

ENGINE LUBRICATION SYSTEM

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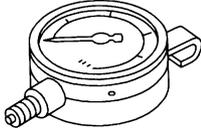
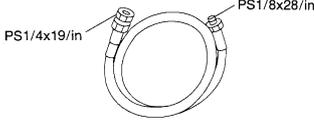
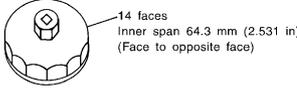
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PREPARATION

PFP:00002

Special Service Tools

EBS007KU

Tool number Tool name	Description
ST25051001 Oil pressure gauge	Measuring oil pressure Maximum measuring range: 2,452 kPa (25 kg/cm², 356 psi)
 S-NT050	
ST25052000 Hose	Adapting oil pressure gauge to cylinder block
 S-NT559	
KV10115801 Oil filter wrench	Removing oil filter
 S-NT772	

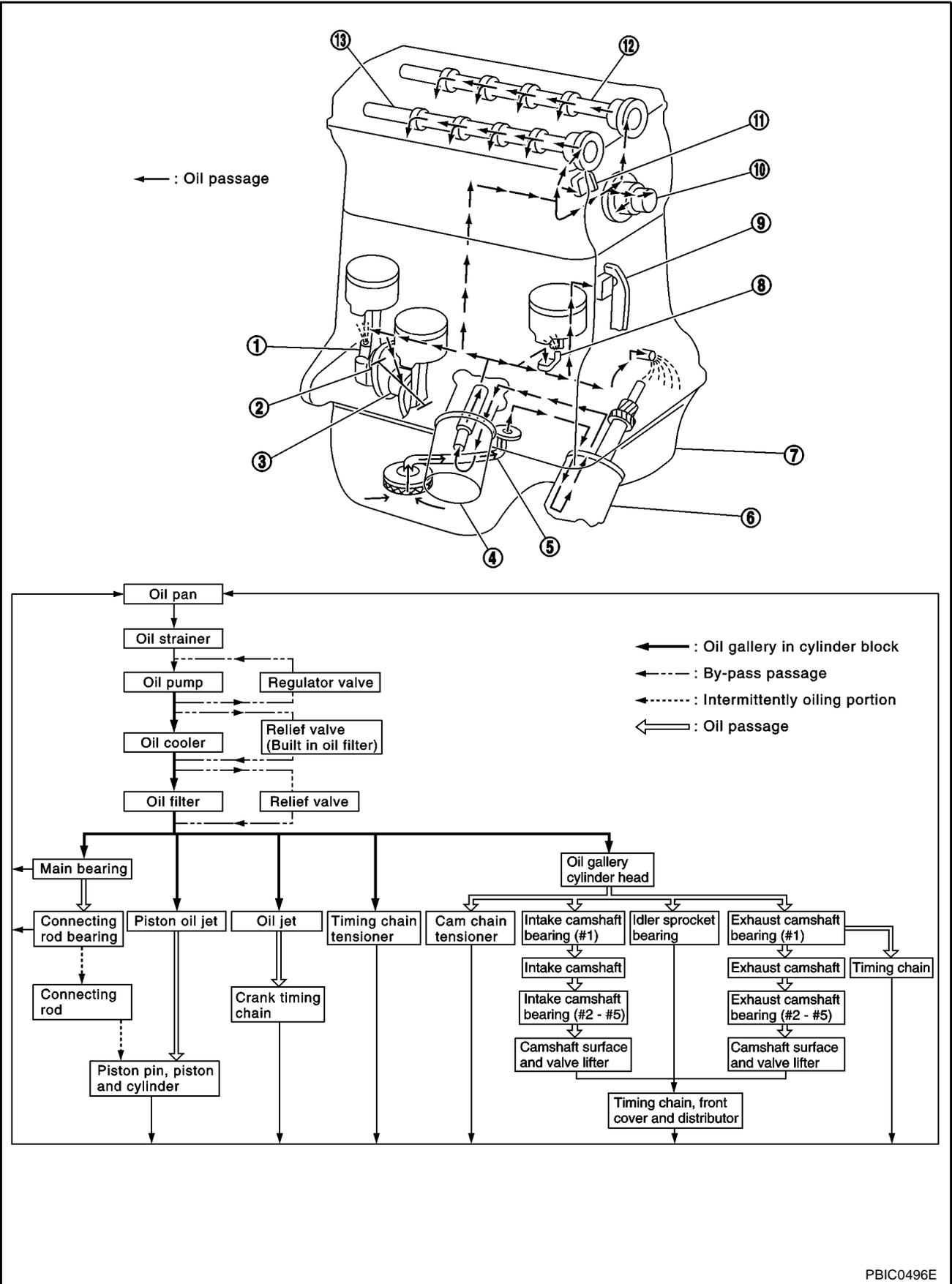
LUBRICATION SYSTEM

PF15010

Lubrication Circuit

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PBIC0496E

LUBRICATION SYSTEM

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|----|-----------------|----|------------------------------|----|------------------------|
| 1 | Connecting rod | 2 | Connecting rod bearing | 3 | Main bearing |
| 4 | Oil filter | 5 | Oil strainer | 6 | Oil pump |
| 7 | Oil pan | 8 | Piston oil jet | 9 | Timing chain tensioner |
| 10 | Idler sprocket | 11 | Upper timing chain tensioner | 12 | Exhaust camshaft |
| 13 | Intake camshaft | | | | |

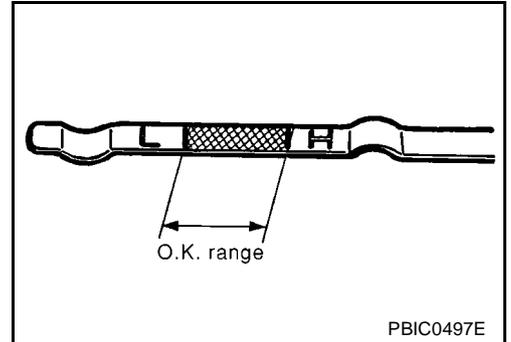
ENGINE OIL

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EBS007KX

Inspection OIL LEVEL

- Before starting the engine, check the oil level. If the engine is already started, stop it and allow 10 minutes before checking.
- Check that the oil level is within the range shown in the figure.
- If it is out of range, adjust it.



OIL APPEARANCE

- Check the oil for a white milky appearance or excessive contamination.
- If the oil is milky, it is highly probable that it is contaminated with coolant. Repair the broken parts.

OIL LEAKAGE

Check for oil leakage around the following area.

- Oil pan
- Oil pan drain plug
- Oil pressure switch
- Oil filter
- Mating surface between cylinder block and cylinder head
- Mating surface between cylinder head and rocker cover
- Front cover
- Crank oil seal (front and rear)

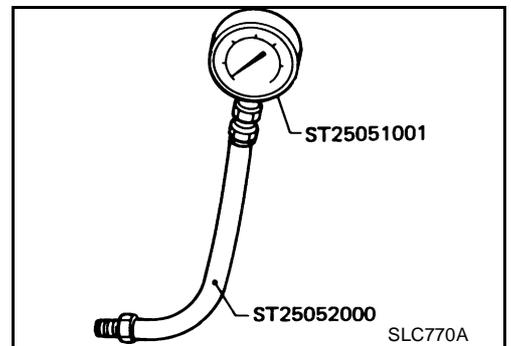
OIL PRESSURE CHECK

WARNING:

- Be careful not to burn yourself, as the engine oil is hot.
 - Oil pressure check should be done in "Parking position".
1. Check the oil level.
 2. Remove air duct on throttle body. Refer to [EM-16, "AIR CLEANER AND AIR DUCT"](#) .
 3. Remove the oil pressure switch through space between No. 2 and No. 3 branch to connect the oil pressure gauge.
 4. Install air duct, remove at step 2, on throttle body.
 5. After warming up the engine, check that oil pressure corresponding to the engine speed is produced.

NOTE:

When oil temperature is low, the oil pressure becomes high.



Engine oil pressure [Oil temperature is 80 °C (176 °F)]

Engine speed (rpm)	Idle speed	2,000	6,000
Oil pressure kPa (bar, kg/cm ² , psi)	Approx. 60 (0.60, 0.6, 9) or more	Approx. 220 (2.20, 2.2, 32) or more	Approx. 350 (3.50, 3.6, 51) or more

If difference is extreme, check oil passage and oil pump for oil leaks.

