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ENGINE LUBRICATION SYSTEM

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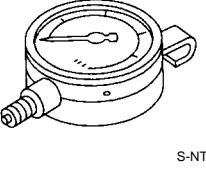
PREPARATION

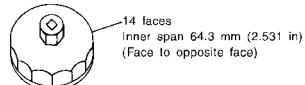
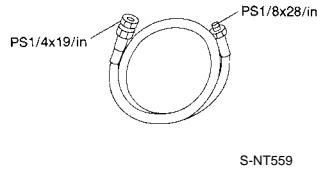
PREPARATION

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Special Service Tools

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Tool number Tool name	Description
ST25051001 Oil pressure gauge	<p>Measuring oil pressure Maximum measuring range: 2,452 kPa (24.5 bar, 25 kg/cm² , 356 psi)</p> 
ST25052000 Hose	Adapting oil pressure gauge to cylinder block
KV10115801 Oil filter wrench	Removing oil filter



LUBRICATION SYSTEM

LUBRICATION SYSTEM

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Lubrication Circuit

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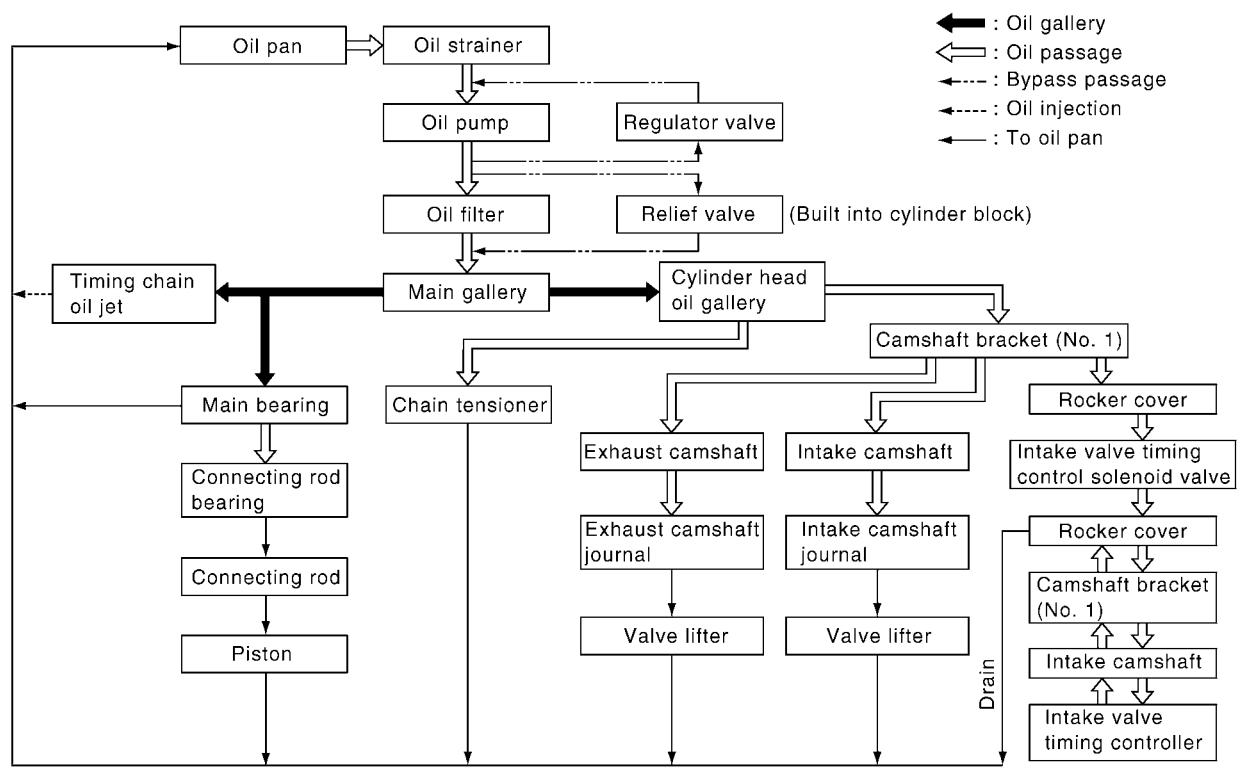
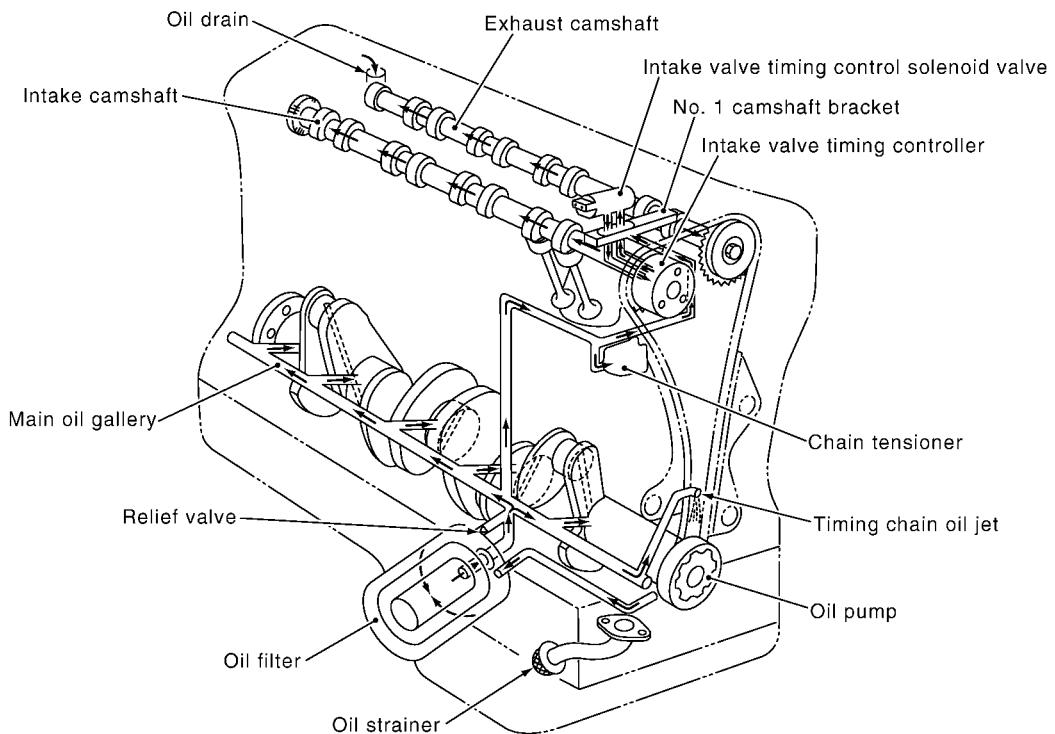
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ENGINE OIL

