

SECTION **LU**

ENGINE LUBRICATION SYSTEM

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DESCRIPTION

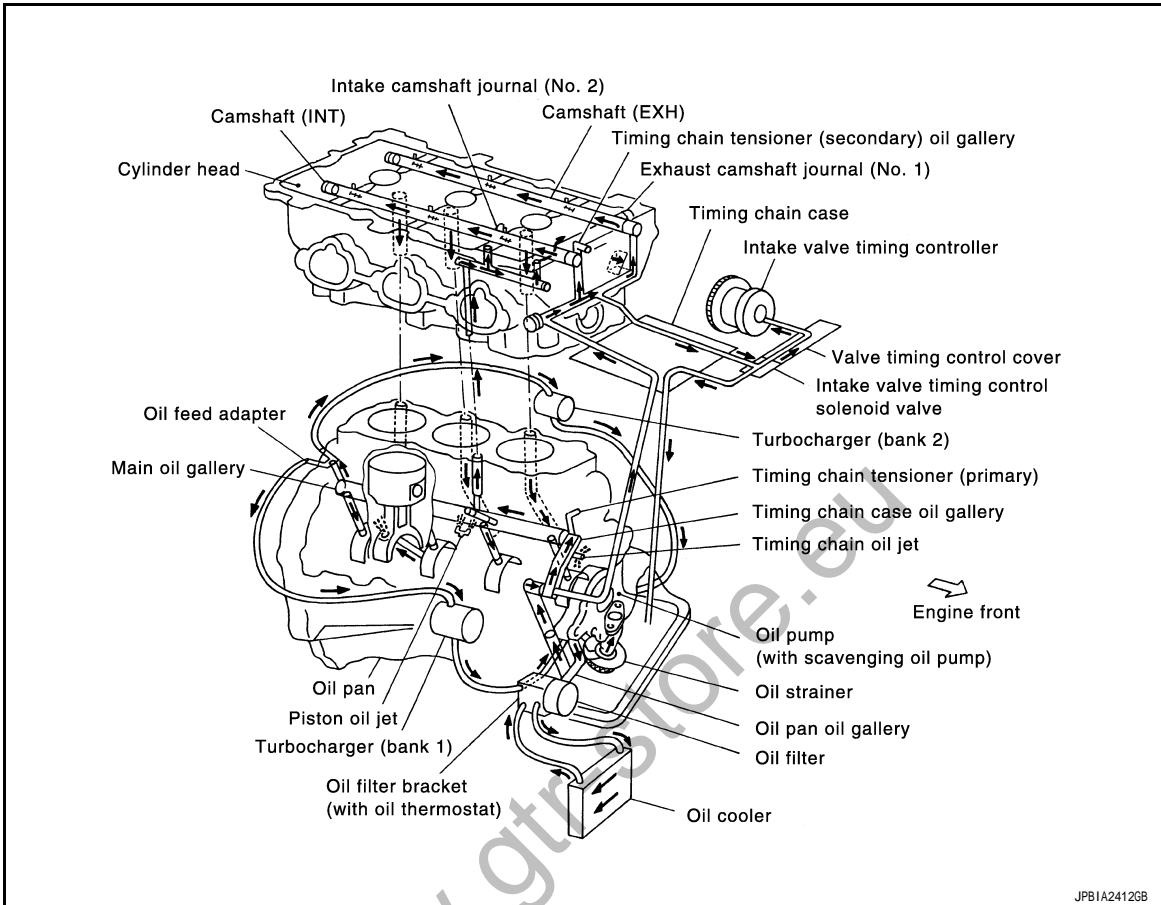
< FUNCTION DIAGNOSIS >

FUNCTION DIAGNOSIS

DESCRIPTION

Engine Lubrication System (GT-R certified NISSAN dealer)

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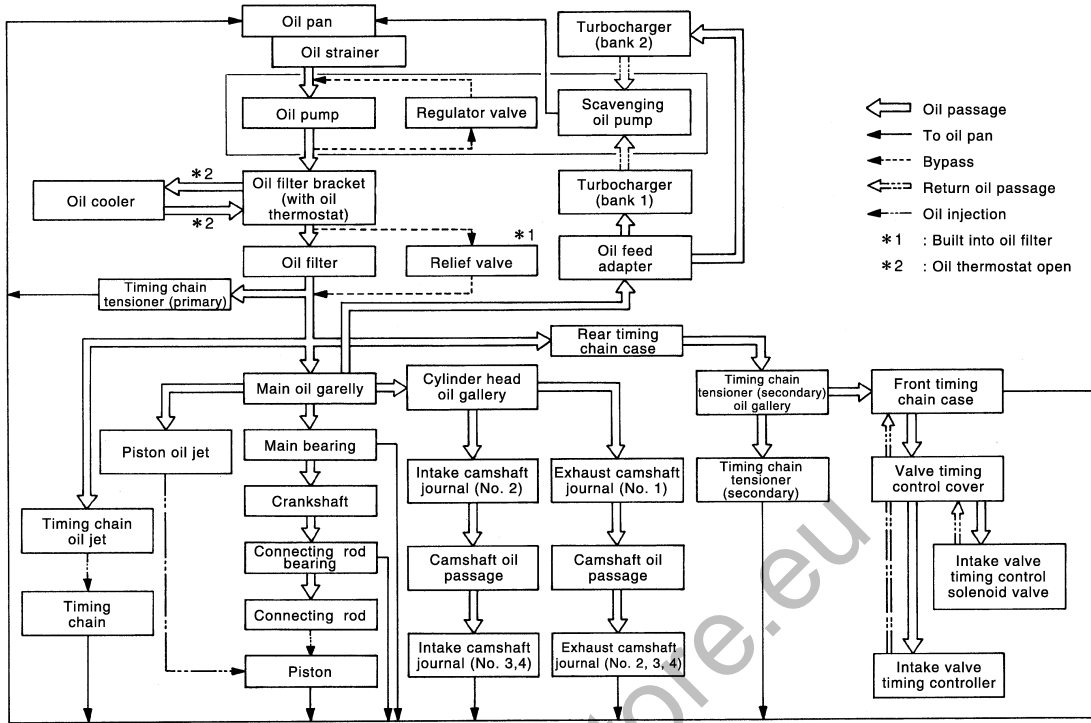
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DESCRIPTION