6. After checking, install the oil pressure switch as follows.
 - Remove old sealant adhering to the switch and engine.
 - Apply thread sealant.
Use Genuine Liquid Gasket or equivalent.

 : 12.3 - 17.2 N-m (1.25 - 1.75 kg-m, 10 - 12 ft-lb)

Changing Engine Oil

EBS007KY

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.
 2. Stop engine and wait for 10 minutes.
 3. Remove engine room LH cove and secure it. Refer to [EM-12, "ENGINE ROOM COVER"](#) .
 4. Remove drain plug and oil filler cap.
 5. Drain oil.
 6. Install drain plug and refill with new engine oil.

Oil specification and viscosity:

- API Certification Mark
- API grade SE, SF, SG, SH or SJ
- ILSAC grade GF-I or GF-II
- Refer to [MA-11, "RECOMMENDED FLUIDS AND LUBRICANTS"](#) .

Oil capacity (Approximate):

Unit: liter (Imp qt)

Drain and refill	With oil filter change	Approximately 3.6 (3-1/8)
	Without oil filter change	Approximately 3.3 (2-7/8)
Dry engine (engine overhaul)		Approximately 4.4 (3-7/8)

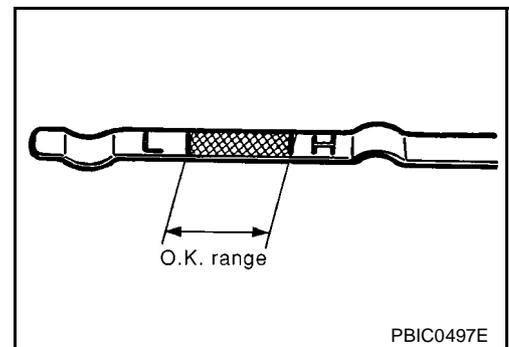
CAUTION:

- Be sure to clean drain plug and install with new washer.

Oil pan drain plug:

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

- The refill capacity depends on the oil temperature and drain time. Use these specifications for reference only.
 - Always use the dipstick to determine when the proper amount of oil is in the engine.
7. Warm up engine and check area around drain plug and oil filter for oil leakage.
 8. Stop engine and wait for 10 minutes.
 9. Check oil level.



OIL FILTER

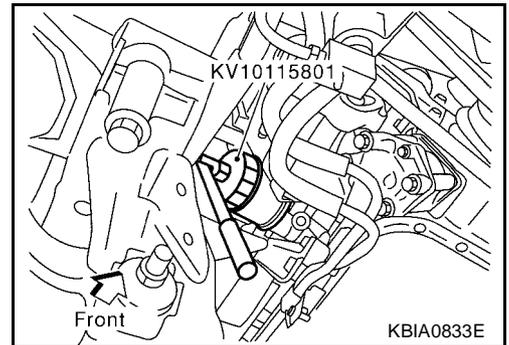
Removal and Installation

REMOVAL

1. Remove front-side under cover.
2. Using an oil filter wrench, remove the oil filter.

CAUTION:

- Be careful not to get burned when the engine and engine oil are hot.
- When removing, prepare a shop cloth to absorb any oil leakage or spillage.
- Do not allow engine oil to adhere to the drive belts.
- Completely wipe off any oil that adhere to the engine and the vehicle.

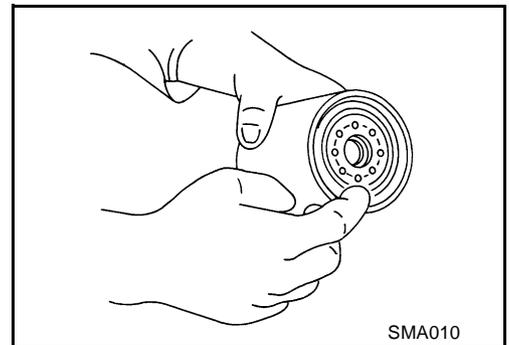


INSTALLATION

1. Remove foreign materials adhering to the oil filter installation surface.
2. Apply engine oil to the oil seal circumference of the new oil filter.

CAUTION:

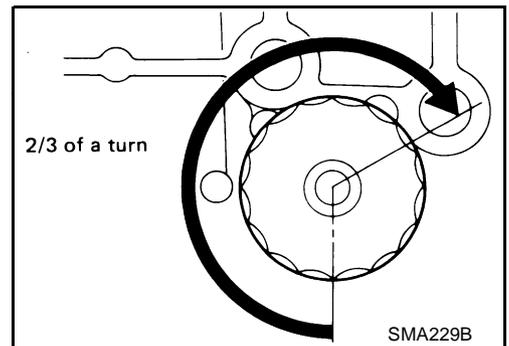
- The oil filter is provided with a relief valve. Use genuine NISSAN oil filter or equivalent.



3. Screw the oil filter manually until it touches the installation surface, then tighten it by 2/3 turn.

Oil filter:

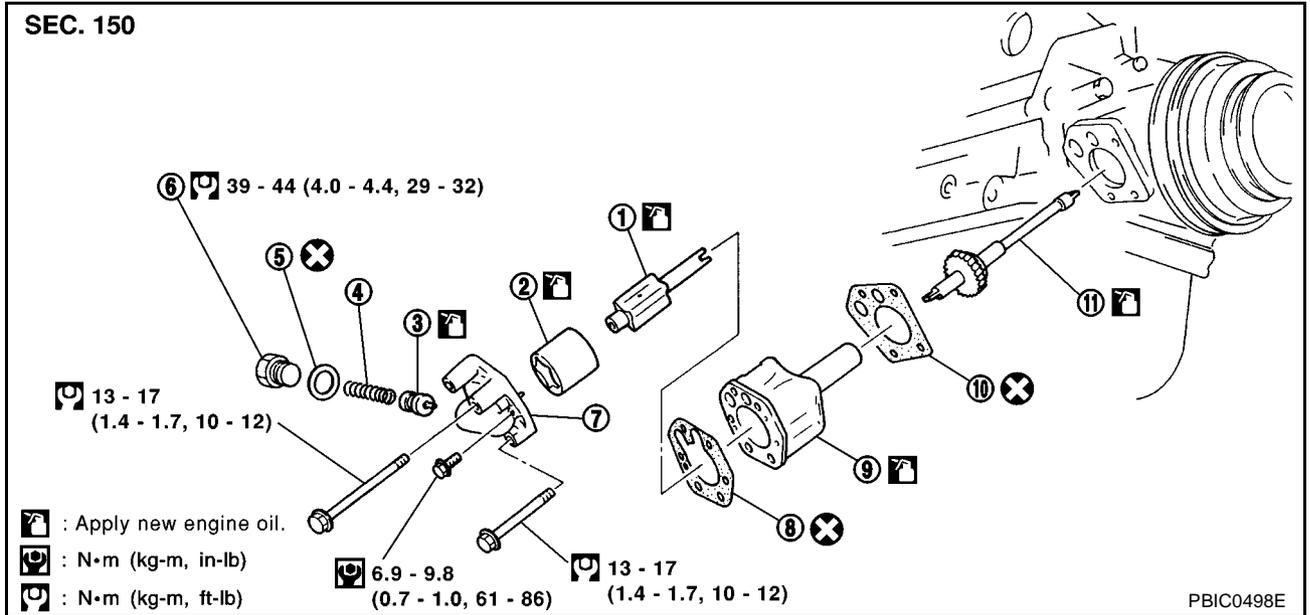
 : 14.7 - 20.5 N·m (1.5 - 2.1 kg-m, 11 - 15 ft-lb)



4. After warming up the engine, check for engine oil leakage.
5. Check oil level and add engine oil. Refer to [LU-5, "ENGINE OIL"](#).

OIL PUMP

Removal and Installation



- | | | |
|------------------|---------------------------|-------------------|
| 1 Inner rotor | 2 Outer rotor | 3 Regulator valve |
| 4 Spring | 5 Washer | 6 Cap |
| 7 Oil pump cover | 8 Gasket | 9 Oil pump body |
| 10 Gasket | 11 Oil pump drive spindle | |

CAUTION:

Before installation, apply new engine oil to the parts as instructed in the figure.

REMOVAL

- Remove front-side under cover.
- Remove engine room LH cover and secure it.
- Remove distributor.
 - Make sure that distributor rotor is at the compression TDC of No. 1 cylinder, and remove distributor. Refer to [EM-32, "CAMSHAFT"](#).

