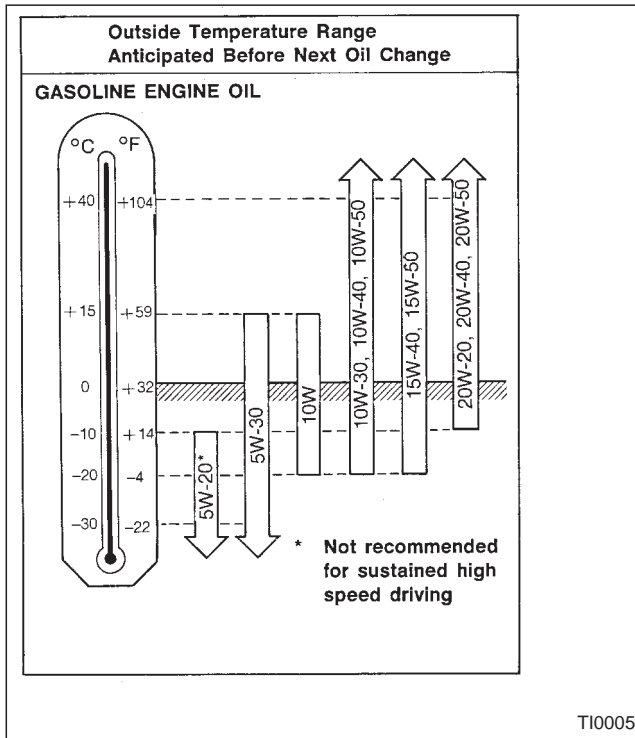
*2: Contact a NISSAN dealership for more information regarding suitable fluid, including recommended brand(s) of DEXRON™III/MERCON™ Automatic Transmission Fluid.

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

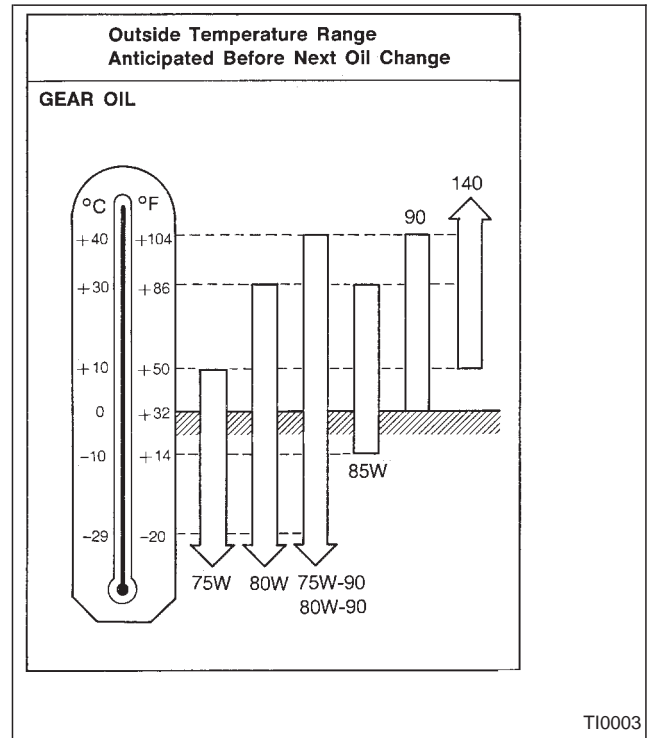
*4: For Australia or models with air conditioner.