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Engine Lubrication System Schematic (GT-R certified NISSAN dealer)

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PRECAUTIONS

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PRECAUTION

PRECAUTIONS

Precaution for Battery Service

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Before disconnecting the battery, lower both the driver and passenger windows. This will prevent any interference between the window edge and the vehicle when the door is opened/closed. During normal operation, the window slightly raises and lowers automatically to prevent any window to vehicle interference. The automatic window function will not work with the battery disconnected.

Liquid Gasket

INFOID:000000003880649

LIQUID GASKET APPLICATION PROCEDURE

1. Remove old liquid gasket adhering to the liquid gasket application surface and the mating surface.
 - Remove liquid gasket completely from the liquid gasket application surface, mounting bolts, and bolt holes.
2. Wipe the liquid gasket application surface and the mating surface with white gasoline (lighting and heating use) to remove adhering moisture, grease and foreign materials.
3. Apply liquid gasket to the liquid gasket application surface.
Use Genuine RTV Silicone Sealant or equivalent. Refer to [GI-15. "Recommended Chemical Products and Sealants"](#).
 - Within five minutes of liquid gasket application, install the mating component.
 - If liquid gasket protrudes, wipe it off immediately.
 - Do not retighten mounting bolts or nuts after the installation.
 - After 30 minutes or more have passed from the installation, fill engine oil and engine coolant.

PREPARATION

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PREPARATION

PREPARATION

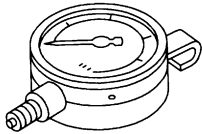
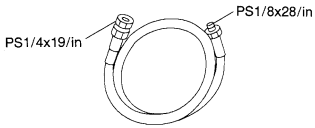
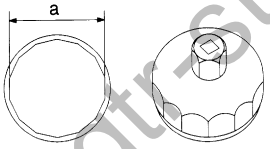
Special Service Tools

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The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name	Description
ST25051001 (J25695-1) Oil pressure gauge  NT050	Measuring oil pressure Maximum measuring range: 2,452 kPa (25 kg/cm², 356 psi)
ST25052000 (J25695-2) Hose  S-NT559	Adapting oil pressure gauge to oil pan (upper)
KV10115801 (J38956) Oil filter wrench  S-NT375	Removing and installing oil filter a: 64.3 mm (2.531 in)

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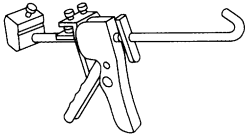
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Commercial Service Tools

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Tool name	Description
Tube presser  NT052	Pressing tube of liquid gasket

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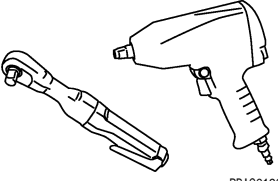
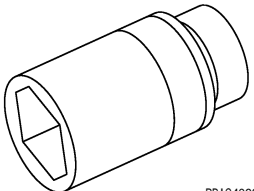
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PREPARATION

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Tool name	Description
<p data-bbox="159 197 284 220">Power tools</p>  <p data-bbox="852 415 917 436">PBIC0190E</p>	<p data-bbox="1013 197 1263 220">Loosening bolts and nuts</p>
<p data-bbox="159 449 289 472">Deep socket</p>  <p data-bbox="852 667 917 688">PBIC4066E</p>	<p data-bbox="1013 449 1446 506">Removing and installing oil pressure switch 27 mm (1.06 in)</p>

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ENGINE OIL

< ON-VEHICLE MAINTENANCE >

ON-VEHICLE MAINTENANCE

ENGINE OIL

Inspection

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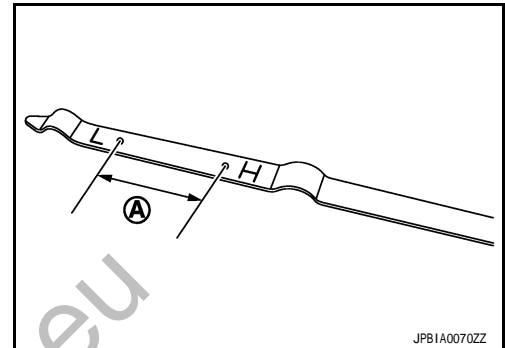
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ENGINE OIL LEVEL

NOTE:

Before starting engine, put vehicle horizontally and check the engine oil level. If engine is already started, stop it and allow 10 minutes before checking.

1. Pull out oil level gauge and wipe it clean.
2. Insert oil level gauge and check the engine oil level is within the range (A) shown in the figure.
3. If it is out of range, adjust it.

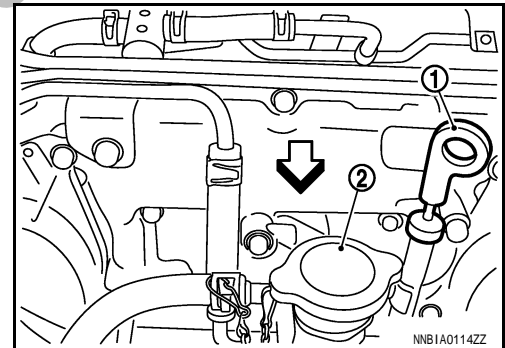


NOTE:

When checking the engine oil level, insert oil level gauge (1) with its tip aligned with oil level guide.