NOTE:

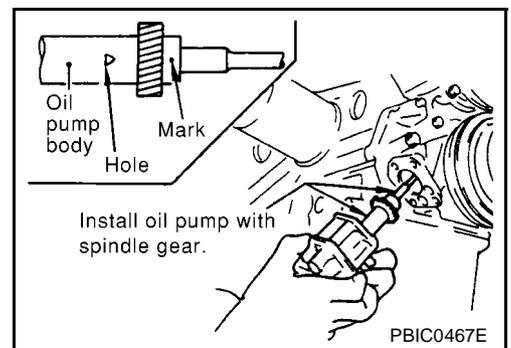
When only distributor is to be removed, it can be removed at any position. But in order to find the reference position for oil pump installation beforehand, it is necessary to remove distributor at the compression TDC of No. 1 cylinder.

- Remove the oil pump.

INSTALLATION

Install in the reverse order of removal paying attention to the following.

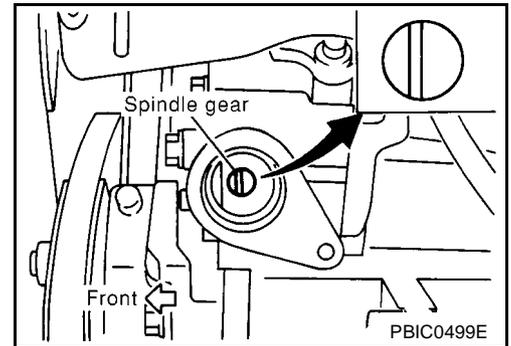
- Make sure that No. 1 cylinder is at compression TDC.
- Insert oil pump straight into engine with mounting bolt hole aligned with the one on engine



OIL PUMP

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- when viewing from distributor side, confirm that spindle gear projection is at the position shown in the figure.



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Disassembly and Assembly

DISASSEMBLY

1. Remove oil pump cover.
2. Remove inner rotor and outer rotor from.
3. Remove regulator cap, regulator spring and regulator valve.

INSPECTION AFTER DISASSEMBLY

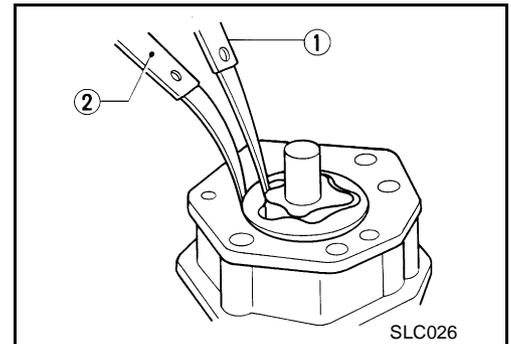
Clearance of Oil pump Parts

- Measure clearance with feeler gauge.
Tip clearance between inner rotor and outer rotor (position 1)

Standard : Less than 0.12 mm (0.0047in)

Clearance between outer rotor and oil pump body (position 2)

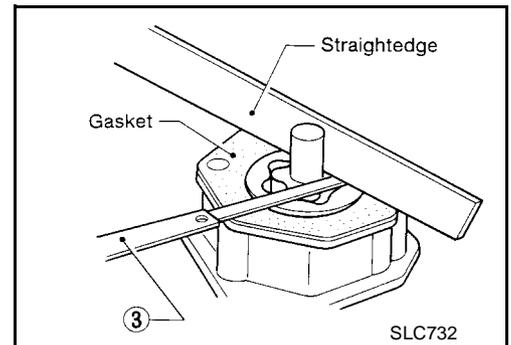
Standard : 0.15 - 0.21 mm (0.0059 - 0.0083 in)



- Measure clearance with feeler gauge and straightedge.
Side clearance between inner rotor and oil pump body (position 3)

Standard : 0.04 - 0.08 mm (0.0016 - 0.0031 in)

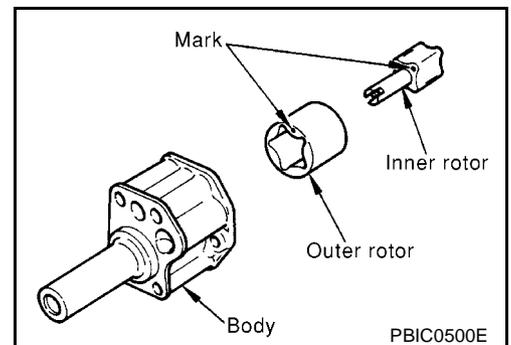
- If the clearance at position (1) exceed the standard, replace rotor set. If clearance at position (2) and (3) exceed the standard, replace oil pump assembly.



ASSEMBLY

Install in the reverse order of removal paying attention to the following.

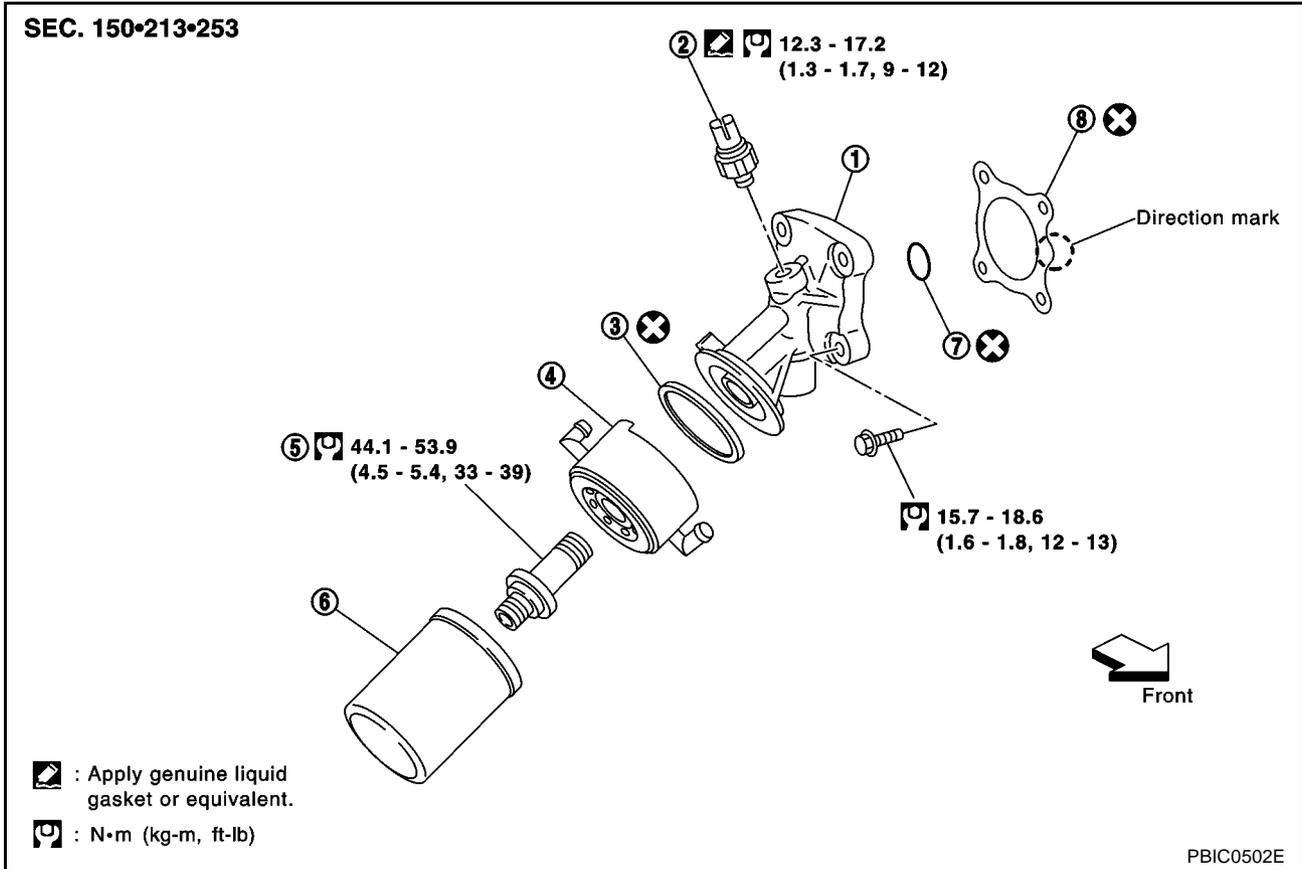
- Install outer rotor and inner rotor with their marks facing the body.
- Install the oil pump cover with knock pin on its back surface aligned with the hole on the oil pump body.