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

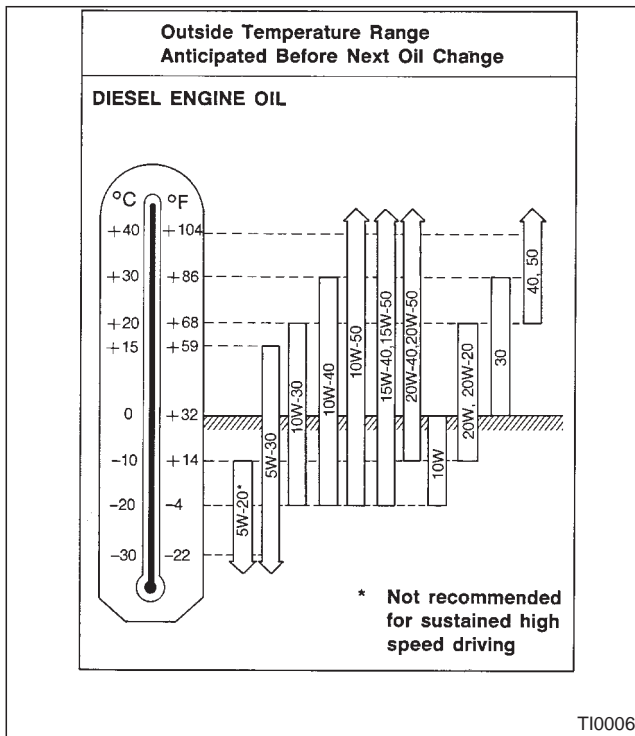
SAE Viscosity Number



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

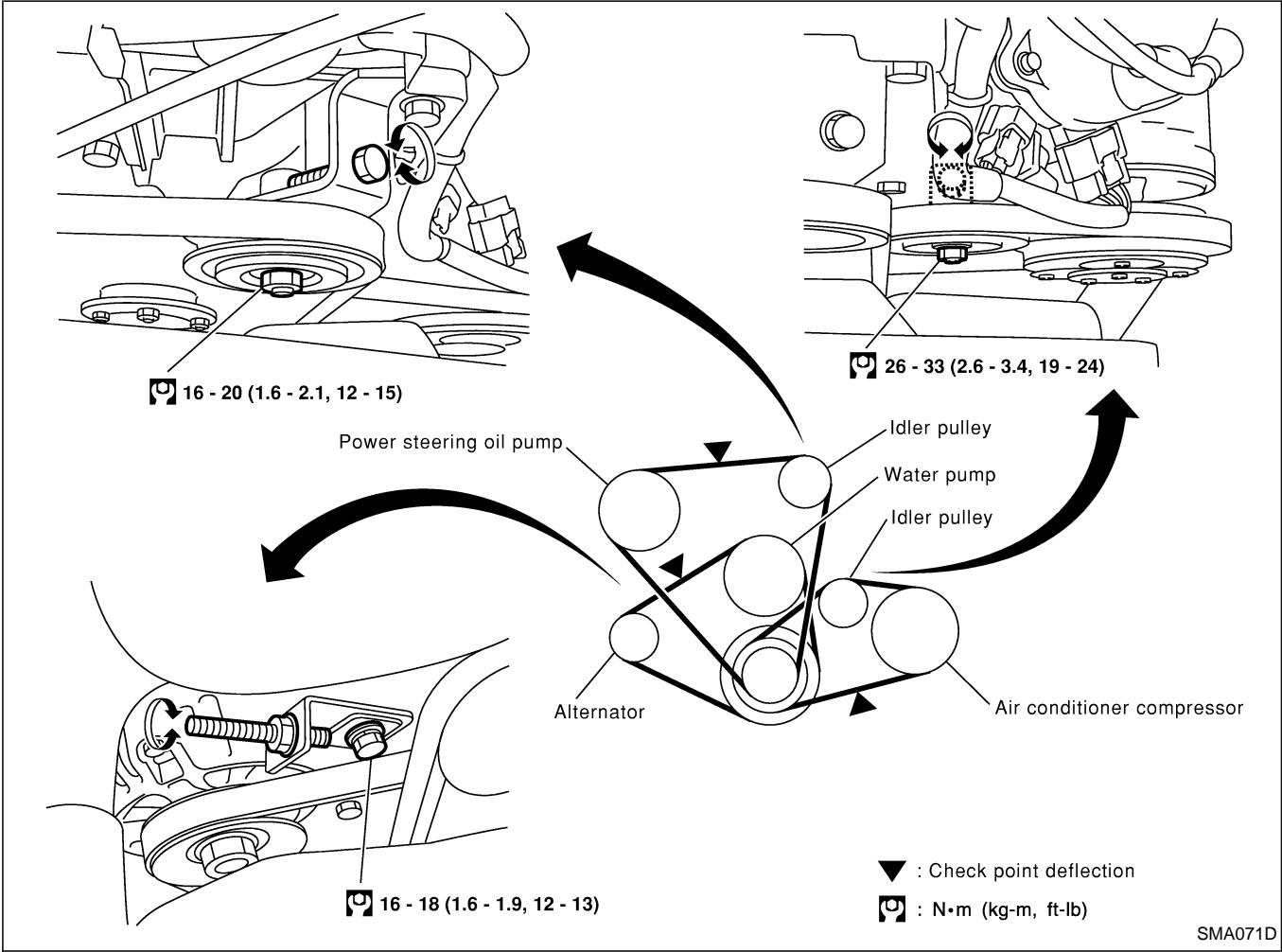


- For warm and cold areas: 75W-90 for transfer and 80W-90 for differential are preferable.
- For hot areas: 90 is suitable for ambient temperatures below 40°C (104°F).



- For cold areas: 10W-30 is preferable. On turbocharger models, 5W-20 is not recommended, and 5W-30 should be used only below 0°C (32°F).
- For hot and warm areas: 20W-40 and 20W-50 are suitable.

Checking Drive Belts



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

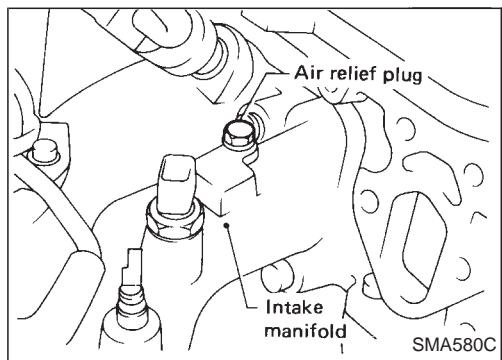
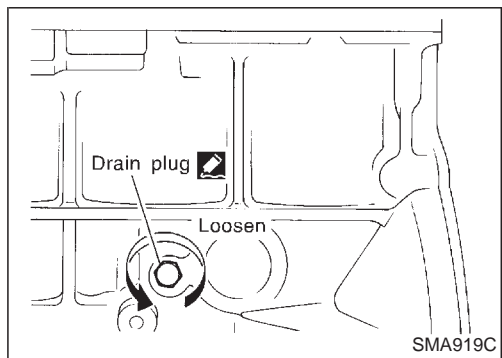
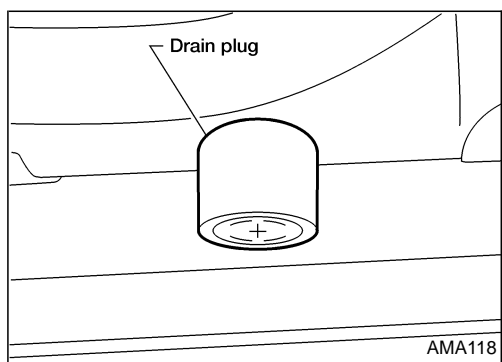
Adjust if belt deflections exceed the limit.

