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G
H
I
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SECTION LU

ENGINE LUBRICATION SYSTEM

CONTENTS

<p style="text-align: center;">MR16DDT</p> <p>SYSTEM DESCRIPTION 3</p> <p>DESCRIPTION 3</p> <p style="padding-left: 20px;">Engine Lubrication System3</p> <p style="padding-left: 20px;">Engine Lubrication System Schematic3</p> <p>PRECAUTION 4</p> <p>PRECAUTIONS 4</p> <p style="padding-left: 20px;">Liquid Gasket4</p> <p>PREPARATION 6</p> <p>PREPARATION 6</p> <p style="padding-left: 20px;">Special Service Tools6</p> <p style="padding-left: 20px;">Commercial Service Tools6</p> <p>PERIODIC MAINTENANCE 8</p> <p>ENGINE OIL 8</p> <p style="padding-left: 20px;">Inspection8</p> <p style="padding-left: 20px;">Draining9</p> <p style="padding-left: 20px;">Refilling9</p> <p>OIL FILTER11</p> <p style="padding-left: 20px;">Removal and Installation 11</p> <p style="padding-left: 20px;">Inspection 11</p> <p>REMOVAL AND INSTALLATION12</p> <p>OIL COOLER12</p> <p style="padding-left: 20px;">Exploded View 12</p> <p style="padding-left: 20px;">Removal and Installation 13</p> <p style="padding-left: 20px;">Inspection 13</p> <p>UNIT DISASSEMBLY AND ASSEMBLY ...15</p> <p>OIL PUMP15</p> <p style="padding-left: 20px;">Exploded View 15</p> <p style="padding-left: 20px;">Removal and Installation 16</p> <p style="padding-left: 20px;">Inspection 17</p>	<p>SERVICE DATA AND SPECIFICATIONS (SDS)18</p> <p>SERVICE DATA AND SPECIFICATIONS (SDS)18</p> <p style="padding-left: 20px;">Periodical Maintenance Specification18</p> <p style="padding-left: 20px;">Engine Oil Pressure18</p> <p style="text-align: center;">HR16DE</p> <p>PRECAUTION19</p> <p>PRECAUTIONS19</p> <p style="padding-left: 20px;">Liquid Gasket19</p> <p>PREPARATION21</p> <p>PREPARATION21</p> <p style="padding-left: 20px;">Special Service Tools21</p> <p style="padding-left: 20px;">Commercial Service Tools21</p> <p>SYSTEM DESCRIPTION23</p> <p>DESCRIPTION23</p> <p style="padding-left: 20px;">Engine Lubrication System23</p> <p style="padding-left: 20px;">Engine Lubrication System Schematic24</p> <p>PERIODIC MAINTENANCE25</p> <p>ENGINE OIL25</p> <p style="padding-left: 20px;">Inspection25</p> <p style="padding-left: 20px;">Draining26</p> <p style="padding-left: 20px;">Refilling26</p> <p>OIL FILTER28</p> <p style="padding-left: 20px;">Removal and Installation28</p> <p style="padding-left: 20px;">Inspection28</p> <p>SERVICE DATA AND SPECIFICATIONS (SDS)29</p> <p>SERVICE DATA AND SPECIFICATIONS (SDS)29</p>
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Periodical Maintenance Specification	29	OIL FILTER	35
Engine Oil Pressure	29	Exploded View	35
K9K		Removal and Installation	35
PRECAUTION	30	REMOVAL AND INSTALLATION	36
PRECAUTIONS	30	OIL PUMP	36
Liquid Gasket	30	Exploded View	36
PREPARATION	32	Removal and Installation	36
PREPARATION	32	OIL COOLER	37
Special Service Tool	32	Exploded View	37
PERIODIC MAINTENANCE	33	Removal and Installation	37
ENGINE OIL	33	Inspection	38
Inspection	33	SERVICE DATA AND SPECIFICATIONS	
Draining	34	(SDS)	39
Refilling	34	SERVICE DATA AND SPECIFICATIONS	
		(SDS)	39
		Standard and Limit	39

SYSTEM DESCRIPTION

DESCRIPTION

Engine Lubrication System

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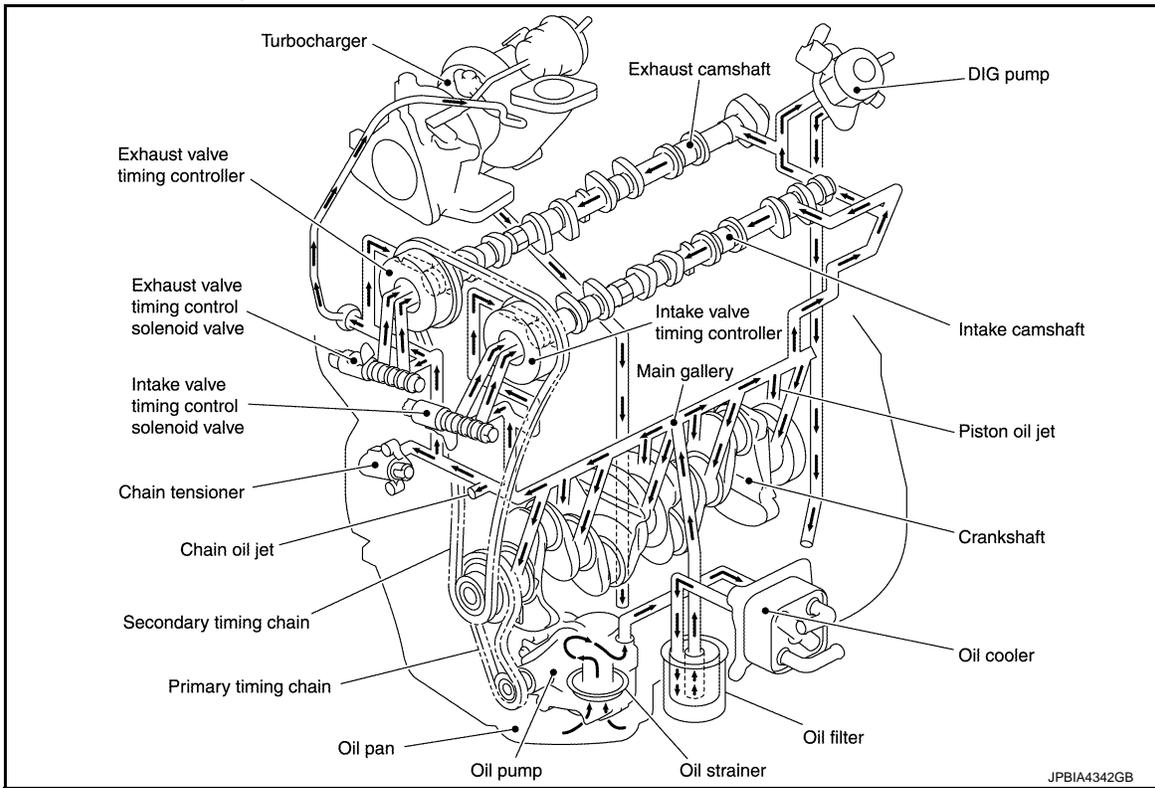
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Engine Lubrication System Schematic