OIL COOLER

Removal and Installation

EBS009L0



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|----------------------|-----------------------|--------------|
| 1 Oil cooler bracket | 2 Oil pressure switch | 3 O-ring |
| 4 Oil cooler | 5 Connector bolt | 6 Oil filter |
| 7 O-ring | 8 Gasket | |

REMOVAL

1. Remove oil filter. Refer to [LU-7, "OIL FILTER"](#).
2. Drain coolant. Refer to [CO-9, "ENGINE COOLANT"](#).

CAUTION:

Perform when the engine is cold.

3. Remove water hose from oil cooler.
4. Remove connector bolt.
5. Remove oil cooler.

INSPECTION AFTER REMOVAL

- Check coolant passage of oil cooler for clogging by blowing through it. Replace if necessary.

INSTALLATION

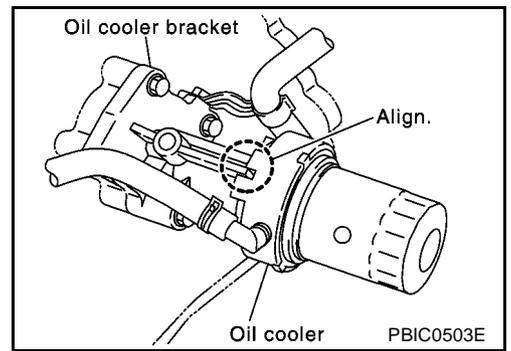
Install in the reverse order of removal paying attention to the following.

- Be sure to clean the O-ring and mounting surface for oil cooler and oil filter.

OIL COOLER

[KA24DE]

- Install oil cooler to oil cooler bracket aligning the protrusion of flange as shown.



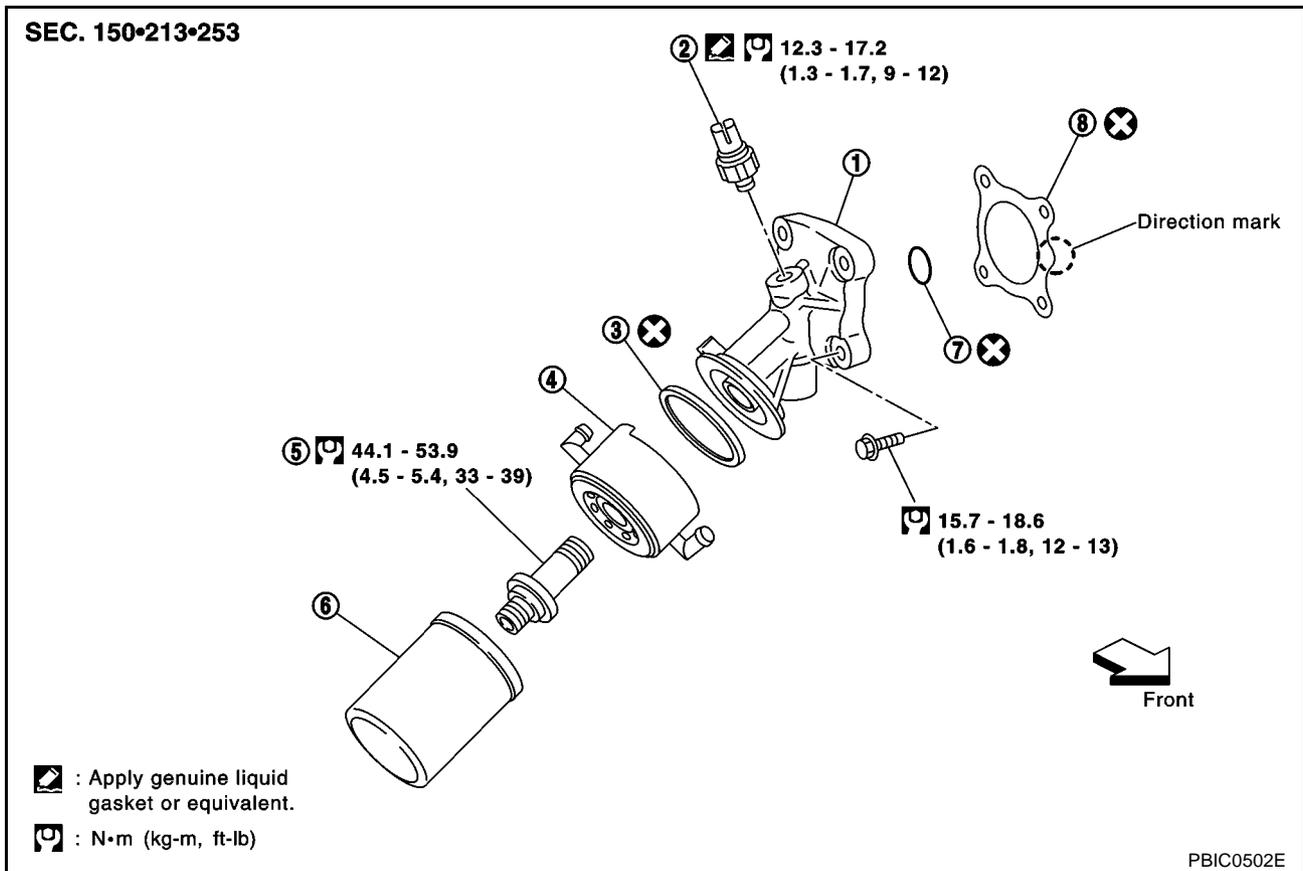
INSPECTION AFTER INSTALLATION

- After warming up the engine, check for engine oil leakage.
- Check oil level and add engine oil. Refer to [LU-5, "ENGINE OIL"](#).

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OIL COOLER BRACKET

Removal and Installation



1 Oil cooler bracket	2 Oil pressure switch	3 O-ring
4 Oil cooler	5 Connector bolt	6 Oil filter
7 O-ring	8 Gasket	

REMOVAL

1. Remove intake manifold. Refer to [EM-21, "INTAKE MANIFOLD"](#) .
2. Disconnect oil pressure switch harness connector.
3. Remove oil filter. Refer to [LU-7, "OIL FILTER"](#) .
4. Remove oil cooler. Refer to [LU-10, "OIL COOLER"](#) .
5. Remove oil cooler bracket.

INSTALLATION

Installation is in the reverse order of removal paying attention to the following.

- Install gasket with its projection for direction identification facing the engine front side. Refer to Component Parts Illustration.
- Apply liquid gasket to the threads of oil pressure switch.

INSPECTION AFTER INSTALLATION

- After warming up the engine, check for engine oil leakage.
- Check oil level and add engine oil. Refer to [LU-5, "ENGINE OIL"](#) .

SERVICE DATA AND SPECIFICATIONS (SDS)

[KA24DE]

SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

Standard and Limit OIL PRESSURE

EBS007L2

Engine speed rpm	Approximate discharge pressure kPa (bar, kg/cm ² , psi)
Idle speed	More than 60 (0.60, 0.6, 9)
2,000	More than 220 (2.20, 2.2, 32)
6,000	More than 350 (3.50, 3.6, 51)

OIL PUMP

Unit: mm (in)

Rotor tip clearance	Less than 0.12 (0.0047)
Outer rotor to body clearance	0.15 - 0.21 (0.0059 - 0.0083)
Side clearance (with gasket)	0.04 - 0.08 (0.0016 - 0.0031)

OIL CAPACITY

Unit: liter (Imp qt)

With oil filter change	Approximately 3.6 (3 - 1/8)
Without oil filter change	Approximately 3.3 (2 - 7/8)
Dry engine (engine overhaul)	Approximately 4.4 (3 - 7/8)

Tightening Torque

EBS007L3

Unit: N·m (kg·m, ft·lb)

Oil pressure switch	12.3 - 17.2 (1.25 - 1.75, 10 - 12)
Oil pan drain plug	29 - 39 (3.0 - 4.0, 22 - 29)
Oil pump cover	13 - 17 (1.4 - 1.7, 10 - 12)
Regulator plug	39.2 - 68.6 (4.0 - 6.9, 29 - 50)
Oil cooler bracket	15.7 - 18.6 (1.6 - 1.9, 12 - 13)

PRECAUTIONS

PFP:00001

Precautions for Liquid Gasket REMOVAL OF LIQUID GASKET SEALING

EBS007HD

- After removing the mounting bolts and nuts, disconnect and remove the liquid gasket sealing using a seal cutter.