Belt deflection:

Unit: mm (in)

| | Used belt deflection | | Deflection of new belt |
|----------------------------|----------------------|-----------------------------|-------------------------|
| | Limit | Deflection after adjustment | |
| Alternator | 14 (0.51) | 9 - 11 (0.39 - 0.43) | 8 - 9 (0.31 - 0.35) |
| Air conditioner compressor | 15 (0.59) | 10 - 12 (0.39 - 0.47) | 8 - 10 (0.31 - 0.39) |
| Power steering oil pump | 16 (0.63) | 11 - 13 (0.43 - 0.51) | 9 - 10 (0.35 - 0.39) |
| Applied pushing force | 98 N (10 kg, 22 lb) | | |

Inspect drive belt deflections when engine is cold.



Changing Engine Coolant

WARNING:

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

–DRAINING ENGINE COOLANT–

1. Set air conditioner system as follows to prevent coolant from remaining in the system.
 - a. Turn ignition switch ON and set temperature control lever all the way to “HOT” position or the highest temperature position.
 - b. Wait 10 seconds before turning ignition switch OFF.
2. Open drain plug at the bottom of radiator, and remove radiator cap.
3. Remove reservoir tank, drain coolant, then clean reservoir tank. Install it temporarily.
- **Be careful not to allow coolant to contact drive belts.**
4. Remove cylinder block drain plug.

5. Open air relief plug.
6. Check drained coolant for contaminants such as rust, corrosion or discoloration. If contaminated, flush engine cooling system. Refer to “FLUSHING COOLING SYSTEM”, MA-11.

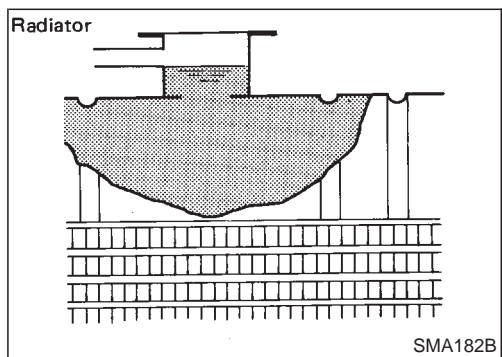
–REFILLING ENGINE COOLANT–

7. Install reservoir tank, radiator drain plug and cylinder block drain plug.
- **Apply sealant to the thread of drain plug.**
 - ⌚: 34 - 44 N·m (3.5 - 4.5 kg-m, 25 - 33 ft-lb)
8. Fill radiator until coolant spills from the air relief hole, then install air relief plug.

Air relief plug:

⌚: 7 - 8 N·m (0.7 - 0.8 kg-m, 61 - 69 in-lb)

- Use Genuine Nissan antifreeze coolant or equivalent mixed with demineralized water/distilled water.

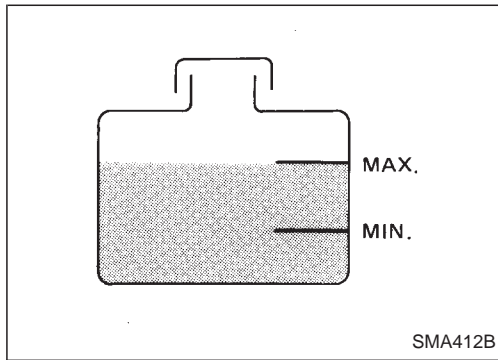


- For coolant mixture ratio, refer to “RECOMMENDED FLUIDS AND LUBRICANTS”, MA-7.

Unit: ℓ (Imp qt)

| | Coolant capacity |
|------------------------|------------------|
| Without reservoir tank | 6.3 (5-1/2) |
| Reservoir tank | 0.6 (1/2) |

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



Changing Engine Coolant (Cont'd)

9. Fill radiator and reservoir tank to specified level.
10. Warm up engine to normal operating temperature without radiator cap installed at idle speed.
- If coolant overflows radiator filler hole, install filler cap.
11. Run engine at 2,500 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.

12. Stop engine and cool it down.
- Cool down using a fan to reduce the time.
- If necessary, refill radiator up to filler neck.
13. Refill reservoir tank to MAX level line.
14. Repeat steps 10 through 13 two or more times with radiator cap installed until coolant no longer drops.
15. Check cooling system for leaks with engine running.
16. Warm up engine, and check for sound of coolant flow while running engine from idle up to 3,000 rpm with heater temperature control lever set at several positions between COOL and WARM.
- Sound may be noticeable at heater water cock.
17. If sound is heard, bleed air from cooling system by repeating steps 10 through 13 until coolant level no longer drops.
- Clean excess coolant from engine.