2 : Radiator cap

⇐ : Engine front



ENGINE OIL APPEARANCE

- Check engine oil for white turbidity or heavy contamination.
- If engine oil becomes turbid and white, it is highly probable that it is contaminated with engine coolant. Repair or replace damaged parts.

ENGINE OIL LEAKAGE

Check for engine oil leakage around the following areas:

- Oil pans (lower and upper)
- Oil pan drain plug
- Oil pressure switch
- Oil level sensor
- Oil temperature sensor
- Oil filter
- Oil filter bracket
- Valve timing control cover
- Intake valve timing control solenoid valve
- Mating surface between cylinder head and rocker cover
- Mating surface between front timing chain case and rear timing chain case
- Mating surface between rear timing chain case and cylinder head
- Mating surface between rear timing chain case and cylinder block
- Mating surface between rear timing chain case and oil pan (upper)
- Mating surface between cylinder block and cylinder head
- Mating surface between lower cylinder block and cylinder block

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ENGINE OIL

< ON-VEHICLE MAINTENANCE >

- Crankshaft oil seals (front and rear)
- Camshaft position sensor (PHASE)
- Turbo charger

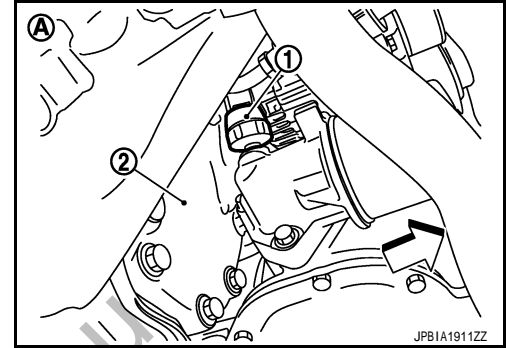
OIL PRESSURE CHECK

WARNING:

- Be careful not to get burned, as engine oil may be hot.
- Oil pressure check should be done in "Parking position".

1. Check the engine oil level. Refer to [LU-7, "Inspection"](#).
2. Remove engine undercover with power tool.
3. Disconnect harness connector at oil pressure switch, and remove oil pressure switch.

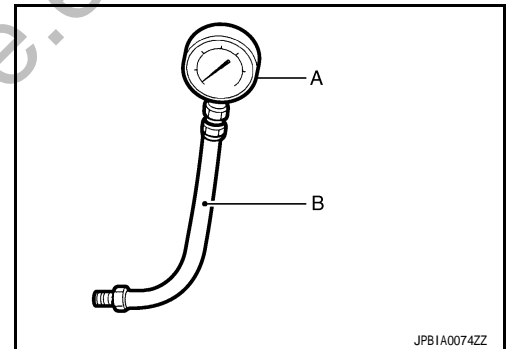
- 1 : Oil pressure switch
- 2 : Front final drive
- A : Vehicle under view
- ⇐ : Engine front



CAUTION:

Never drop or shock oil pressure switch.

4. Install the oil pressure gauge [SST: ST25051001 (J25695-1)] (A) and hose [SST: ST25052000 (J25695-2)] (B).



5. Start the engine and warm it up to normal operating temperature.
6. Check the engine oil pressure with engine running under no-load.

NOTE:

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

Engine oil pressure : Refer to [LU-18, "Engine Oil Pressure \(GT-R certified NISSAN dealer\)"](#).

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

7. After the inspections, install oil pressure switch as follows:

- a. Remove old liquid gasket adhering to oil pressure switch and the mating surface.
- b. Apply liquid gasket and tighten oil pressure switch to the specification.

Use Genuine RTV Silicone Sealant or equivalent. Refer to [GI-15, "Recommended Chemical Products and Sealants"](#).

Tightening torque : Refer to [LU-11, "Exploded View \(GT-R certified NISSAN dealer\)"](#).

- c. After warming up engine, check there is no leakage of engine oil with running engine.

Draining

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WARNING:

- Be careful not to get burned, as engine oil may be hot.

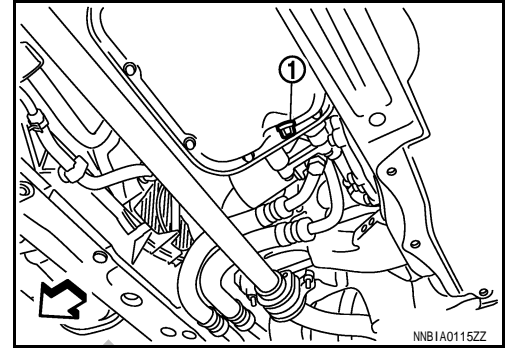
ENGINE OIL

< ON-VEHICLE MAINTENANCE >

• **Prolonged and repeated contact with used engine oil may cause skin cancer. Try to avoid direct skin contact with used engine oil. If skin contact is made, wash thoroughly with soap or hand cleaner as soon as possible.**

1. Warm up the engine, and check for engine oil leakage from engine components. Refer to [LU-7. "Inspection"](#).
2. Stop the engine and wait for 10 minutes.
3. Loosen oil filler cap.
4. Remove undercover with power tool.
5. Remove drain plug (1) and then drain engine oil.

↔ : Vehicle front



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Refilling

1. Install drain plug with new washer. Refer to [EM-94. "Exploded View \(GT-R certified NISSAN dealer\)"](#).

CAUTION:

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

Tightening torque : Refer to [EM-94. "Exploded View \(GT-R certified NISSAN dealer\)"](#).

2. Refill with new engine oil.

Engine oil specification and viscosity: Refer to [MA-13. "Fluids and Lubricants"](#)

Engine oil capacity : Refer to [LU-18. "Periodical Maintenance Specification"](#).