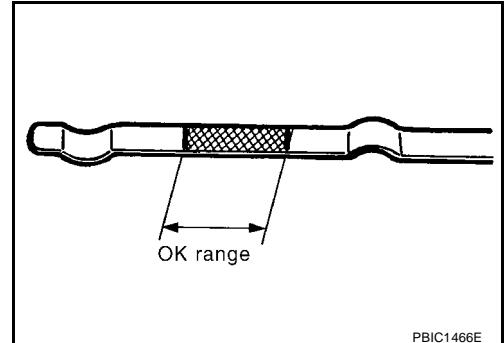
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Inspection

EBS0001

OIL LEVEL AND CONTAMINATION

- Before starting the engine, put vehicle horizontally and 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 oil level is outside the range, adjust level.
- Check the oil for white turbidity or remarkable contamination.
- If the oil becomes turbid and white, it is highly probable that it is contaminated with coolant. Find the cause and repair.
- When oil level gauge is inserted in guide, apply engine oil to rubber seal of grip.



OIL LEAK

Check the following parts for engine oil leaks.

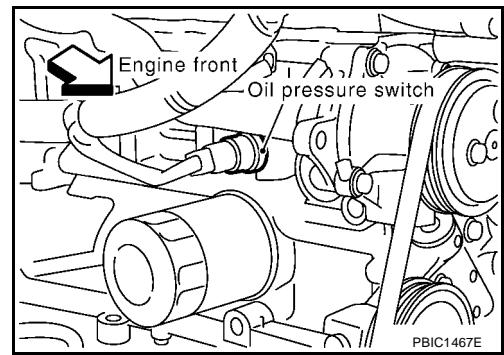
- Oil pan
- Oil pan drain plug
- Oil pressure switch
- Oil filter
- Front cover
- Cylinder head front cover
- Mating surfaces of cylinder block and cylinder head
- Mating surfaces of cylinder head and rocker cover

OIL PRESSURE CHECK

WARNING:

- Be careful not to burn yourself, as the engine oil is hot.
- Oil pressure check should be done in "Parking" or "Neutral" position.