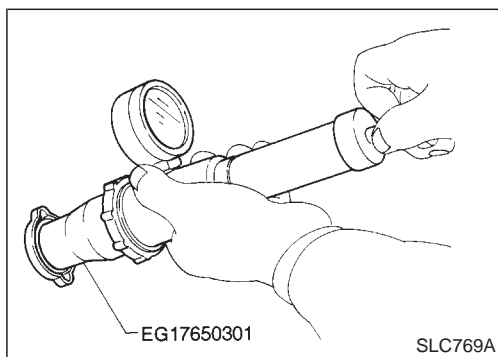
–FLUSHING COOLING SYSTEM–

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

Checking Cooling System

CHECKING HOSES

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



CHECKING RADIATOR CAP

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

Radiator cap relief pressure:

Standard

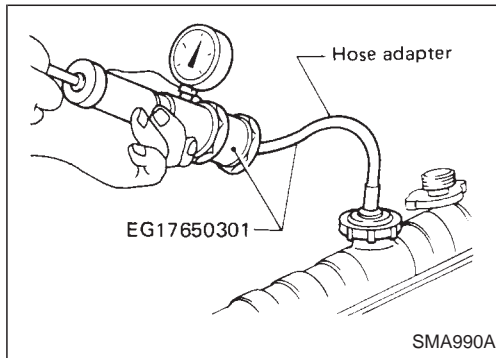
78 - 98 kPa

(0.78 - 1.0 bar, 0.8 - 1.0 kg/cm², 11 - 14 psi)

Limit

59 - 98 kPa

(0.59 - 0.98 bar, 0.6 - 1.0 kg/cm², 9 - 14 psi)



Checking Cooling System (Cont'd)

CHECKING COOLING SYSTEM FOR LEAKS

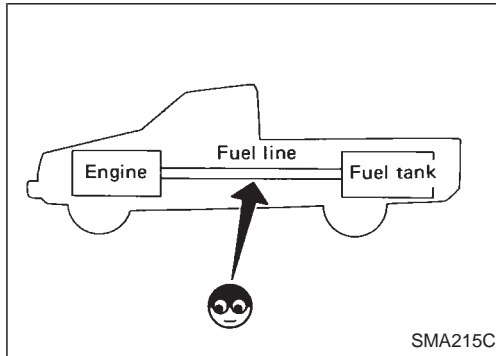
Apply pressure to the cooling system with cap tester to check for leakage.

Testing pressure:

157 kPa (1.57 bar, 1.6 kg/cm², 23 psi)

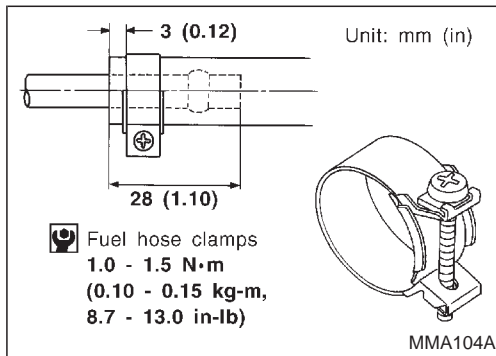
CAUTION:

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



Checking Fuel Lines

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

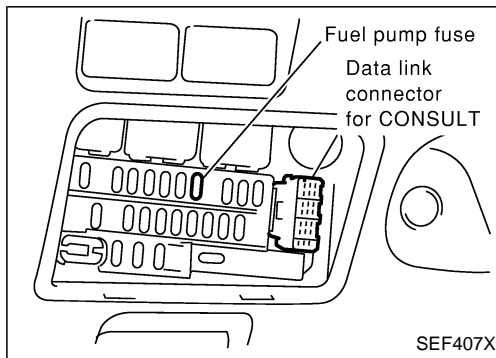


CAUTION:

Tighten high-pressure rubber hose clamp so that clamp end is 3 mm (0.12 in) from hose end.

Tightening torque specifications are the same for all rubber hose clamps.

Ensure that screw does not contact adjacent parts.

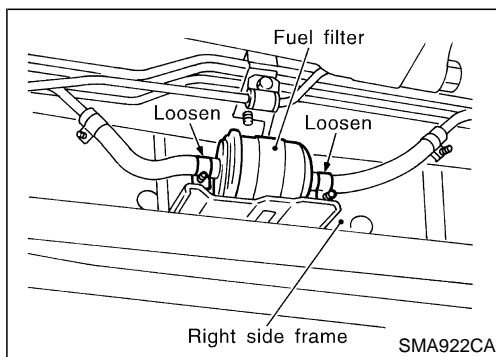


Changing Fuel Filter

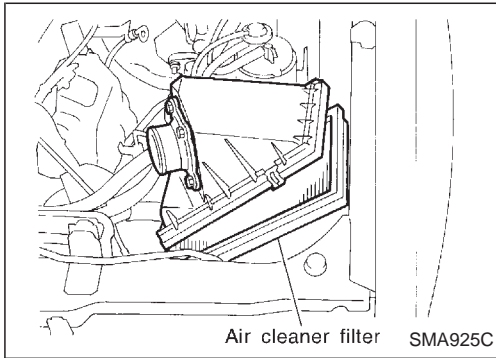
WARNING:

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

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



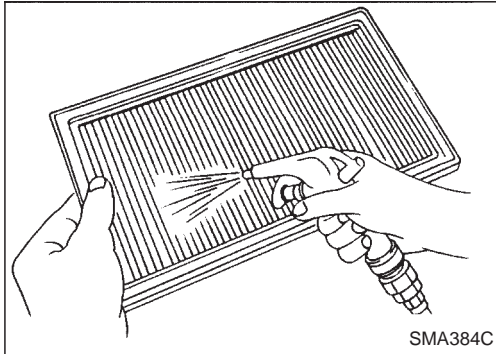
5. Loosen fuel hose clamps.
6. Replace fuel filter.
- Be careful not to spill fuel or engine compartment. Place a shop towel to absorb fuel.
- Use a high-pressure type fuel filter. Do not use a synthetic resinous fuel filter.
- When tightening fuel hose clamps, refer to "Checking Fuel Lines", MA-12.