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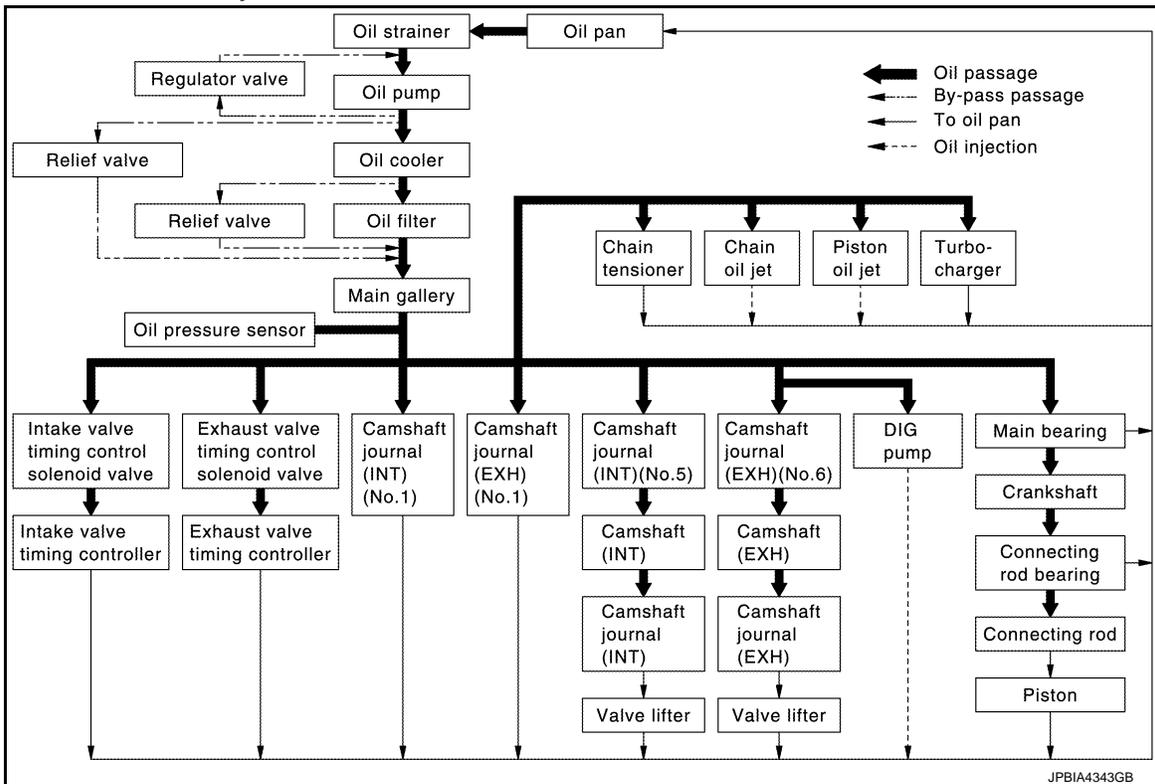
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< PRECAUTION >

PRECAUTION

PRECAUTIONS

Liquid Gasket

INFOID:000000006337314

REMOVAL OF LIQUID GASKET SEALING

- After removing mounting nuts and bolts, separate the mating surface using the seal cutter [SST: KV10111100 (J-37228)] (A) and remove old liquid gasket sealing.

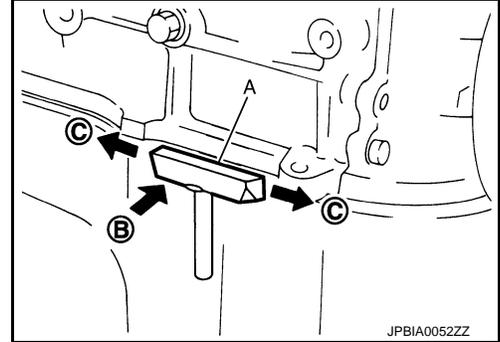
CAUTION:

Be careful not to damage the mating surfaces.

- Tap the seal cutter [SST: KV10111100 (J-37228)] to insert it (B), and then slide it (C) by tapping on the side as shown in the figure.
- In areas where the seal cutter [SST: KV10111100 (J-37228)] is difficult to use, lightly tap the parts using a plastic hammer to remove it.

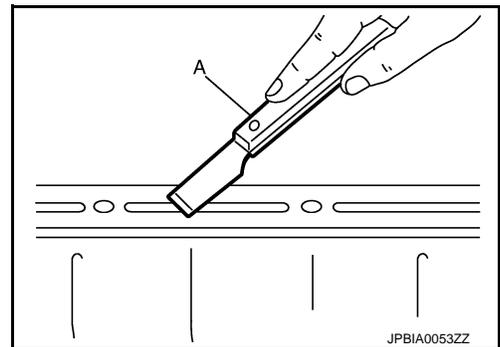
CAUTION:

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



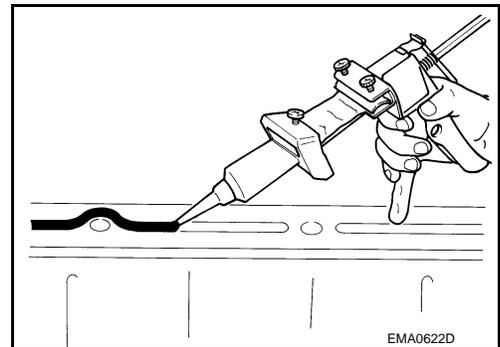
LIQUID GASKET APPLICATION PROCEDURE

1. Using a scraper (A), remove old liquid gasket adhering to the liquid gasket application surface and the mating surface.
 - Remove liquid gasket completely from the groove of 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. Attach liquid gasket tube to the tube presser (commercial service tool).

Use Genuine Liquid Gasket or equivalent.
4. Apply liquid gasket without gaps to the specified location according to the specified dimensions.
 - If there is a groove for liquid gasket application, apply liquid gasket to the groove.

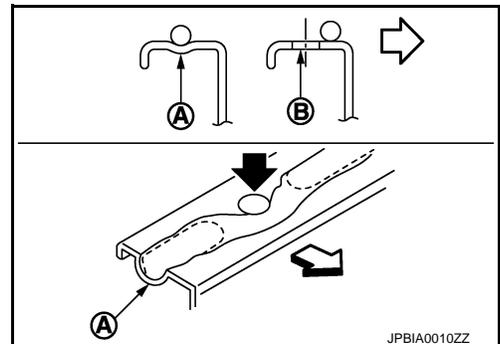


- As for bolt holes (B), normally apply liquid gasket inside the holes. Occasionally, it should be applied outside the holes. Check to read the text of this manual.