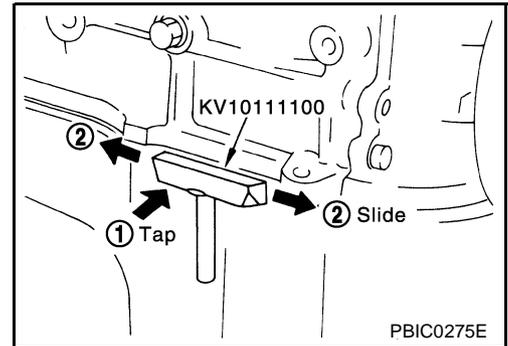
CAUTION:

Be careful not to damage the mating surfaces.

- In areas where the cutter is difficult to use, use a plastic hammer to lightly tap the areas where the liquid gasket is applied.

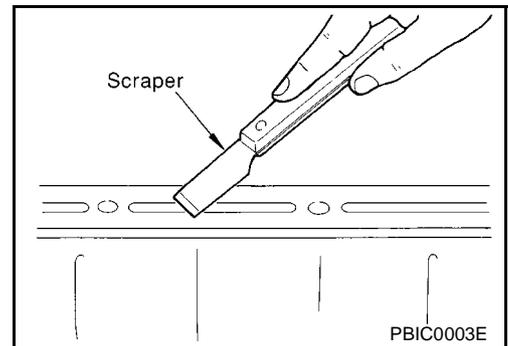
CAUTION:

If for some unavoidable reason a tool such as a flat-bladed screwdriver is used, be careful not to damage the mating surfaces.

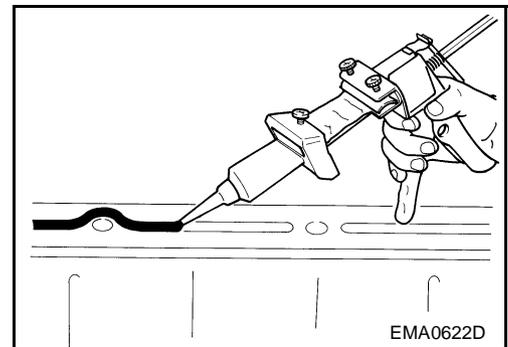


LIQUID GASKET APPLICATION PROSEDURE

1. Using a scraper, remove the old liquid gasket adhering to the gasket application surface and the mating surface.
 - Remove the liquid gasket completely from the groove of the gasket application surface, mounting bolts, and bolt holes.
2. Wipe the gasket application surface and the mating surface with white gasoline (lighting and heating use) to remove adhering moisture, grease and foreign materials.
3. Attach genuine liquid gasket to the tube presser.
 - **Use Genuine Liquid Gasket or equivalent.**
4. Apply the gasket without breaks to the specified location with the specified dimensions.
 - If there is a groove for the liquid gasket application, apply the gasket to the groove.



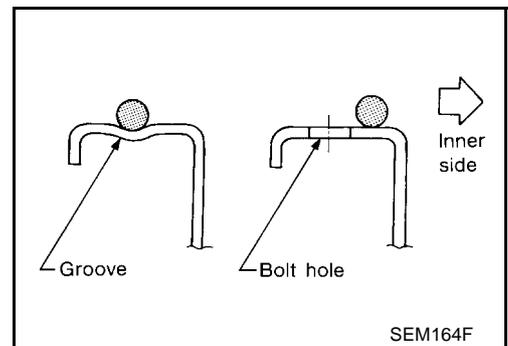
4. Apply the gasket without breaks to the specified location with the specified dimensions.
 - If there is a groove for the liquid gasket application, apply the gasket to the groove.



- As for the bolt holes, normally apply the gasket inside the holes. Occasionally, it should be applied outside the holes. Make sure to read the text of service manual.
- Within five minutes of gasket application, install the mating component.
- If the liquid gasket protrudes, wipe it off immediately.
- Do not retighten after the installation.
- After 30 minutes or more have passed from the installation, fill the engine oil and coolant.

CAUTION:

If there are specific instructions in the service manual, observe them.

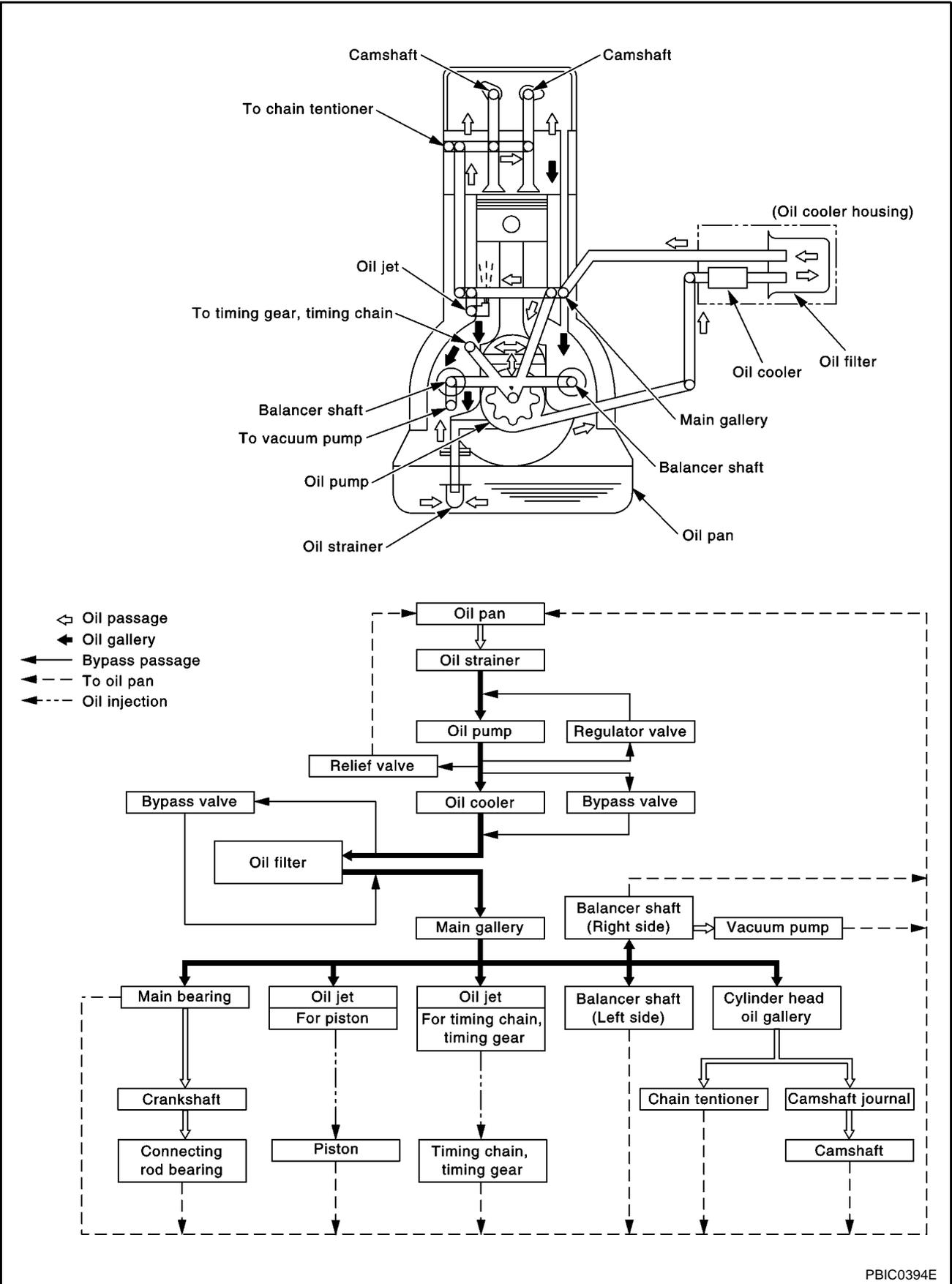


LUBRICATION SYSTEM

PF15010

Lubrication Circuit

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ENGINE OIL

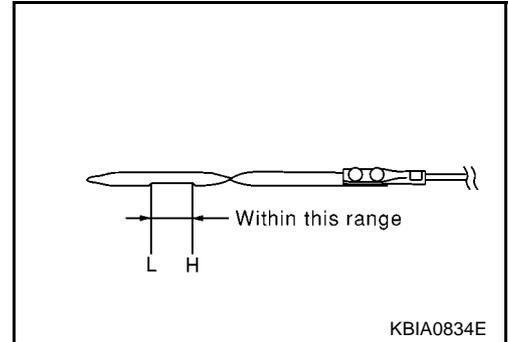
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Inspection

EBS007A0

OIL LEVEL AND OIL APPEARANCE

- Before starting the engine, check the oil level. If the engine is already started, stop it and allow 10 minutes before checking.
- Check that the oil level is within the range shown in the figure.
- If it is out of range, adjust it.
- Check the oil for a white milky appearance or excessive contamination.
- If the oil is milky, it is highly probable that it is contaminated with coolant. Repair the broken parts.