- Check the engine oil level.
- Remove oil filter. Refer to [LU-6, "OIL FILTER"](#).
- Remove oil pressure switch and connect an oil pressure gauge.



- Install oil filter. Refer to [LU-6, "OIL FILTER"](#).
- After warming up the engine, check that oil pressure corresponding to the engine speed is produced.

NOTE:

Low oil temperature creates high pressure.

ENGINE OIL

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

Engine speed (rpm)	Idle speed	2,000	6,000
Engine oil pressure kPa (bar, kg/cm ² , psi)	Approx. 44.1 (0.441, 0.45, 6.4) or more	Approx. 265 (2.65, 2.7, 38) or more	Approx. 373 (3.73, 3.8, 54) or more

6. After checking the oil pressure, install oil pressure switch as follows:

- Remove old sealant on the switch and engine.
- Apply thread sealant and tighten.

Use Genuine Liquid Gasket or equivalent.

 : 18.7 - 20.5 N·m (1.9 - 2.0 kg·m, 14 - 15 ft-lb)

CAUTION:

Be careful not to get burned when engine or engine oil is heated.

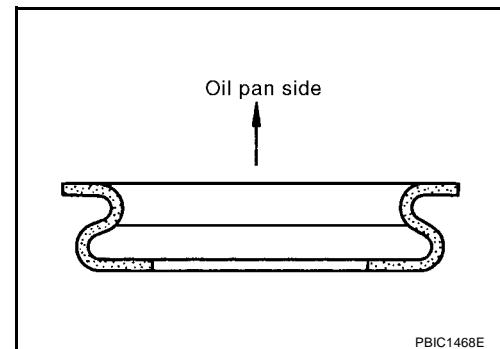
Changing Engine Oil

EBS000IK

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.

- Warm up engine, and check for oil leakage from engine components.
- Stop engine and wait for 10 minutes.
- Remove oil filler cap, and remove drain plug.
- Drain engine oil.
- Install drain plug. Refill with new engine oil.
 - Install drain plug washer in the direction shown in figure.
 - Oil specification and viscosity:**
Refer to [MA-12, "RECOMMENDED FLUIDS AND LUBRICANTS"](#).



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Oil capacity (Approximate):

Unit: ℥ (Imp qt)

Drain and refill	With oil filter change	3.0 (2-5/8)
	Without oil filter change	2.8 (2-1/2)
Dry engine (engine overhaul)		3.5 (3-1/8)

CAUTION:

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

Oil pan drain plug:

 : 29.4 - 39.2 N·m (3.0 - 3.9 kg·m, 22 - 28 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.
- Warm up engine and check area around drain plug and oil filter for oil leakage.
- Stop engine and wait for 10 minutes.
- Check oil level. Refer to [LU-4, "Inspection"](#).

OIL FILTER

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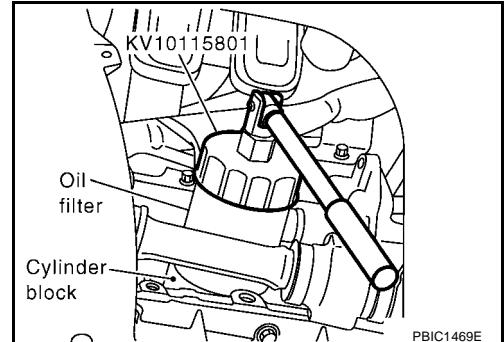
Removal and Installation

REMOVAL

- Using an oil filter wrench (special service tool), remove 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 adheres to the engine and the vehicle.