Changing Air Cleaner Filter

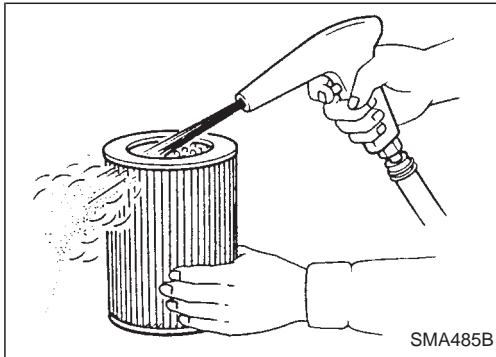
Viscous paper type

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



Dry paper type

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



Checking Cyclone Pre-air Cleaner (Built into air cleaner)

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

GI

MA

EM

LC

EC

FE

CL

MT

AT

TF

PD

FA

RA

BR

ST

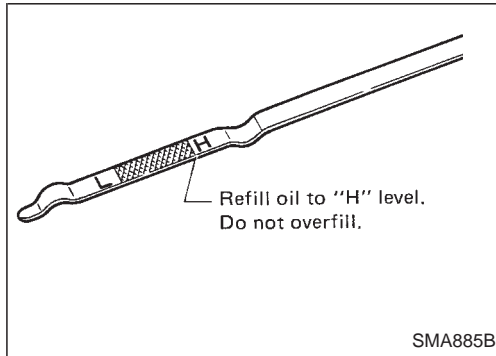
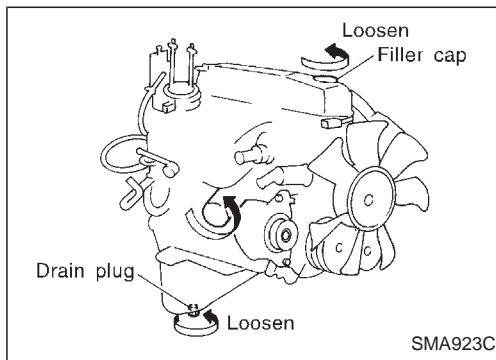
RS

BT

HA

EL

IDX



Changing Engine Oil

WARNING:

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

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

Oil grade: API SE, SF, SG or SH

Viscosity: See "RECOMMENDED FLUIDS AND LUBRICANTS", MA-8.

Refill oil capacity (Approximately):

| | Unit: ℓ (Imp qt) | |
|---------------------------|------------------|-------------|
| | 2WD | 4WD |
| With oil filter change | 3.6 (3-1/8) | 4.1 (3-5/8) |
| Without oil filter change | 3.3 (2-7/8) | 3.8 (3-3/8) |

CAUTION:

- Be sure to clean drain plug and install with new washer.
Drain plug:
 [Image of a torque wrench icon] 29 - 39 N·m (3.0 - 4.0 kg-m, 22 - 29 ft-lb)
 - Use recommended engine oil.
 - The refill capacity changes depending on the oil temperature and drain time, use these values as a reference and be certain to check with the dipstick when changing the oil.
4. Check oil level.
 5. Start engine and check area around drain plug and oil filter for oil leakage.
 6. Run engine for a few minutes, then turn it off. After several minutes, check oil level.

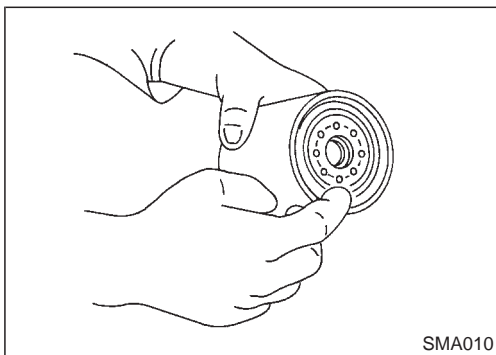
Changing Oil Filter

1. Remove oil filter with a suitable tool.
- The filter is a full-flow cartridge type and is provided with a relief valve.

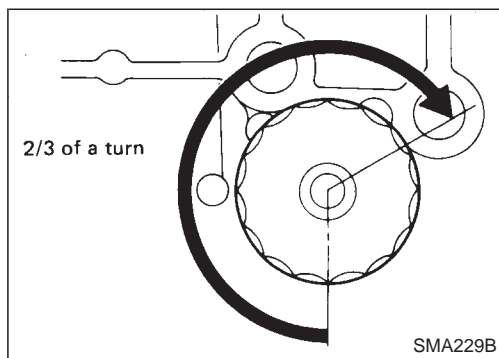
Refer to LC section ("Oil Filter", "ENGINE LUBRICATION SYSTEM").

WARNING:

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



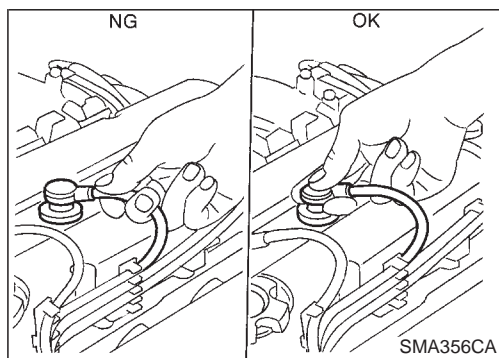
2. Before installing a new oil filter, clean the oil filter mounting surface on cylinder block, and coat the rubber seal of oil filter with a little engine oil.