OIL LEAKAGE

Check for oil leakage around the following area.

- Oil pan
- Oil pan drain plug
- Oil pressure switch
- Oil cooler
- Oil filter
- Mating surface between cylinder block and cylinder head
- Mating surface between cylinder head and rocker cover
- Front cover

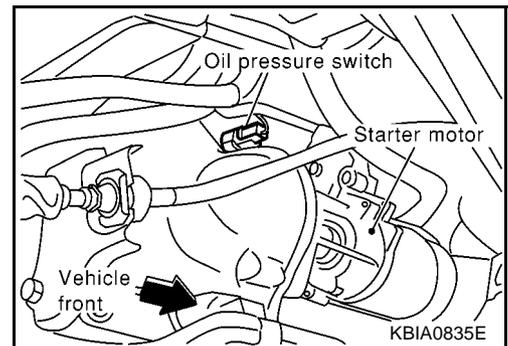
OIL PRESSURE CHECK

WARNING:

- Be careful not to burn yourself, as the engine oil is hot.
 - Oil pressure check should be done in “Parking position”.
1. Check the oil level.
 2. Remove the rear side under cover.
 3. Remove the oil pressure switch to connect the oil pressure gauge.
 4. After warming up the engine, check that oil pressure corresponding to the engine speed is produced.

NOTE:

When oil temperature is low, the oil pressure becomes high.



Engine oil pressure

Engine speed (rpm)	Idle speed	2,000	3,800
Oil pressure kPa (bar, kg/cm ² , psi)	More than 147 (1.47, 1.5, 21)	More than 294 (2.94, 3.0, 43)	More than 392 (3.92, 4.0, 57)

If difference is extreme, check oil passage and oil pump for oil leaks.

5. After checking, install the oil pressure switch as follows.
 - a. Remove old sealant adhering to the switch and engine.
 - b. Apply thread sealant.

Use Genuine Liquid Gasket or equivalent.

 : 12.3 - 17.2 N·m (1.25 - 1.75 kg-m, 10 - 12 ft-lb)

Changing Engine Oil

EBS007A1

WARNING:

- Be careful not to burn yourself, as the engine oil is hot.
 - Prolonged and repeated contact with used engine oil may cause skin cancer; try to avoid direct skin contact with used oil. If skin contact is made, wash thoroughly with soap or hand cleaner as soon as possible.
1. Warm up engine, and check for oil leakage from engine components.
 2. Stop engine and wait for 10 minutes.
 3. Open engine room LH cover and secure it.
 4. Remove drain plug and oil filler cap.
 5. Drain engine oil.
 6. Install drain plug and refill with new engine oil.

CAUTION:

- Be sure to clean drain plug and install with new washer.

Oil pan drain plug:

 : 53.9 - 58.8 N·m (5.5 - 6.0 kg-m, 40 - 43 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.

Oil specification and viscosity:

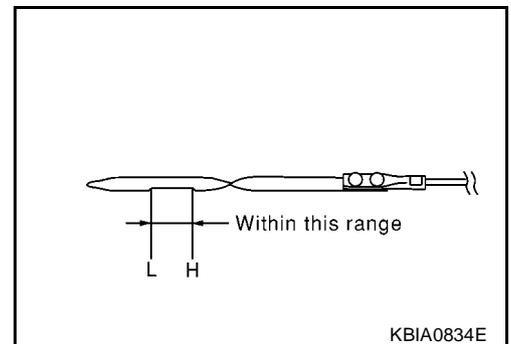
- API grade CE, CF or CF-4
- Refer to [MA-11, "RECOMMENDED FLUIDS AND LUBRICANTS"](#) .

Oil capacity (Approximate):

Unit: liter (Imp qt)

Drain and refill	With oil filter change	Approximately 6.9 (6-1/8)
	Without oil filter change	Approximately 6.4 (5-5/8)
Dry engine (engine overhaul)		Approximately 7.6 (6-3/4)

7. Warm up engine and check area around drain plug and oil filter for oil leakage.
8. Stop engine and wait for 10 minutes.
9. Check oil level.



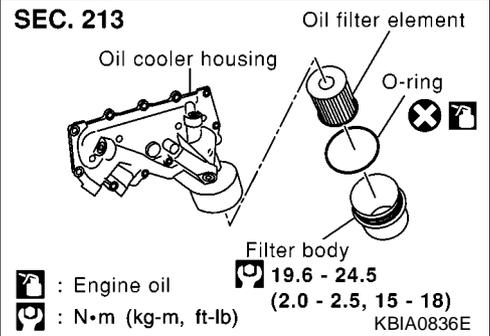
OIL FILTER

Removal and Installation

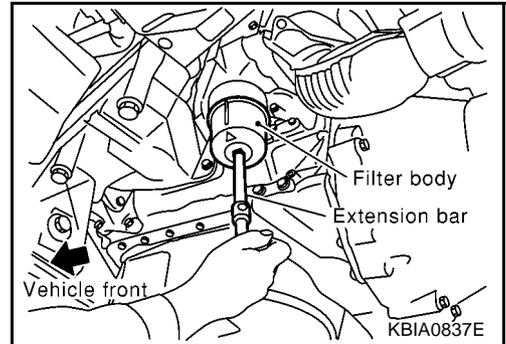
REMOVAL

EBS007HG

SEC. 213



1. Open access hole on undercover.
2. Insert 12.7 mm (1/2 inch) square extension bar into square hole on filter body. Loosen it by approximately 4 turns.



3. Align protrusions on front of oil cooler housing and on filter body (indicated by Δ mark) to drain oil.
 - Catch the oil with a pan or cloth.

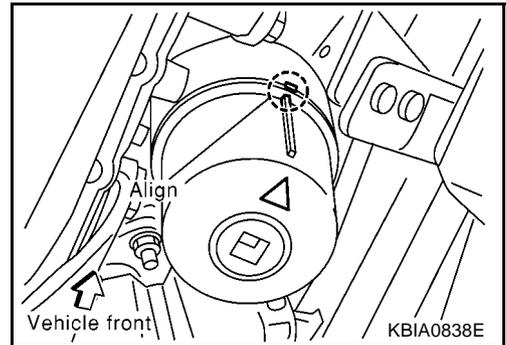
NOTE:

- It takes approx. 3 minutes to completely drain oil.
- The drained oil flows over the right surface of the filter body.

CAUTION:

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

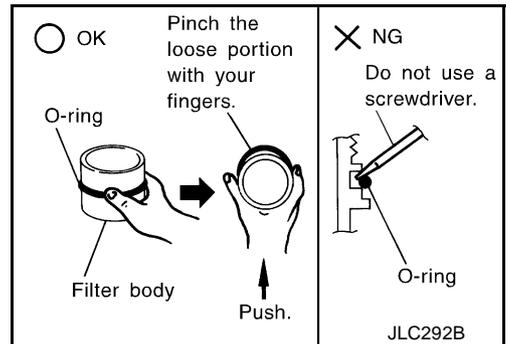
4. Remove the filter body, then remove the oil filter element.



5. 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 (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. Apply engine oil to the oil seal circumference of the oil filter body.
4. Install the filter body to the oil filter bracket.
5. Screw the oil filter body manually until it touches the installation surface.

 : 20 - 24 N-m (2.0 - 2.5 kg-m, 15 - 18 ft-lb)

A

6. After warming up the engine, check for engine oil leakage.
7. Check oil level and add engine oil. Refer to [LU-16, "ENGINE OIL"](#).