A : Groove

⇐ : Inside

- 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.



PRECAUTIONS

< PRECAUTION >

[MR16DDT]

CAUTION:

If there are specific instructions in this manual, observe them.

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PREPARATION

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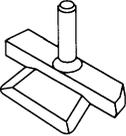
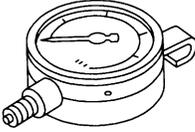
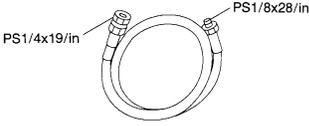
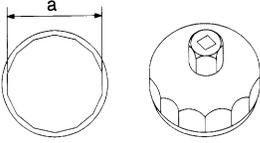
[MR16DDT]

PREPARATION

PREPARATION

Special Service Tools

INFOID:000000006337315

Tool number Tool name	Description
KV10111100 Seat cutter  <p style="text-align: center;">NT046</p>	Removing oil pan (lower) etc.
ST25051001 Oil pressure gauge  <p style="text-align: center;">NT050</p>	Measuring oil pressure Maximum measuring range: 2,452 kPa (25 kg/cm², 356 psi)
ST25052000 Hose  <p style="text-align: center;">S-NT559</p>	Adapting oil pressure gauge to cylinder block
KV10115801 Oil filter wrench  <p style="text-align: center;">S-NT375</p>	Removing and installing oil filter a: 64.3 mm (2.531 in)

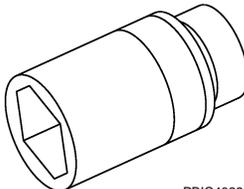
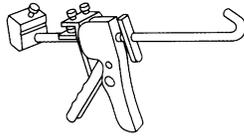
Commercial Service Tools

INFOID:000000006337316

PREPARATION

< PREPARATION >

[MR16DDT]

Tool name	Description
<p data-bbox="162 199 292 220">Deep socket</p>  <p data-bbox="828 409 901 430">PBIC4066E</p>	<p data-bbox="1006 199 1445 252">Removing and installing oil pressure switch 27 mm (1.06 in)</p>
<p data-bbox="162 451 292 472">Tube presser</p>  <p data-bbox="828 661 876 682">NT052</p>	<p data-bbox="1006 451 1347 472">Pressing the tube of liquid gasket</p>

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PERIODIC MAINTENANCE

ENGINE OIL

Inspection

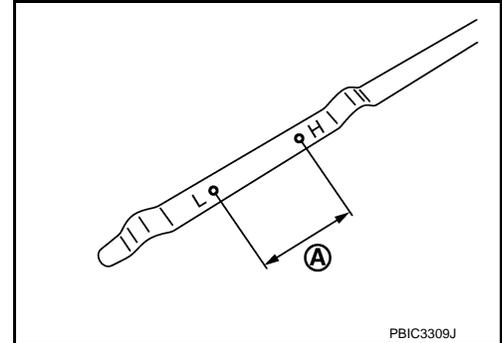
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ENGINE OIL LEVEL

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 that the engine oil level is within the range (A) shown in the figure.
3. If it is out of range, adjust it.



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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 area.

- Oil pan (upper and lower)
- Oil pan drain plug
- Oil pressure switch
- Oil filter
- Valve timing control cover
- Front cover
- Mating surface between cylinder head and camshaft bracket
- Mating surface between cylinder block and cylinder head
- Mating surface between cylinder head and rocker cover
- Crankshaft oil seals (front and rear)

OIL PRESSURE CHECK

WARNING:

- Be careful not to get burned, as engine oil may be hot.
- When checking engine oil pressure, shift position should be “Parking position”, and apply parking brake securely.

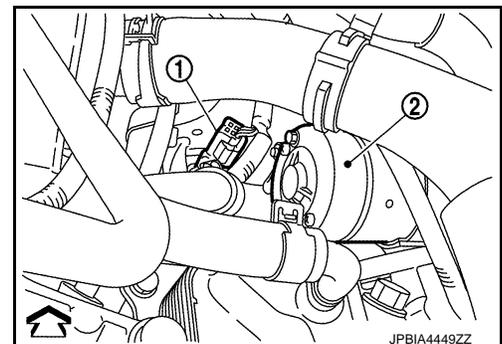
1. Check engine oil level. Refer to [LU-8. "Inspection"](#).
2. Disconnect harness connector at oil pressure sensor (1), and remove oil pressure switch using a deep socket (commercial service tool).

2 : Starter motor

⇐ : Engine front

CAUTION:

Never drop or shock oil pressure switch.



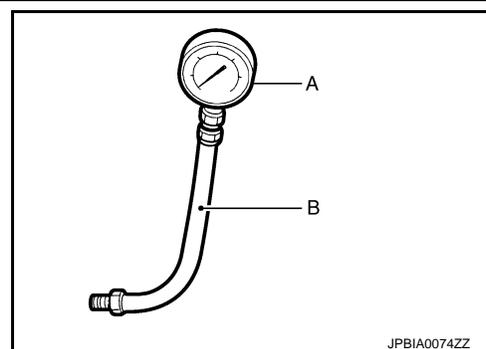
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ENGINE OIL

< PERIODIC MAINTENANCE >

[MR16DDT]

3. Install oil pressure gauge [SST: ST25051001 (J-25695-1)] (A) and hose [SST: ST25052000 (J-25695-2)] (B).



4. Start engine and warm it up to normal operating temperature.
5. Check oil pressure with engine running under no-load.
NOTE:
When engine oil temperature is low, engine oil pressure becomes high.

Engine oil pressure : Refer to [LU-18, "Engine Oil Pressure"](#).

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

6. After the inspections, install oil pressure switch as follows:
 - a. Remove old liquid gasket adhering to oil pressure switch and engine.
 - b. Apply liquid gasket and tighten oil pressure switch to specification.
Use Genuine RTV Silicon Sealant or equivalent.

Tightening torque : Refer to [EM-103, "Exploded View"](#).

- c. Check engine oil level. Refer to [LU-8, "Inspection"](#).
- d. After warming up engine, check that there is no leakage of engine oil with running engine.

Draining

INFOID:000000006337318

WARNING:

- Be careful not to get burned, as engine oil may be hot.
- 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-8, "Inspection"](#).
2. Stop the engine and wait for 10 minutes.
3. Loosen oil filler cap.
4. Remove drain plug and then drain engine oil.

Refilling

INFOID:000000006337319

1. Install drain plug with new drain plug washer. Refer to [EM-40, "Exploded View"](#).

CAUTION:

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

Tightening torque : Refer to [EM-40, "Exploded View"](#).

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:

- The refill capacity depends on the engine oil temperature and drain time. Use these specifications for reference only.