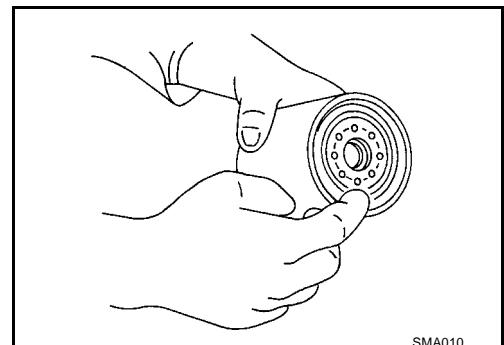


INSTALLATION

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

CAUTION:

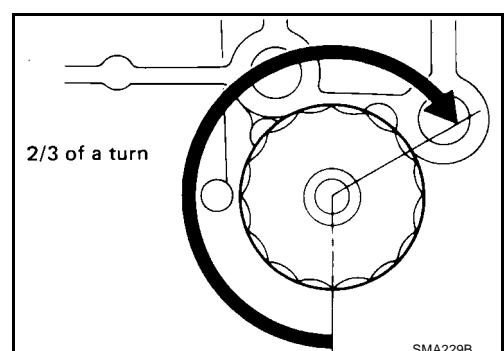
- Use genuine NISSAN oil filter or the equivalent.



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

Oil filter:

 :11 - 14 N·m (1.2 - 1.4 kg·m, 9 - 10 ft-lb)



INSPECTION AFTER INSTALLATION

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

OIL PUMP

PFP:15010

Removal and Installation

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REMOVAL

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- Remove front cover. Refer to [EM-46, "TIMING CHAIN"](#) .

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INSTALLATION

- Install in the reverse order of removal.

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Disassembly and Assembly

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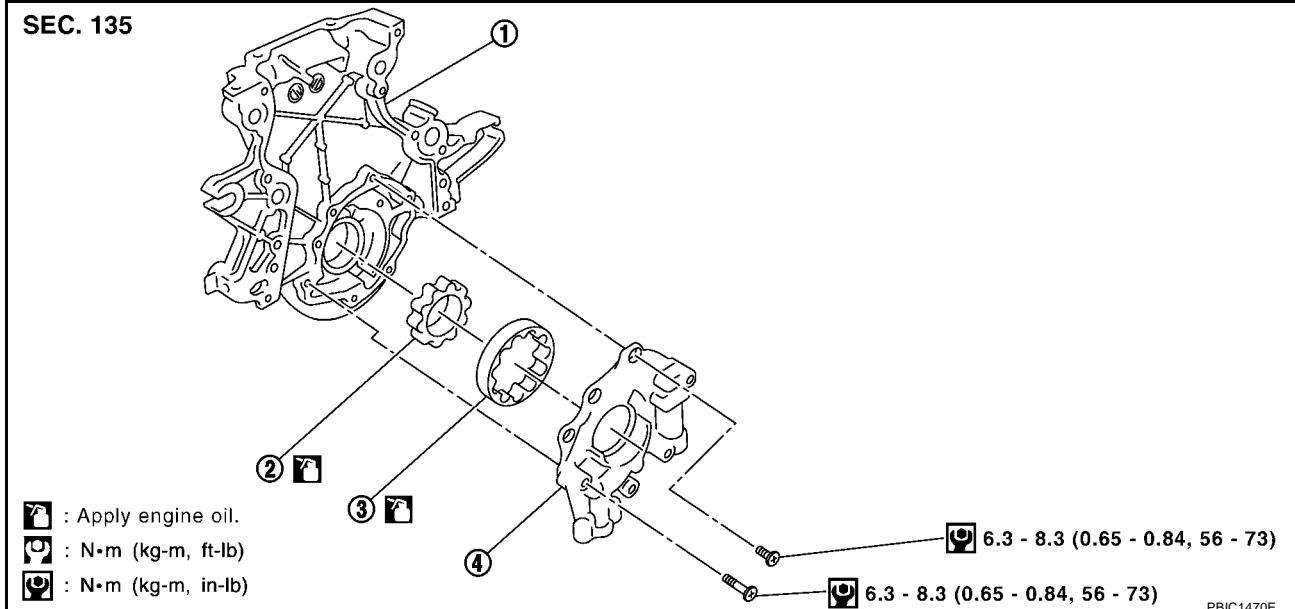
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- Front cover
- Inner rotor
- Outer rotor
- Oil pump cover

CAUTION:

Prior to installation, apply new engine oil to the parts marked in figure.

DISASSEMBLY

- Remove oil pump cover.
- Remove outer rotor and inner rotor from front cover.