CAUTION:

- **When filling engine oil, never pull out oil level gauge.**
- **The refill capacity depends on the engine oil temperature and drain time. Use these specifications for reference only.**
- **Always use oil level gauge to determine the proper amount of engine oil in engine.**

3. Warm up the engine and check area around drain plug and oil filter for engine oil leakage.
4. Stop the engine and wait for 10 minutes.
5. Check the engine oil level. Refer to [LU-7. "Inspection"](#).

OIL FILTER

< ON-VEHICLE MAINTENANCE >

OIL FILTER

Removal and Installation

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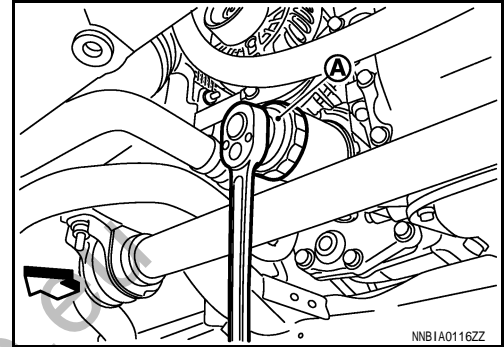
REMOVAL

CAUTION:

- Oil filter is provided with relief valve. Use genuine NISSAN oil filter or equivalent.
- Be careful not to get burned when engine and engine oil may be hot.
- When removing, prepare a shop cloth to absorb any engine oil leakage or spillage.
- Never allow engine oil to adhere to drive belt.
- Completely wipe off any engine oil that adheres to engine and vehicle.

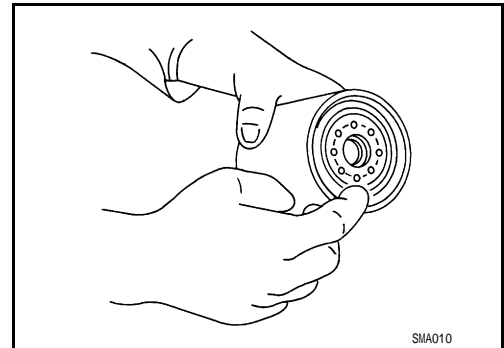
1. Remove engine undercover with power tool.
2. Using oil filter wrench [SST: KV10115801 (J38956)] (A), remove oil filter.

⇐ : Vehicle front



INSTALLATION

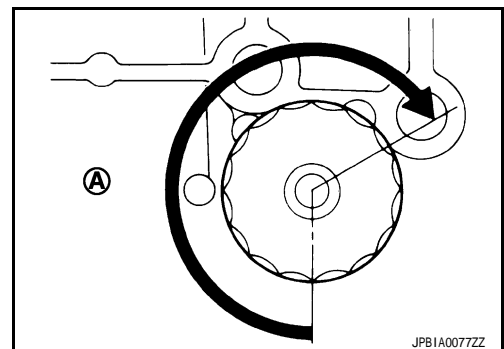
1. Remove foreign materials adhering to oil filter installation surface.
2. Apply engine oil to the oil seal contact surface of new oil filter.



3. Screw oil filter manually until it touches the installation surface, then tighten it by 2/3 turn (A). Or tighten to the specification.

Oil filter:

: 17.7 N·m (1.8 kg-m, 13 ft-lb)



Inspection

INFOID:000000003880656

INSPECTION AFTER INSTALLATION

1. Check the engine oil level. Refer to [LU-7. "Inspection"](#).
2. Start the engine, and check there is no leakage of engine oil.
3. Stop the engine and wait for 10 minutes.
4. Check the engine oil level, and adjust the level. Refer to [LU-7. "Inspection"](#).