ENGINE OIL

< PERIODIC MAINTENANCE >

[MR16DDT]

-
- **Always use oil level gauge to determine the proper amount of engine oil in the engine.**
3. Warm up engine and check area around drain plug and oil filter for engine oil leakage.
 4. Stop engine and wait for 10 minutes.
 5. Check the engine oil level. Refer to [LU-8. "Inspection"](#).

OIL FILTER

Removal and Installation

INFOID:000000006337320

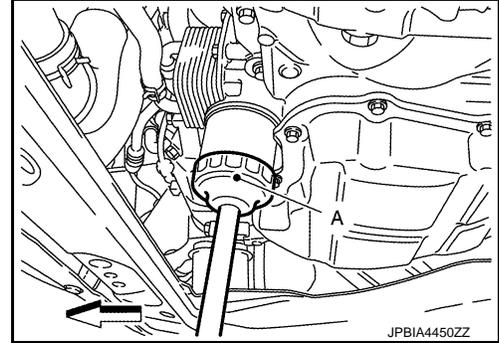
REMOVAL

1. Remove engine under cover.
2. Using oil filter wrench [SST: KV10115801 (J-38956)] (A), remove oil filter.

← : Vehicle front

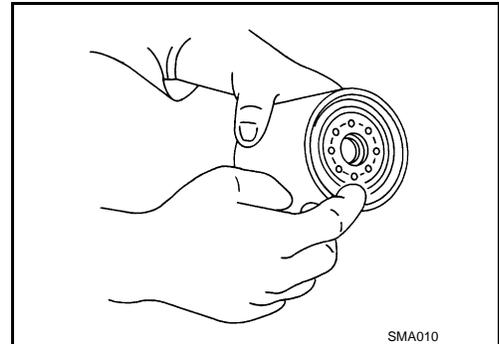
CAUTION:

- 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.
- Completely wipe off any engine oil that adheres to engine and vehicle.



INSTALLATION

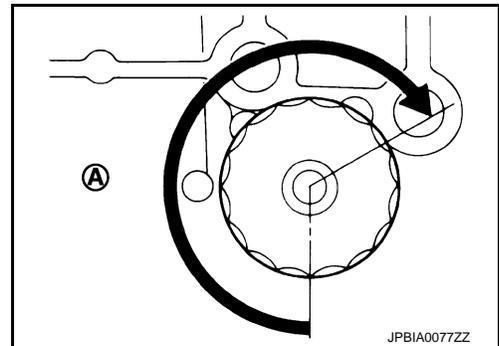
1. Remove foreign materials adhering to the oil filter installation surface.
2. Apply new engine oil to the oil seal contact surface of new oil filter.



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

Oil filter:

: 17.7 N·m (1.8 kg·m, 13 ft·lb)



Inspection

INFOID:000000006337321

INSPECTION AFTER INSTALLATION

1. Check the engine oil level. Refer to [LU-8, "Inspection"](#).
2. Start the engine, and check that 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-8, "Inspection"](#).

OIL COOLER

< REMOVAL AND INSTALLATION >

[MR16DDT]