Changing Oil Filter (Cont'd)

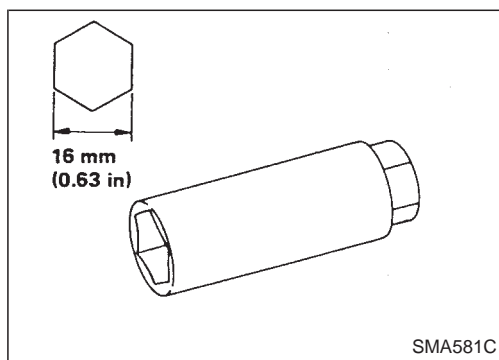
3. Screw in the oil filter until a slight resistance is felt, then tighten additionally more than 2/3 turn.
4. Add engine oil.

Refer to "Changing Engine Oil", MA-14.



Checking and Changing Spark Plugs

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



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

Spark plug:

| | |
|---------------|--------------------|
| Make | NGK |
| Standard type | BKR5E-11 |
| Cold type | BKR6E-11, BKR7E-11 |

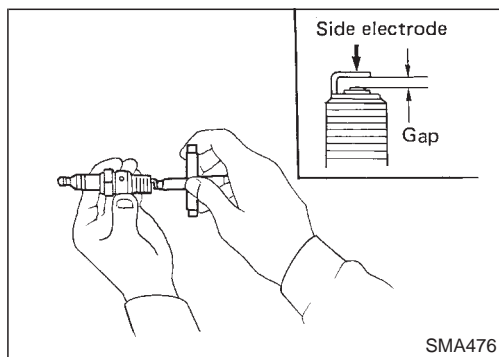
Use standard type spark plug for normal condition.

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

- frequent engine starts
- low ambient temperatures

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

- extended highway driving
- frequent high engine revolution



5. Check spark plug gap.

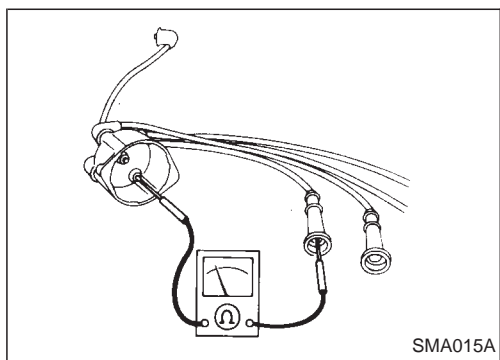
Gap: 1.0 - 1.1 mm (0.039 - 0.043 in)

Clean with a wire brush if necessary.

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

Spark plug:

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



Checking Ignition Wires

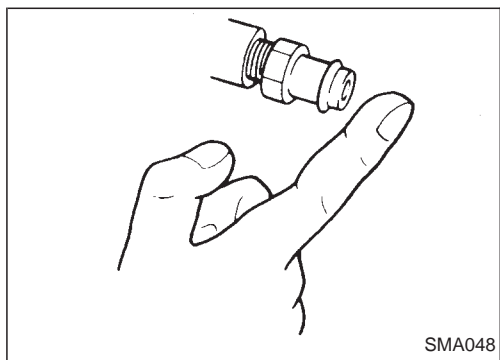
1. Check the high tension wires for cracks, damage, burned terminals and for proper fit.
2. Measure the resistance of the high tension wires, by shaking them and checking for intermittent breaks.

Resistance:

13.6 - 18.4 kΩ/m (4.15 - 5.61 kΩ/ft) [at 25°C (77°F)]

| Cylinder No. | Resistance kΩ/m [at 25°C (77°F)] |
|--------------|----------------------------------|
| 1 | Approximately 5.7 |
| 2 | Approximately 7.5 |
| 3 | Approximately 9.7 |
| 4 | Approximately 11.5 |

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



Checking Positive Crankcase Ventilation (PCV) System

CHECKING PCV VALVE

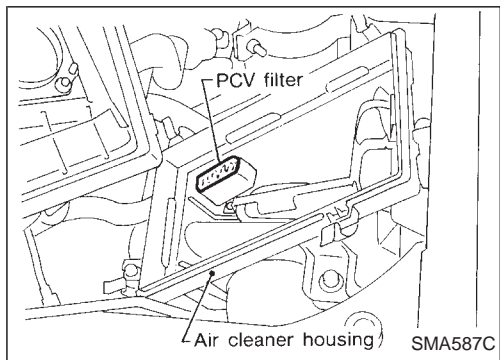
With engine running at idle, remove ventilation hose with PCV valve from breather separator; if valve is working properly, a hissing noise will be heard as air passes through it and a strong vacuum should be felt immediately when a finger is placed over valve inlet.