LU

C

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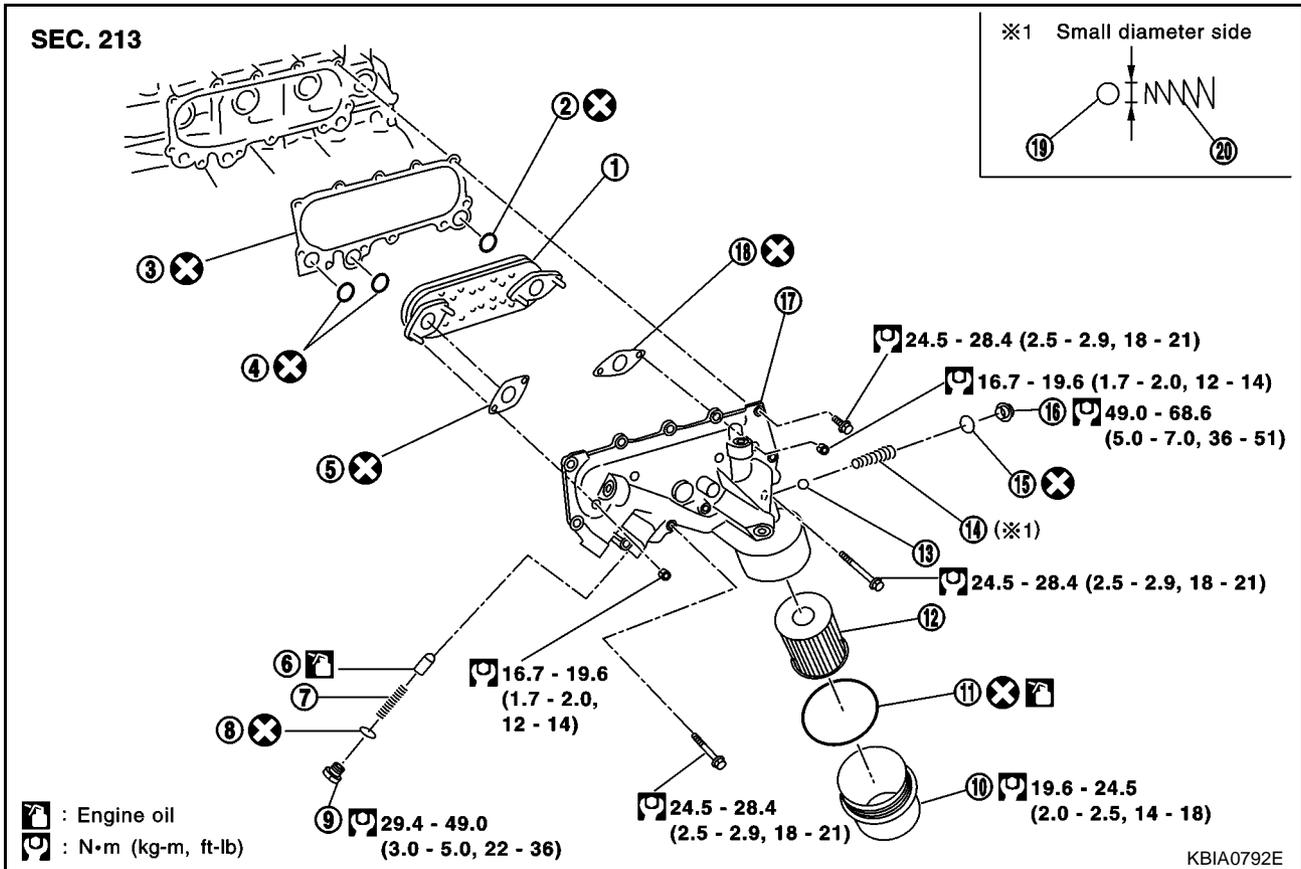
M

OIL COOLER

PFP:21305

Removal and Installation

EBS007HH



KBIA0792E

- | | | |
|------------------------------|-----------------------|-----------------------|
| 1 Oil cooler element | 2 O-ring | 3 Gasket |
| 4 O-ring | 5 Gasket | 6 Relief valve |
| 7 Spring | 8 Washer | 9 Plug |
| 10 Filter body | 11 O-ring | 12 Oil filter element |
| 13 Bypass valve (check ball) | 14 Spring | 15 Washer |
| 16 Plug | 17 Oil cooler housing | 18 Gasket |
| 19 Check ball | 20 Spring | |

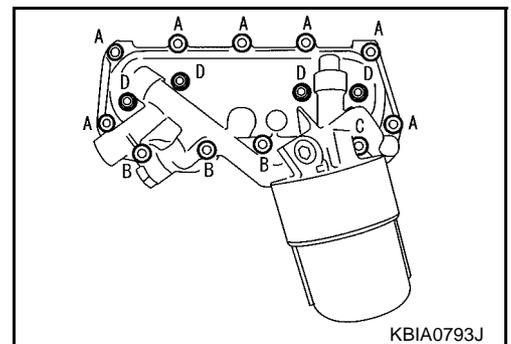
REMOVAL

1. Drain engine coolant.
2. Remove exhaust manifold. Refer to [EM-117, "EXHAUST MANIFOLD"](#).
3. Remove mounting bolts (A to C) shown in figure. Then remove oil cooler.

CAUTION:

- Do not loosen nuts D at this time, because they are used to secure oil cooler element.
- Use a tray to collect coolant from cylinder block for this operation.

4. Remove nuts D to remove oil cooler element.
5. Insert a wrench into square hole (1/2 inch square) on lower portion of filter body. Move it to remove filter body and oil filter element.



6. Remove bypass valve and relief valve.

INSTALLATION

Install in the reverse order of removal.

Bypass Valve

- Install bypass valve spring with its small end facing check ball. Refer to above "Component parts Illustration".

Oil Cooler

- There are 3 types of mounting bolts. Refer to the figure when installing them.

Bolt length:

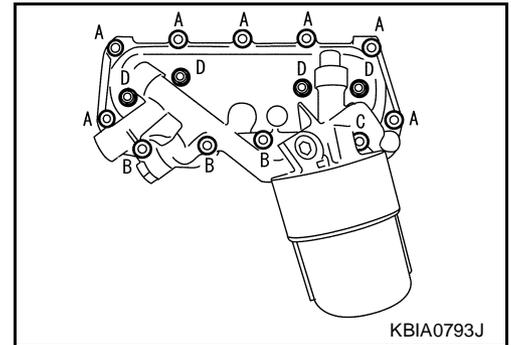
A: 20 mm (0.79 in)

B: 55 mm (2.17 in)

C: 70 mm (2.76 in)

NOTE:

Nuts D are used to secure oil cooler element.



INSPECTION AFTER INSTALLATION

After warming up the engine, check engine oil and engine coolant leakage.

OIL PUMP

PFP:15010

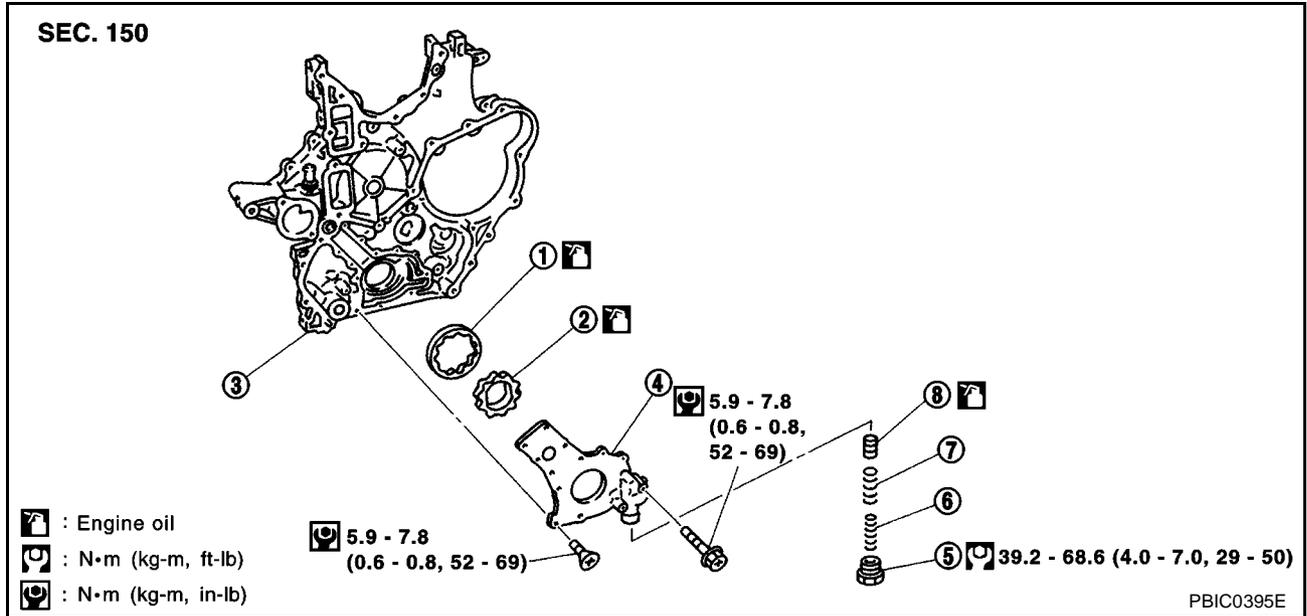
Removal and Installation

EBS007A3

- Remove gear case. Refer to [EM-151, "TIMING GEAR"](#) .