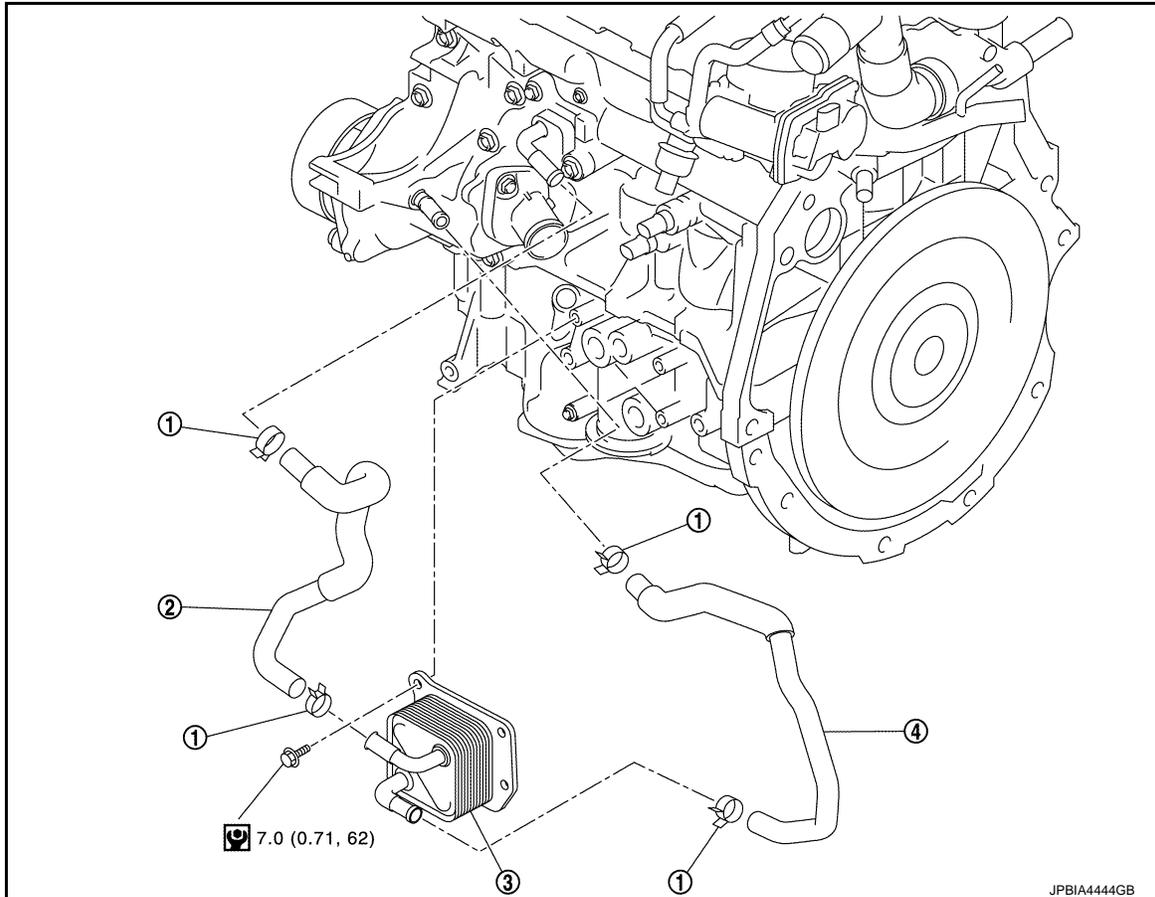
REMOVAL AND INSTALLATION

OIL COOLER

Exploded View

INFOID:000000006696653

M/T models



- 1. Clamp
- 2. Water hose
- 3. Oil cooler
- 4. Water hose

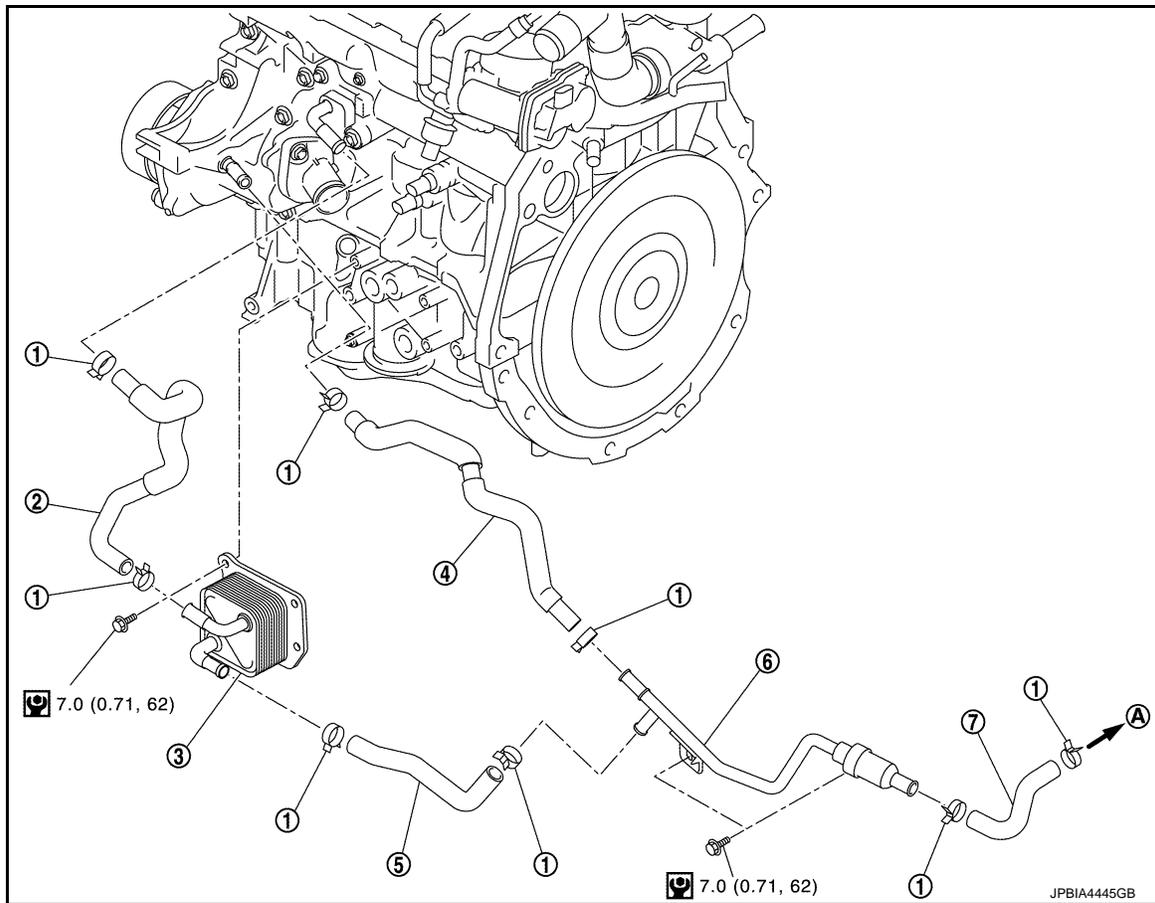
 : N·m (kg-m, in-lb)

OIL COOLER

< REMOVAL AND INSTALLATION >

[MR16DDT]

CVT models



- | | | |
|----------------------|---------------|----------------------|
| 1. Clamp | 2. Water hose | 3. Oil cooler |
| 4. Water hose | 5. Water hose | 6. Heater thermostat |
| 7. Water hose | | |
| A. To CVT oil warmer | | |

: N·m (kg-m, in-lb)

Removal and Installation

INFOID:00000000696654

REMOVAL

1. Drain engine coolant. Refer to [CO-11, "Draining"](#).
CAUTION:
Perform when engine is cold.
2. Remove front bumper facia. Refer to [EXT-12, "Exploded View"](#).
3. Remove charge air cooler. Refer to [EM-31, "Exploded View"](#).
4. Remove water hose.
5. Remove oil cooler.

INSTALLATION

Installation is in reverse order of removal.

Inspection

INFOID:00000000696655

INSPECTION AFTER REMOVAL

Oil Cooler

Check oil cooler for cracks. Check oil cooler for clogging by blowing through engine coolant inlet. If necessary, replace oil cooler assembly.

OIL COOLER

< REMOVAL AND INSTALLATION >

[MR16DDT]

INSPECTION AFTER INSTALLATION

1. Check the engine oil level and the engine coolant level and add engine oil and engine coolant. Refer to [LU-8, "Inspection"](#) and [CO-11, "Inspection"](#).
2. Start the engine, and check that there is no leakage of engine oil or engine coolant.
3. Stop the engine and wait for 10 minutes.
4. Check the engine oil level and the engine coolant level again. Refer to [LU-8, "Inspection"](#) and [CO-11, "Inspection"](#).

OIL PUMP

< UNIT DISASSEMBLY AND ASSEMBLY >

[MR16DDT]