OIL FILTER BRACKET

< ON-VEHICLE REPAIR >

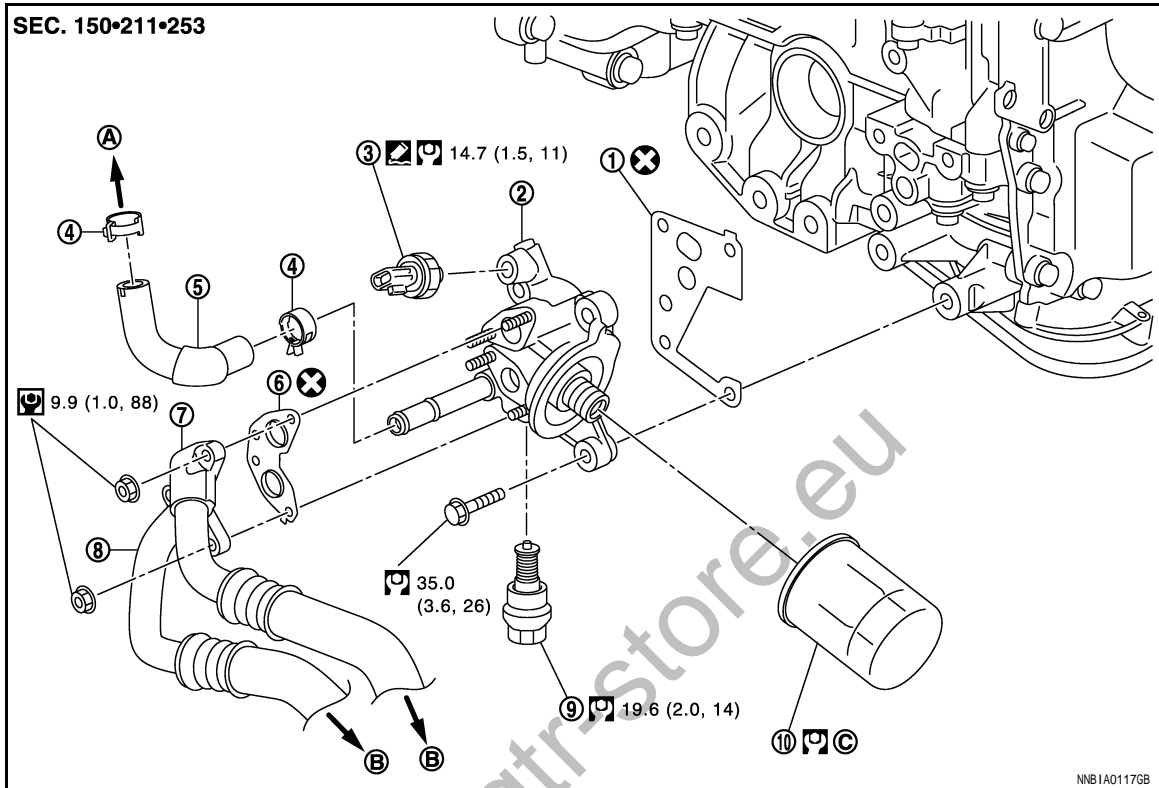
ON-VEHICLE REPAIR

OIL FILTER BRACKET

Exploded View (GT-R certified NISSAN dealer)

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| 1. Gasket | 2. Oil filter bracket | 3. Oil pressure switch |
| 4. Clamp | 5. Oil return hose | 6. Gasket |
| 7. Oil cooler feed hose | 8. Oil cooler return hose | 9. Oil thermostat |
| 10. Oil filter | | |
| A. To exhaust manifold turbocharger assembly (bank 1) | B. To oil cooler | C. Refer to LU-10 |

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Refer to [GI-4, "Components"](#) for symbols in the figure.

Removal and Installation (GT-R certified NISSAN dealer)

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REMOVAL

WARNING:

Be careful not to get burned, as engine oil may be hot.

1. Disconnect battery cable from the negative terminal. Refer to [PG-89, "Exploded View"](#).
2. Remove drive belt. Refer to [EM-13, "Exploded View"](#).
3. Remove engine undercover with power tool.
4. Remove alternator and alternator bracket. Refer to [CHG-19, "Exploded View \(GT-R certified NISSAN dealer\)"](#).
5. Disconnect oil pressure switch harness connector.
6. Disconnect oil cooler feed hose, oil cooler return hose, and oil return hose at oil filter bracket side.

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CAUTION:

Never spill engine oil to rubber parts such as engine mounting insulator.

7. Using the oil filter wrench [SST: KV10115801 (J38956)], remove oil filter. Refer to [LU-10, "Removal and Installation"](#).

OIL FILTER BRACKET

< ON-VEHICLE REPAIR >

8. Remove oil filter bracket from oil pan (upper).

CAUTION:

Never spill engine oil to rubber parts such as engine mounting insulator.

9. Remove oil pressure switch and oil thermostat from oil filter bracket if necessary.

INSTALLATION

Note the following, and install in the reverse order of removal.

- Install oil pressure switch as follows:
 - Remove old liquid gasket adhering to oil filter bracket.
 - Apply liquid gasket and install oil pressure switch.

Use Genuine RTV Silicone Sealant or equivalent. Refer to [GI-15, "Recommended Chemical Products and Sealants"](#).

Inspection (GT-R certified NISSAN dealer)

INFOID:000000003880659

INSPECTION AFTER INSTALLATION

1. Check the engine oil level and add engine oil. Refer to [LU-7, "Inspection"](#).
2. Start the engine, and check there is no leakage of engine oil.
3. Stop the engine and wait for 10 minutes.
4. Check the engine oil level again. Refer to [LU-7, "Inspection"](#).

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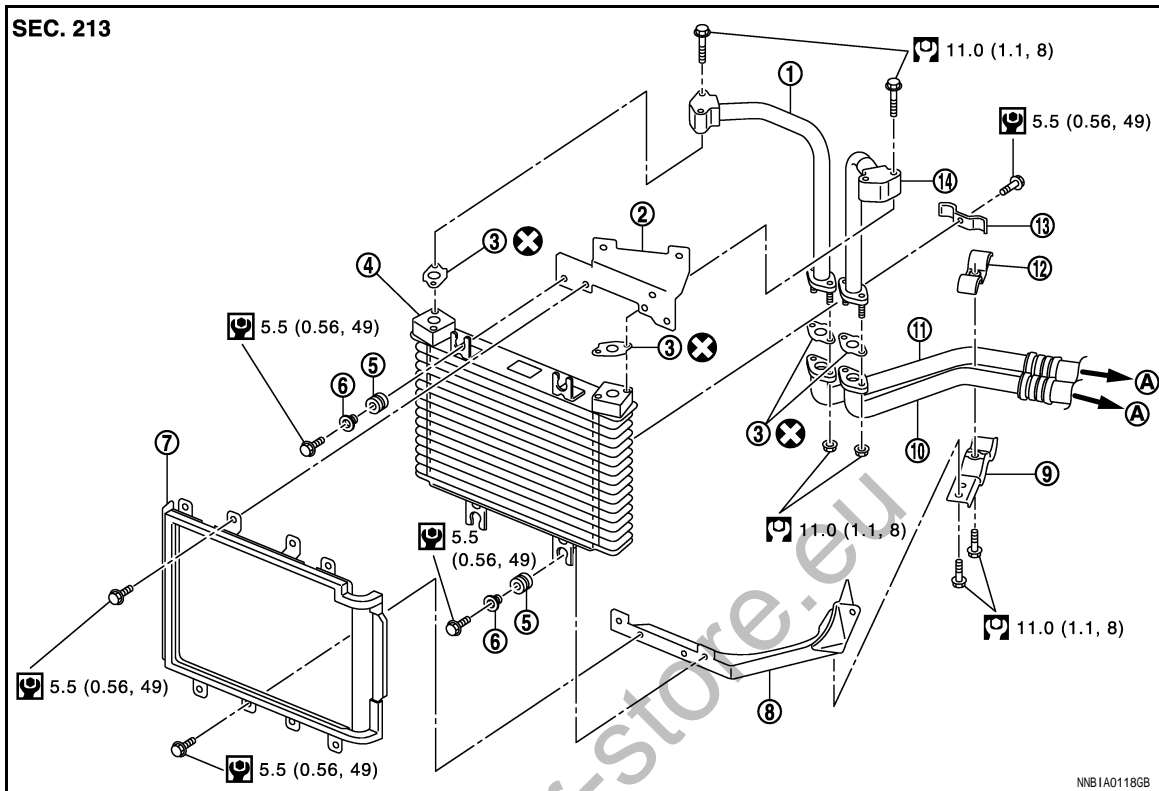
OIL COOLER