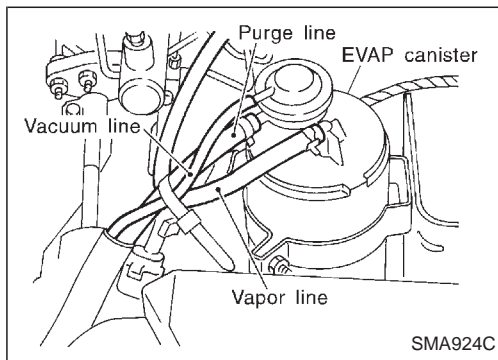
CHECKING VENTILATION HOSES

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

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 Vacuum Hoses and Connections

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

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

Checking EVAP Vapor Lines

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

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

GI

MA

EM

LC

EC

FE

CL

MT

AT

TF

PD

FA

RA

BR

ST

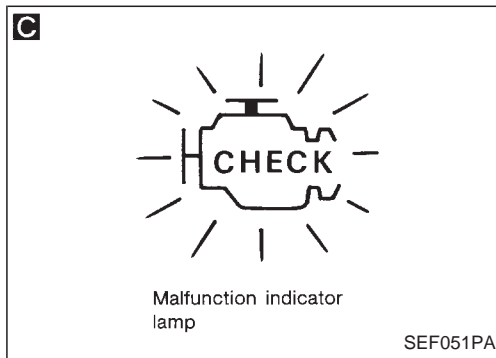
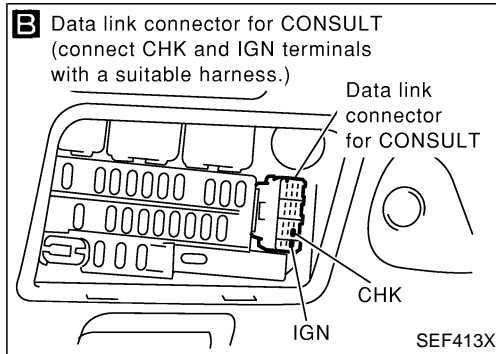
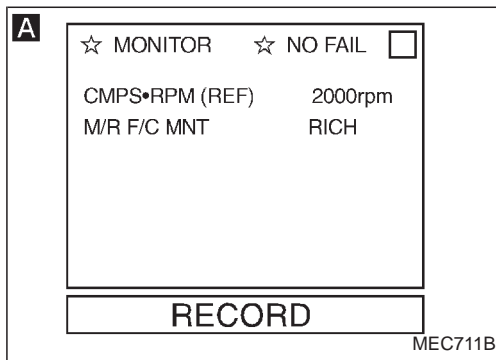
RS

BT

HA

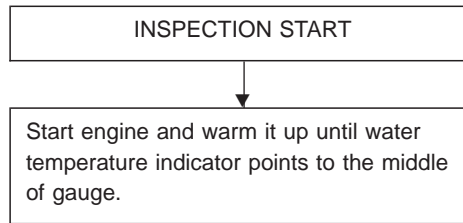
EL

IDX



Checking Heated Oxygen Sensor (HO2S)

Checking procedure



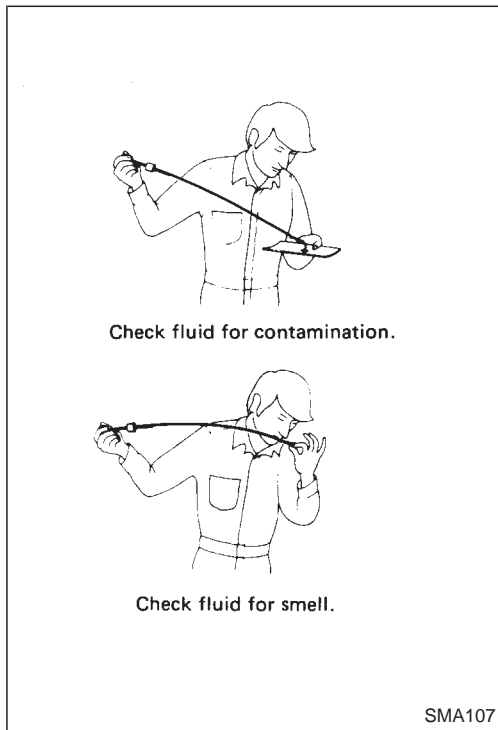
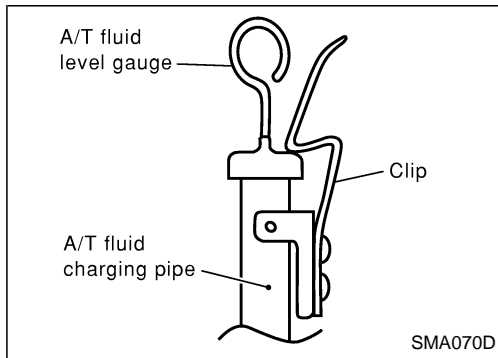
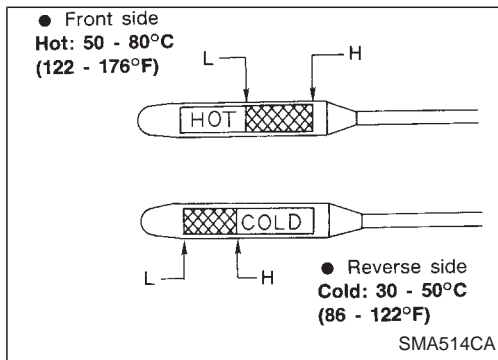
- A B C**
1. See "M/R F/C MNT" in "Data monitor" mode.
2. Run engine at about 2,000 rpm for about 2 minutes under no-load.
3. Maintaining engine at 2,000 rpm under no-load (engine is warmed up to normal operating temperature), check that the monitor fluctuates between "LEAN" and "RICH" more than 5 times during 10 seconds.
- 1 time** RICH → LEAN → RICH →
- 2 times** RICH → LEAN → RICH → LEAN → RICH → RICH
- OR
1. Set "Heated oxygen sensor monitor" in the Diagnostic test mode II.
(Refer to EC section.)
2. Run engine at about 2,000 rpm for about 2 minutes under no-load.
3. Maintaining engine at 2,000 rpm under no-load, check to make sure that malfunction indicator lamp on the instrument panel goes ON and OFF more than 5 times during 10 seconds.