UNIT DISASSEMBLY AND ASSEMBLY

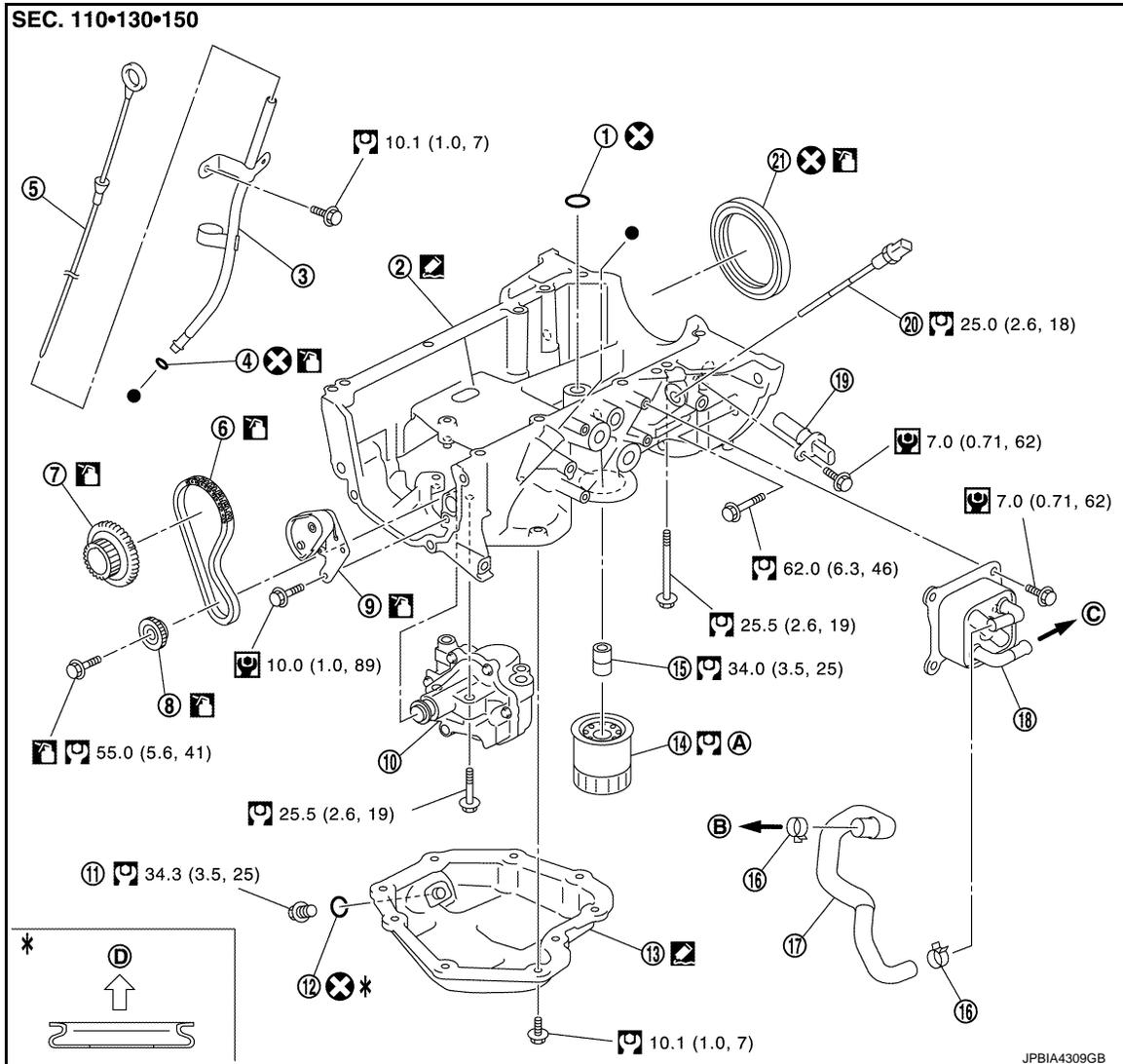
OIL PUMP

Exploded View

INFOID:000000006489830

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- | | | |
|--------------------------------|----------------------|-----------------------------|
| 1. O-ring | 2. Oil pan (upper) | 3. Oil level gauge guide |
| 4. O-ring | 5. Oil level gauge | 6. Oil pump drive chain |
| 7. Crankshaft sprocket | 8. Oil pump sprocket | 9. Oil pump chain tensioner |
| 10. Oil pump | 11. Drain plug | 12. Drain plug washer |
| 13. Oil pan (lower) | 14. Oil filter | 15. Connector bolt |
| 16. Clamp | 17. Oil cooler hose | 18. Oil cooler |
| 19. Crankshaft position sensor | 20. Oil level sensor | 21. Rear oil seal |
- A. Refer to [LU-11](#)
- B. To thermostat housing
- C. To thermostat housing (M/T models)
To CVT fluid cooler (CVT models)

D. Oil pan side

: N·m (kg-m, ft-lb)

: N·m (kg-m, in-lb)

: Always replace after every disassembly.

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 : Should be lubricated with oil.

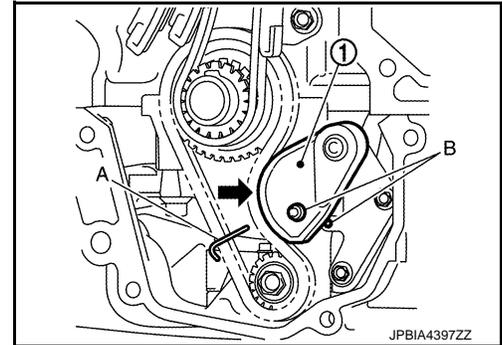
 : Sealing point

Removal and Installation

INFOID:000000006337323

REMOVAL

1. Remove engine assembly. Refer to [EM-55, "2WD : Exploded View"](#) (2WD) , [EM-59, "4WD : Exploded View"](#) (4WD).
2. Remove oil pan (lower). Refer to [EM-41, "Removal and Installation"](#).
3. Remove front cover, and other related parts. Refer to [EM-67, "Exploded View"](#).
4. Remove oil pump sprocket with the following procedure:
 - Add matching mark if necessary for easier installation.
- a. Push oil pump drive chain tensioner (1) in the direction show in the figure (A).
- b. Insert a stopper pin (A) into the body hole (B).
- c. Remove oil pump chain tensioner.
 - When the holes on lever and tensioner body cannot be aligned, align these holes by slightly moving the oil pump chain tensioner slack guide.



- d. Hold the WAF part of oil pump shaft [WAF: 10 mm (0.39 in)] (A), and then loosen the oil pump sprocket bolt and remove it.

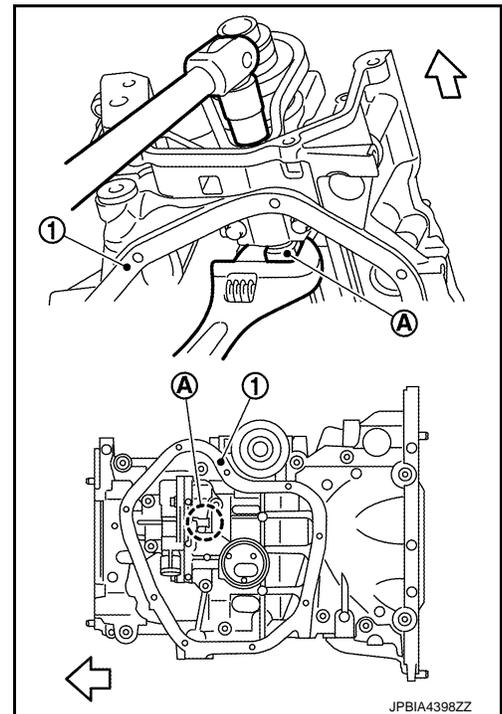
1 : Oil pan (upper)

 : Engine front

CAUTION:

- **Secure the oil pump shaft with the WAF part.**
- **Never loosen the oil pump sprocket bolt by tightening the oil pump drive chain.**

- e. Remove oil pump sprocket.



5. Remove oil pump.

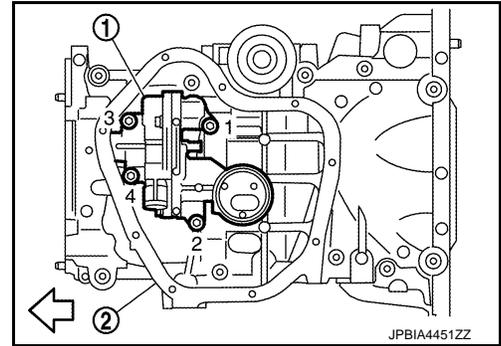
OIL PUMP

< UNIT DISASSEMBLY AND ASSEMBLY >

[MR16DDT]

- Loosen bolts in reverse order as shown in the figure.