< ON-VEHICLE REPAIR >

OIL COOLER

Exploded View (GT-R certified NISSAN dealer)

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|---------------------------|----------------------------|------------------|
| 1. Oil cooler return pipe | 2. Bracket (upper) | 3. Gasket |
| 4. Oil cooler | 5. Grommet | 6. Color |
| 7. Air duct bracket | 8. Bracket (lower) | 9. Hose bracket |
| 10. Oil cooler feed hose | 11. Oil cooler return hose | 12. Hose bracket |
| 13. Pipe bracket | 14. Oil cooler feed pipe | |
| A. To oil filter bracket | | |

Refer to [GI-4, "Components"](#) for symbols in the figure.

Removal and Installation (GT-R certified NISSAN dealer)

INFOID:000000003882897

REMOVAL

WARNING:

Be careful not to get burned, as engine oil may be hot.

1. Remove engine undercover with power tool.
2. Remove front bumper. Refer to [EXT-13, "Exploded View"](#).
3. Remove air duct from oil cooler.
4. Remove air duct bracket.
5. Disconnect oil cooler hoses from oil cooler pipes.

CAUTION:

When oil cooler hoses are disconnected, attach plug to prevent engine oil leakage.

6. Remove oil cooler.

CAUTION:

- Never damage or scratch oil cooler core when removing.
- When oil cooler is removed, attach plug to prevent engine oil leakage.

7. Remove oil cooler pipes if necessary.

OIL COOLER

< ON-VEHICLE REPAIR >

INSTALLATION

Note the following, and install in the reverse order of removal.

Oil cooler pipe

If oil cooler pipes are removed, install it as follows:

1. Install oil cooler pipes and pipe bracket, and temporarily tighten the pipe bracket bolt.
2. Temporarily tighten the oil cooler pipe bolts. (oil cooler upper side)
3. Tighten pipe bracket bolt to the specified torque.
4. Tighten oil cooler pipe bolts to the specified torque. (oil cooler upper side)

Inspection (GT-R certified NISSAN dealer)

INFOID:000000003882898

INSPECTION AFTER INSTALLATION

1. Check the engine oil level and add engine oil. Refer to [LU-7, "Inspection"](#).

CAUTION:

Be sure to add engine oil before starting engine if drained engine oil from oil cooler.

Oil cooler engine oil capacity : Approximately 1.3 ℓ (1-3/8 us qt, 1-1/8 imp qt)*

*: Engine oil capacity is the reference value.

2. Start the engine, and check there is no leakage of engine oil.
3. Stop the engine and wait for 10 minutes.
4. Check the engine oil level again. Refer to [LU-7, "Inspection"](#).