OK

NG

INSPECTION END

Check and adjustment should be made by referring to IDLE SPEED/ IGNITION TIMING/IDLE MIXTURE RATIO INSPECTION in EC section.



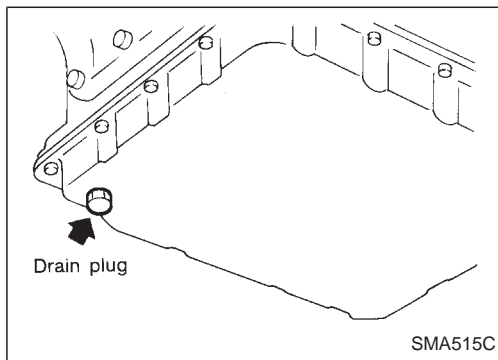
Checking A/T Fluid

1. Warm up engine.
2. Check for fluid leakage.
3. Before driving, fluid level can be checked at fluid temperatures of 30 to 50°C (86 to 122°F) using "COLD" range on A/T fluid level gauge.
 - a. Park vehicle on level surface and set parking brake.
 - b. Start engine and move selector lever through each gear position. Leave selector lever in "P" position.
 - c. Check fluid level with engine idling.
 - d. Remove A/T fluid level gauge and note reading. If level is at low side of either range, and fluid to the charging pipe.
 - e. Re-insert A/T fluid level gauge into charging pipe as far as it will go.
 - f. Remove A/T fluid level gauge and note reading. If reading is at low side of range, add fluid to the charging pipe.
- Do not overfill.**
4. Drive vehicle for approximately 5 minutes in urban areas.
5. Re-check fluid level at fluid temperatures of 50 to 80°C (122 to 176°F) using "HOT" range on A/T fluid level gauge.

CAUTION:

Securely install A/T fluid level gauge.

6. Check fluid condition.
 - If fluid is very dark or smells burned, refer to AT section for checking operation of A/T. Flush cooling system after repair of A/T.
 - If A/T fluid contains frictional material (clutches, bands, etc.), replace radiator and flush cooler line using cleaning solvent and compressed air after repair of A/T. Refer to LC section ("Radiator", "ENGINE COOLING SYSTEM").



Changing A/T Fluid

1. Warm up A/T fluid.
2. Stop engine.
3. Drain A/T fluid from drain plug and refill with new A/T fluid. Always refill same volume with drained fluid.

Fluid grade:

Genuine Nissan ATF or equivalent. Refer to "RECOMMENDED FLUIDS AND LUBRICANTS", MA-7.

Fluid capacity (With torque converter):

8.1 ℓ (7-1/8 Imp qt)

Drain plug:

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

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

Checking Differential Gear Oil

Filler plug:

Front

: 59 - 98 N·m (6 - 10 kg-m, 44 - 72 ft-lb)

Rear

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

Changing Differential Gear Oil

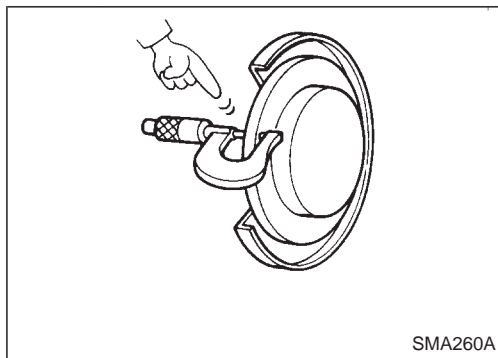
Drain plug:

Front

: 59 - 98 N·m (6 - 10 kg-m, 44 - 72 ft-lb)

Rear

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



Checking Disc Brake

ROTOR

Check condition and thickness.

Minimum thickness:

CL28VA 22 mm (0.87 in)

CL28VD 26 mm (1.02 in)

Engine Maintenance (KA24DE engine)

INSPECTION AND ADJUSTMENT

Drive belt deflection

| Unit: mm (in) | | | |
|----------------------------|----------------------|-----------------------------|-------------------------|
| | Used belt deflection | | Deflection of new belt |
| | Limit | Deflection after adjustment | |
| Alternator | 14 (0.51) | 9 - 11 (0.35 - 0.43) | 8 - 9 (0.31 - 0.35) |
| Air conditioner compressor | 15 (0.59) | 10 - 12 (0.39 - 0.47) | 8 - 10 (0.31 - 0.39) |
| Power steering oil pump | 16 (0.63) | 11 - 13 (0.43 - 0.51) | 9 - 10 (0.35 - 0.39) |
| Applied pushing force | 98 N (10 kg, 22 lb) | | |

Spark plug

| | |
|---------------|-----------------------------------|
| Standard type | BKR5E-11 |
| Cold type | BKR6E-11, BKR7E-11 |
| Plug gap | mm (in) 1.0 - 1.1 (0.039 - 0.043) |

Ignition wire

13.6 - 18.4 kΩ/m (4.15 - 5.61 kΩ/ft) [at 25°C (77°F)]

| Cylinder No. | Resistance kΩ [at 25°C (77°F)] |
|--------------|--------------------------------|
| 1 | Approximately 5.7 |
| 2 | Approximately 7.5 |
| 3 | Approximately 9.7 |
| 4 | Approximately 11.5 |

GI

MA

EM

LC

EC

FE

CL

MT

AT

TF

PD

FA

RA

BR

ST

RS

BT

HA

EL

IDX