NOTE:

Oil pump is provided in gear case.



- | | | |
|------------------|-------------------|-----------------------------|
| 1 Outer rotor | 2 Inner rotor | 3 Gear case (oil pump body) |
| 4 Oil pump cover | 5 Regulator plug | 6 Inner spring |
| 7 Outer spring | 8 Regulator valve | |

CAUTION:

Before installation, apply new engine oil to the parts as instructed in the figure.

Disassembly and Assembly

DISASSEMBLY

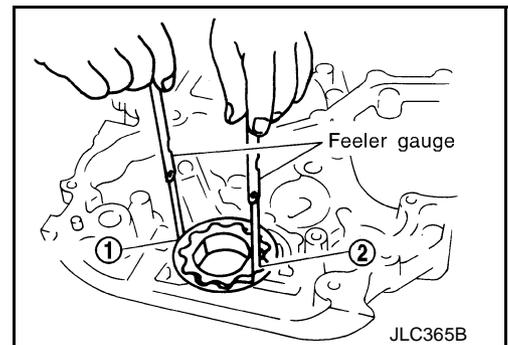
EBS007A4

- Remove oil pump cover.
- Remove inner rotor and outer rotor from gear case.
- After removing regulator plug, remove regulator spring and regulator valve.

INSPECTION AFTER DISASSEMBLY

Clearance of Oil Pump Parts

- Measure clearance with feeler gauge.
 - Clearance between outer rotor and oil pump body (position 1)
 - Standard : 0.114 - 0.200 mm (0.0045 - 0.0079 in)**
 - Tip clearance between inner rotor and outer rotor (position 2)
 - Standard : Less than 0.180 mm (0.0071in)**



OIL PUMP

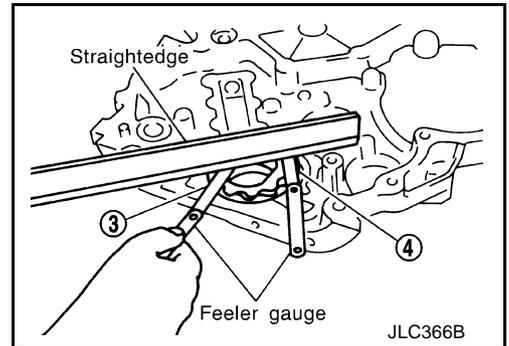
[ZD30DD]

- Measure clearance with feeler gauge and straightedge.
Side clearance between inner rotor and oil pump body (position 3)

Standard : 0.050 - 0.090 mm (0.0020 - 0.0035 in)

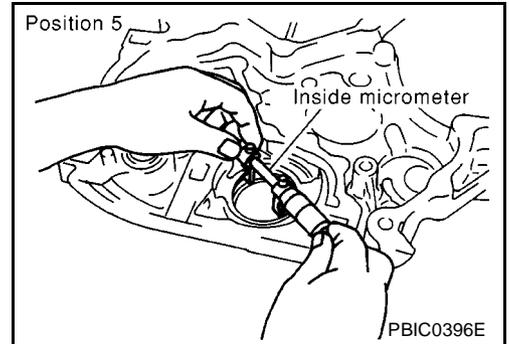
- Side clearance between outer rotor and oil pump body (position 4)

Standard : 0.030 - 0.105 mm (0.0012 - 0.0041 in)



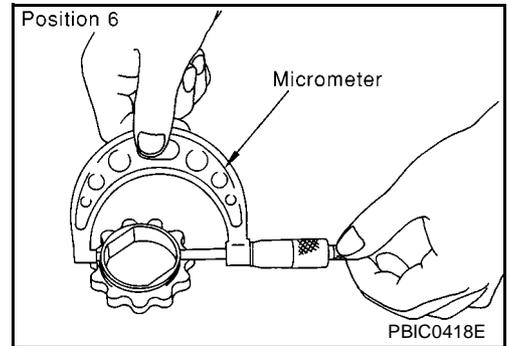
- Calculate the clearance between inner rotor and oil pump body as follows.

1. Measure the inner diameter of oil pump body with inside micrometer (Position 5)



2. Measure the outer diameter of protruded portion of inner rotor (Position 6)
(Clearance) = (Inner diameter of oil pump body) – (Outer diameter of inner rotor)

Standard : 0.045 - 0.091 mm (0.0018 - 0.0036 in)



Regulator Valve Appearance

Check valve sliding part for damage.

Sagging of Regulator Valve Spring

Check spring free length for sagging.

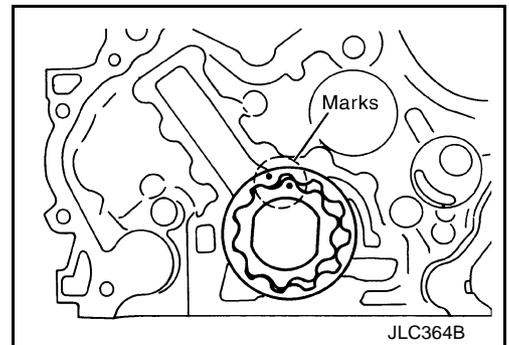
Inner spring : 56 mm (2.20 in)

Outer spring : 60 mm (2.36 in)

ASSEMBLY

Following instructions below, install in reverse order of removal.

- Install inner and outer rotors with their marks facing oil pump cover.
- Apply sufficient amount of engine oil. Rotate inner rotor by finger to check for smooth rotation.



SERVICE DATA AND SPECIFICATIONS (SDS)

[ZD30DD]

SERVICE DATA AND SPECIFICATIONS (SDS)

PF0:00030

Standard and Limit OIL PRESSURE

EBS007A5

Engine speed rpm	Approximate discharge pressure kPa (bar, kg/cm ² , psi)
Idle speed	More than 147 (1.47, 1.5, 21)
2,000	More than 294 (2.94, 3.0, 43)
3,800	More than 392 (3.92, 4.0, 57)

OIL PUMP

Unit: mm (in)

Body to outer rotor radial clearance	0.114 - 0.200 (0.0045 - 0.0079)
Inner rotor to outer rotor tip clearance	Less than 0.18 (0.0071)
Body to inner rotor axial clearance	0.050 - 0.090 (0.0020 - 0.0035)
Body to outer rotor axial clearance	0.030 - 0.105 (0.0012 - 0.0041)
Body to inner rotor radial clearance	0.045 - 0.091 (0.0018 - 0.0036)

OIL CAPACITY

Unit: liter (Imp qt)

With oil filter change	Approximately 6.9 (6-1/8)
Without oil filter change	Approximately 6.4 (5-5/8)
Dry engine (engine overhaul)	Approximately 7.6 (6-3/4)

Tightening Torque

EBS007A6

Unit: N·m (kg-m, ft-lb)
Unit: N·m (kg-m, in-lb)*

Oil pressure switch	12.3 - 17.2 (1.25 - 1.75, 10 - 12)
Oil pan drain plug	53.9 - 58.8 (5.5 - 6.0, 40 - 43)
Oil filter body	19.6 - 24.5 (2.0 - 2.5, 15 - 18)
Oil pump cover	5.9 - 7.8 (0.6 - 0.8, 53 - 69)*
Oil pump regulator plug	39.2 - 68.6 (4.0 - 7.0, 29 - 50)
Oil cooler housing	24.5 - 28.4 (2.5 - 2.9, 18 - 20)
Oil cooler element	16.7 - 19.6 (1.7 - 2.0, 13 - 14)
Oil pump relief valve plug	29.4 - 49.0 (3.0 - 5.0, 22 - 36)
Oil cooler bypass valve plug	49.0 - 68.6 (5.0 - 7.0, 37 - 50)