- 1 : Oil pump
- 2 : Oil pan (upper)
- ⇐ : Engine front



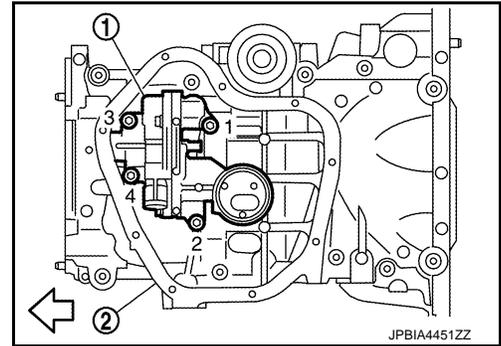
INSTALLATION

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

Oil Pump

- Tighten bolts in numerical order as shown in the figure.

- 1 : Oil pump
- 2 : Oil pan (upper)
- ⇐ : Engine front



Inspection

INFOID:000000006337324

INSPECTION AFTER INSTALLATION

1. Check the engine oil level. Refer to [LU-8. "Inspection"](#).
2. Start the engine, and check that 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-8. "Inspection"](#).

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[MR16DDT]

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Periodical Maintenance Specification

INFOID:000000006337325

ENGINE OIL CAPACITY (APPROXIMATE)

Unit: ℓ (Imp qt)

Drain and refill	With oil filter change	4.8 (4-1/4)
	Without oil filter change	4.6 (4)
Dry engine (Overhaul)		5.4 (4-3/4)

Engine Oil Pressure

INFOID:000000006337326

Unit: kPa (bar, kg/cm², psi)

Engine speed	Approximate discharge pressure*
Idle speed	60 (0.6, 0.61, 9)
2,000 rpm	200 (2.0, 2.0, 29)

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

PRECAUTION

PRECAUTIONS

Liquid Gasket

INFOID:000000006450016

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REMOVAL OF LIQUID GASKET SEALING

- After removing mounting nuts and bolts, separate the mating surface using the seal cutter [SST: KV10111100] (A) and remove old liquid gasket sealing.

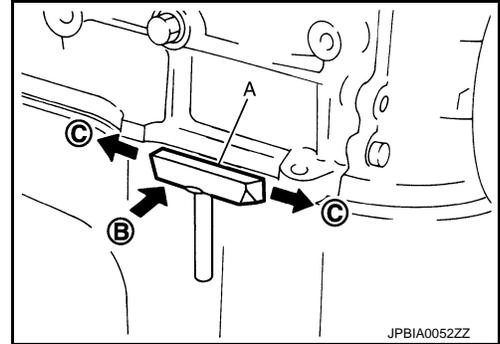
CAUTION:

Be careful not to damage the mating surfaces.

- Tap the seal cutter [SST: KV10111100] to insert it (B), and then slide it (C) by tapping on the side as shown in the figure.
- In areas where the seal cutter [SST: KV10111100] is difficult to use, lightly tap the parts using a plastic hammer to remove it.

CAUTION:

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



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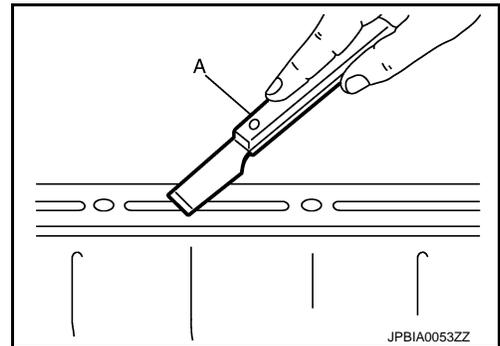
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LIQUID GASKET APPLICATION PROCEDURE

1. Using a scraper (A), remove old liquid gasket adhering to the liquid gasket application surface and the mating surface.
 - Remove liquid gasket completely from the groove of 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.



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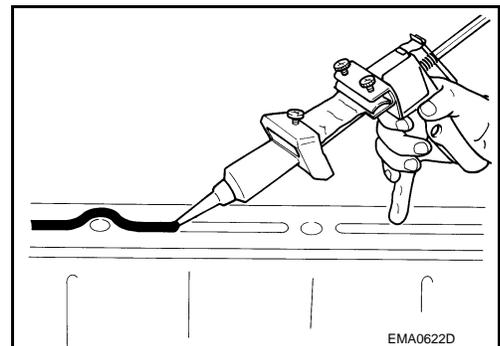
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3. Attach liquid gasket tube to the tube presser (commercial service tool).

Use Genuine Liquid gasket or equivalent.

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



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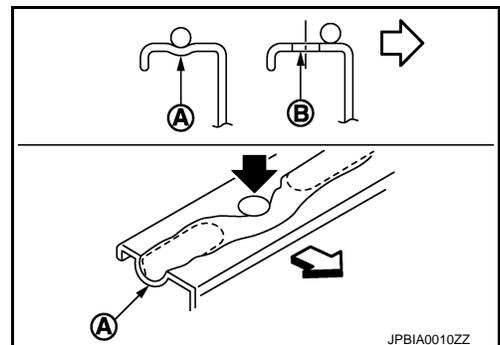
- As for bolt holes (B), normally apply liquid gasket inside the holes. Occasionally, it should be applied outside the holes. Check to read the text of this manual.

A : Groove

⇐ : Inside

- 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.

CAUTION:



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PRECAUTIONS

< PRECAUTION >

[HR16DE]

If there are specific instructions in this manual, observe them.

PREPARATION

< PREPARATION >

[HR16DE]

PREPARATION

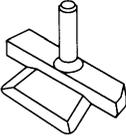
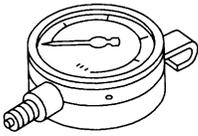
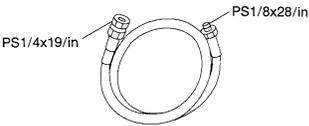
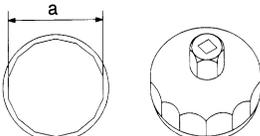
PREPARATION

Special Service Tools

INFOID:000000006450017

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Tool number Tool name	Description
KV10111100 Seat cutter  NT046	Removing oil pan (lower) etc.
ST25051001 Oil pressure gauge  NT050	Measuring oil pressure Maximum measuring range: 2,452 kPa (25 kg/cm², 356 psi)
ST25052000 Hose  S-NT559	Adapting oil pressure gauge to cylinder block
KV10115801 Oil filter wrench  S-NT375	Removing and installing oil filter a: 64.3 mm (2.531 in)