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OIL PUMP

< DISASSEMBLY AND ASSEMBLY >

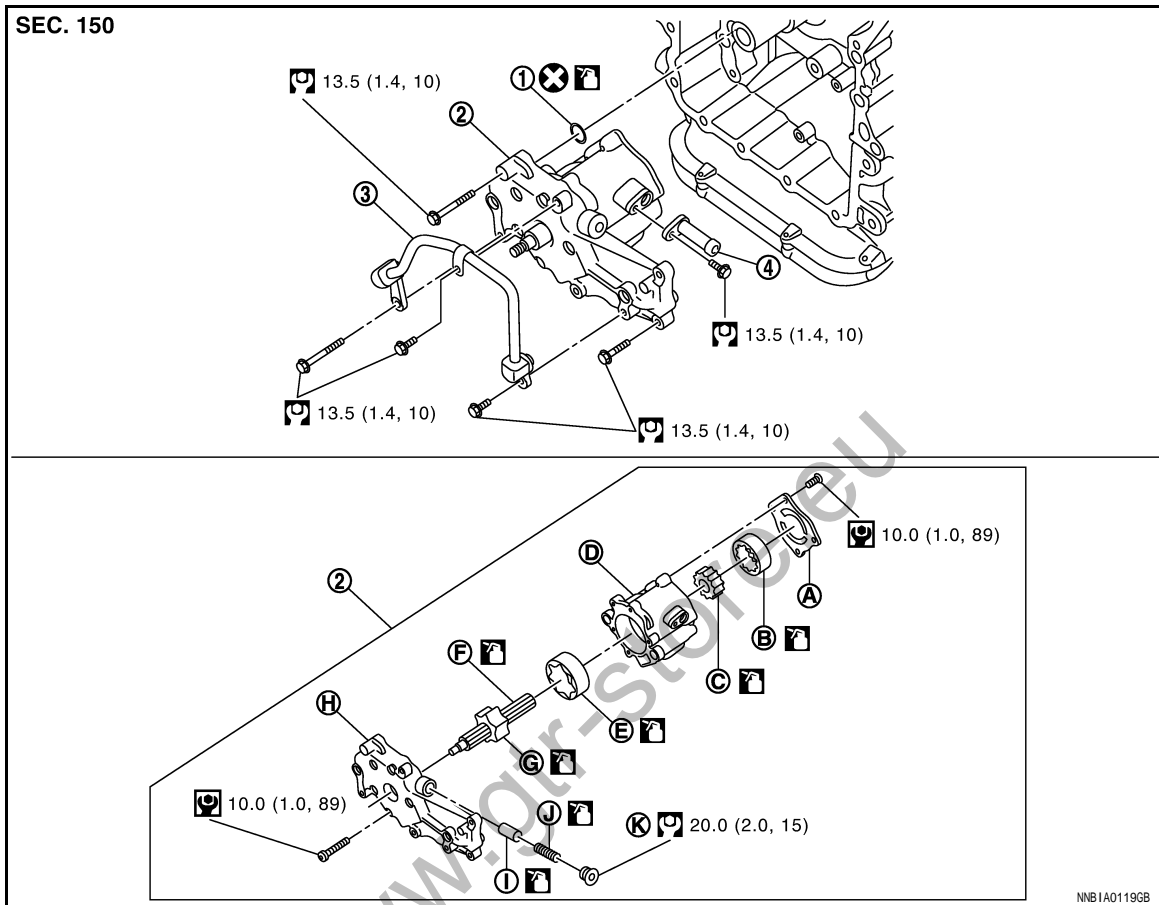
DISASSEMBLY AND ASSEMBLY

OIL PUMP

Exploded View (GT-R certified NISSAN dealer)

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| 1. O-ring | 2. Oil pump assembly | 3. Suction pipe |
| 4. Scavenging pump outlet pipe | | |
| A. Rear cover | B. Scavenging pump outer rotor | C. Scavenging pump inner rotor |
| D. Oil pump housing | E. Oil pump outer rotor | F. Shaft |
| G. Oil pump inner rotor | H. Oil pump cover | I. Regulator valve |
| J. Regulator valve spring | K. Regulator valve plug | |

Refer to [GI-4. "Components"](#) for symbols in the figure.

CAUTION:

Never remove oil pump inner rotor from shaft.

Disassembly and Assembly (GT-R certified NISSAN dealer)

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DISASSEMBLY

1. Remove engine assembly from vehicle. Refer to [EM-48. "Exploded View \(GT-R certified NISSAN dealer\)"](#).
2. Remove oil pan (lower) and oil strainer. Refer to [EM-94. "Exploded View \(GT-R certified NISSAN dealer\)"](#).
3. Remove front timing chain case, timing chain (primary) and oil pump drive chain. Refer to [EM-66. "Exploded View \(GT-R certified NISSAN dealer\)"](#).
4. Remove oil pump assembly.
5. Remove suction pipe.
6. Remove rear cover.

P

OIL PUMP

< DISASSEMBLY AND ASSEMBLY >

- Remove scavenging pump inner rotor and scavenging pump outer rotor from scavenging pump rear side.

NOTE:

As a reference for the assembling direction, put a mark on each rotor with paint.

- Remove oil pump cover.
- Remove shaft with oil pump inner rotor from oil pump housing.

CAUTION:

Never remove oil pump inner rotor from shaft.

- Remove oil pump outer rotor.

NOTE:

As a reference for the assembling direction, put a mark on the rotor with paint.

- After removing regulator valve plug, remove regulator valve spring and regulator valve.

ASSEMBLY

Note the following, and assemble in the reverse order of disassembly.

CAUTION:

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

- Install each rotor in the original direction, referring to the mark put before disassembly.

Inspection (GT-R certified NISSAN dealer)

INFOID:000000003880662

INSPECTION AFTER DISASSEMBLY

Oil Pump Clearance

- Measure the clearance with feeler gauge (C).
- Clearance between oil pump outer rotor and oil pump body [position (B)]

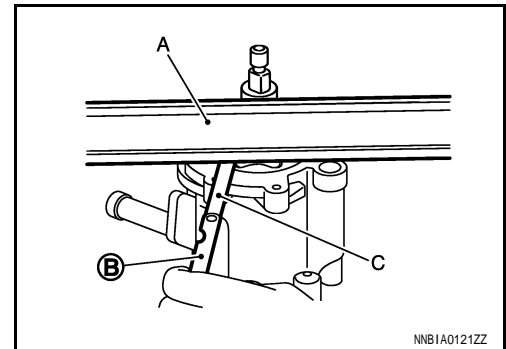
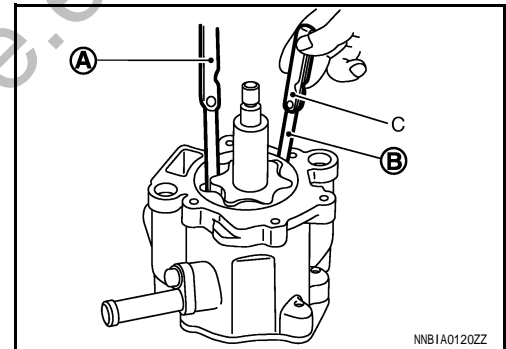
Standard : Refer to [LU-18, "Oil Pump \(GT-R certified NISSAN dealer\)"](#).

- Tip clearance between oil pump inner rotor and oil pump outer rotor [position (A)]

Standard : Refer to [LU-18, "Oil Pump \(GT-R certified NISSAN dealer\)"](#).

- Measure the clearance with feeler gauge (C) and straightedge (A).
- Side clearance between oil pump rotor and oil pump body [position (B)]

Standard : Refer to [LU-18, "Oil Pump \(GT-R certified NISSAN dealer\)"](#).