INSPECTION AFTER DISASSEMBLY

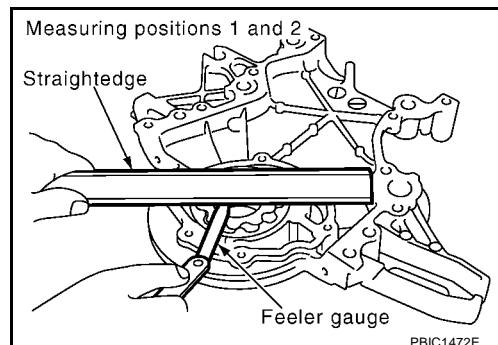
Clearances of Oil Pump Parts

- Measure clearance with feeler gauge and straightedge.
Side clearance between inner rotor and front cover (position 1).

Standard : 0.025 - 0.075 mm (0.0010 - 0.0030 in)

- Side clearance between outer rotor and front cover (position 2).

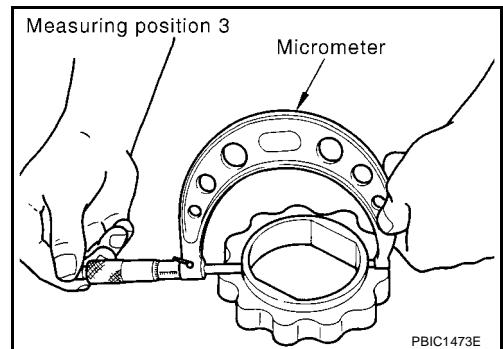
Standard : 0.025 - 0.075 mm (0.0010 - 0.0030 in)



- Calculate the clearance from inner rotor to front cover socket with the following procedures.

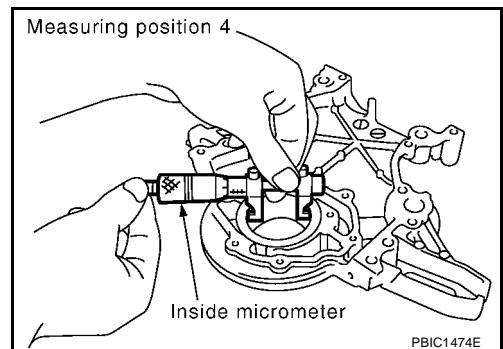
OIL PUMP

1. Using a micrometer, measure the outer diameter of inner rotor protrusion (Position 3).



2. Using an inside micrometer, measure the inner diameter of front cover. (Position 4)
(Clearance) = (Inner diameter of front cover) - (outer diameter of inner rotor protrusion)

Standard : 0.045 - 0.095 mm (0.0011 - 0.0037 in)



ASSEMBLY

Install in the reverse order of disassembly.

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

Standard and Limit OIL PRESSURE

EBS00010

Engine speed rpm	Approximate discharge pressure kPa (bar, kg/cm ² , psi)	LU
Idle speed	Approx. 44.1 (0.441, 0.45, 6.4) or more	
2,000	Approx. 265 (2.65, 2.7, 38) or more	
6,000	Approx. 373 (3.73, 3.8, 54) or more	

OIL PUMP

Unit: mm (in)

Body to inner rotor axial clearance	0.025 - 0.075 (0.0010 - 0.0030)	D
Body to outer rotor axial clearance	0.025 - 0.075 (0.0010 - 0.0030)	
Inner rotor to brazed portion of housing clearance	0.045 - 0.095 (0.0018 - 0.0037)	E

OIL CAPACITY

Unit: ℓ (Imp qt)

With oil filter change	Approximately 3.0 (2-5/8)	F
Without oil filter change	Approximately 2.8 (2-1/2)	
Dry engine (engine overhaul)	Approximately 3.5 (3-1/8)	G

TIGHTENING TORQUE

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

Oil pressure switch	18.7 - 20.5 (1.9 - 2.0, 14 - 15)	H
Oil pan drain plug	29.4 - 39.2 (3.0 - 3.9, 22 - 28)	
Oil filter	11 - 14 (1.2 - 1.4, 9 - 10)	I
Oil pump cover	6.3 - 8.3 (0.65 - 0.84, 56 - 73)*	J

SERVICE DATA AND SPECIFICATIONS (SDS)