- If measured values are out of the standard, replace oil pump assembly.

Regulator Valve Clearance

OIL PUMP

< DISASSEMBLY AND ASSEMBLY >

(Clearance) = (Regulator valve hole diameter) – (Regulator valve outer diameter)

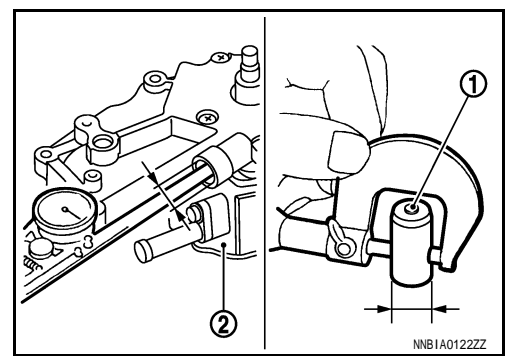
- 1 : Regulator valve
- 2 : Oil pump cover

Standard : Refer to [LU-18, "Regulator Valve \(GT-R certified NISSAN dealer\)"](#).

- If the calculated value is out of the standard, replace oil pump assembly.

CAUTION:

- Coat regulator valve with engine oil.
- Check that it falls smoothly into valve hole by its own weight.



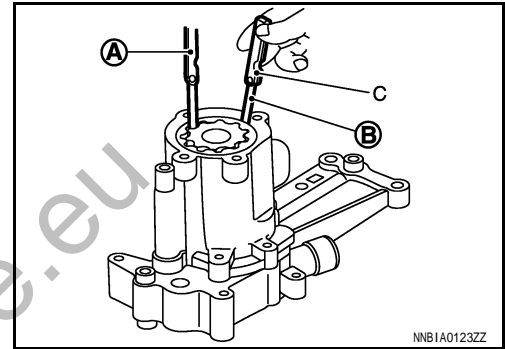
Scavenging Oil Pump Clearance

- Measure the clearance with feeler gauge (C).
- Clearance between scavenging oil pump outer rotor and oil pump body [position (B)]

Standard : Refer to [LU-18, "Scavenging Oil Pump \(GT-R certified NISSAN dealer\)"](#).

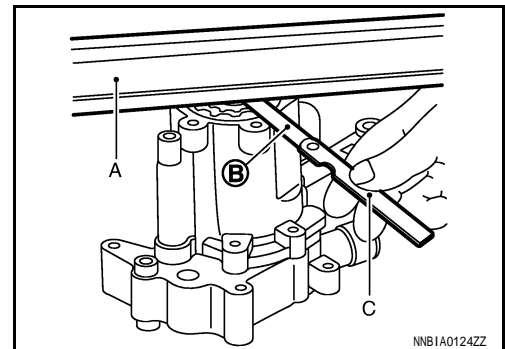
- Tip clearance between scavenging oil pump inner rotor and scavenging oil pump outer rotor [position (A)]

Standard : Refer to [LU-18, "Scavenging Oil Pump \(GT-R certified NISSAN dealer\)"](#).



- Measure the clearance with feeler gauge (C) and straightedge (A).
- Side clearance between scavenging oil pump rotor and oil pump housing [position (B)]

Standard : Refer to [LU-18, "Scavenging Oil Pump \(GT-R certified NISSAN dealer\)"](#).



- If measured values are out of the standard, replace oil pump assembly.

INSPECTION AFTER INSTALLATION

1. Check the engine oil level. Refer to [LU-7, "Inspection"](#).
2. Start the engine, and check there is no leakage of engine oil.
3. Stop the engine and wait for 10 minutes.
4. Check the engine oil level and adjust the level. Refer to [LU-7, "Inspection"](#).

SERVICE DATA AND SPECIFICATIONS (SDS)

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Periodical Maintenance Specification

INFOID:000000003880663

ENGINE OIL CAPACITY (APPROXIMATELY)

Unit: ℓ (US qt, Imp qt)

Drain and refill	With oil filter change	5.5 (5-3/4, 4-7/8)
	Without oil filter change	5.0 (5-1/4, 4-3/8)
Dry engine (Overhaul)		6.7 (7-1/8, 5-7/8)

Engine Oil Pressure (GT-R certified NISSAN dealer)

INFOID:000000003880664

Unit: kPa (kg/cm², psi)

Engine speed	Approximate discharge pressure*
750 rpm	210 (2.14, 30)
1,000 rpm	240 (2.45, 35)
4,000 rpm	540 (5.51, 78)

*: Engine oil temperature at 80°C (176°F)

Oil Pump (GT-R certified NISSAN dealer)

INFOID:000000003880665

Unit: mm (in)

Oil pump housing to oil pump outer rotor radial clearance	0.080 - 0.140 (0.0031 - 0.0055)
Oil pump inner rotor to oil pump outer rotor tip clearance	0.100 - 0.200 (0.0039 - 0.0079)
Oil pump housing to oil pump rotor axial clearance	0.025 - 0.080 (0.0010 - 0.0031)

Regulator Valve (GT-R certified NISSAN dealer)

INFOID:000000003880666

Unit: mm (in)

Regulator valve to oil pump cover clearance	0.032 - 0.077 (0.0013 - 0.0030)
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Scavenging Oil Pump (GT-R certified NISSAN dealer)

INFOID:000000003894978

Unit: mm (in)

Oil pump housing to scavenging oil pump outer rotor radial clearance	0.130 - 0.186 (0.0051 - 0.0073)
Scavenging oil pump inner rotor to scavenging oil pump outer rotor tip clearance	0.300 (0.0118) or less
Oil pump housing to scavenging oil pump rotor axial clearance	0.025 - 0.080 (0.0010 - 0.0031)