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Commercial Service Tools

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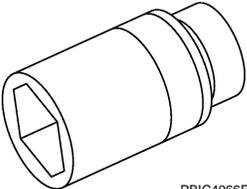
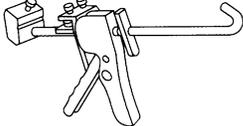
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PREPARATION

[HR16DE]

< PREPARATION >

Tool name	Description
<p data-bbox="164 197 293 222">Deep socket</p>  <p data-bbox="829 415 898 432">PBIC4066E</p>	<p data-bbox="1010 197 1446 254">Removing and installing oil pressure switch 27 mm (1.06 in)</p>
<p data-bbox="164 449 293 474">Tube presser</p>  <p data-bbox="829 663 873 680">NT052</p>	<p data-bbox="1010 449 1349 474">Pressing the tube of liquid gasket</p>

SYSTEM DESCRIPTION

DESCRIPTION

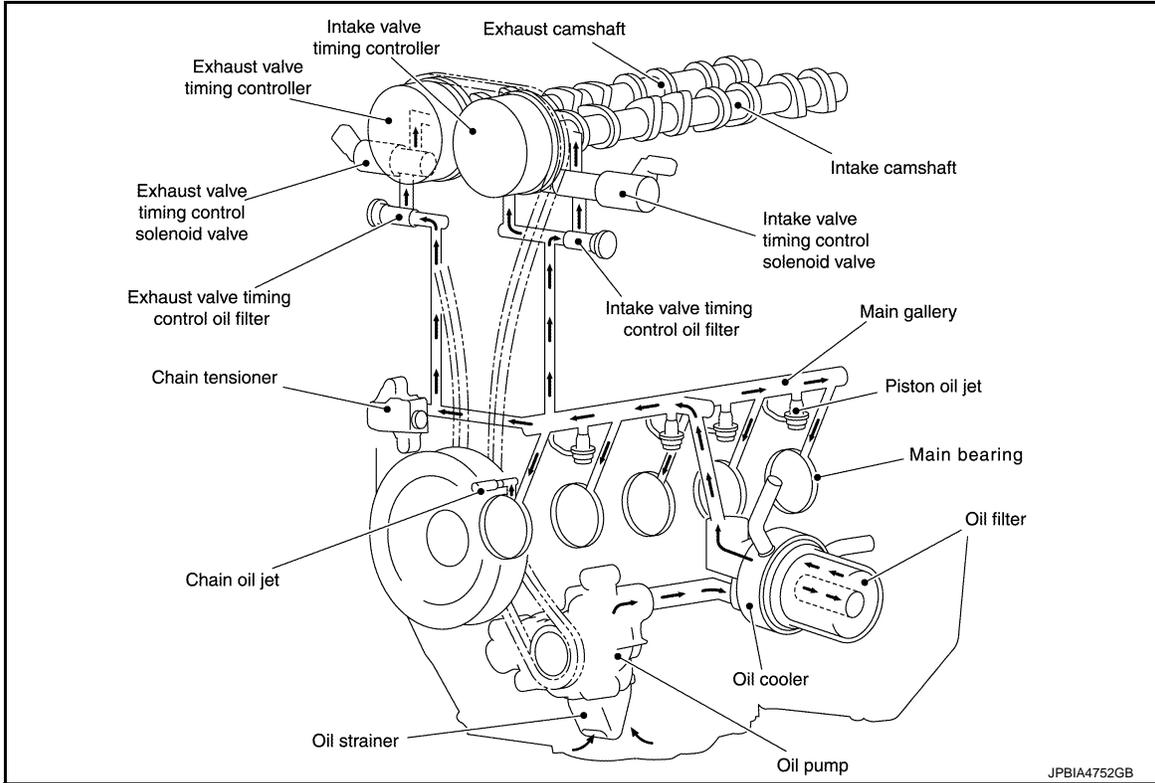
Engine Lubrication System

INFOID:000000006450019

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WITH OIL COOLER



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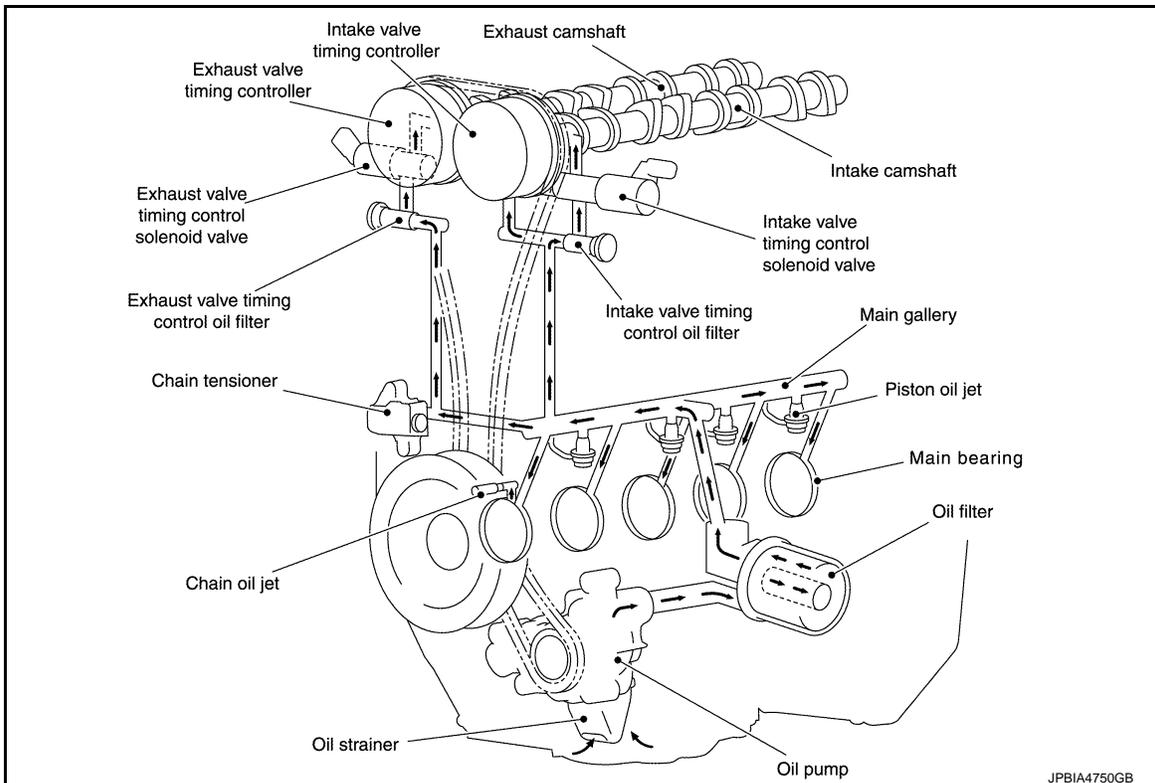
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WITHOUT OIL COOLER



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DESCRIPTION

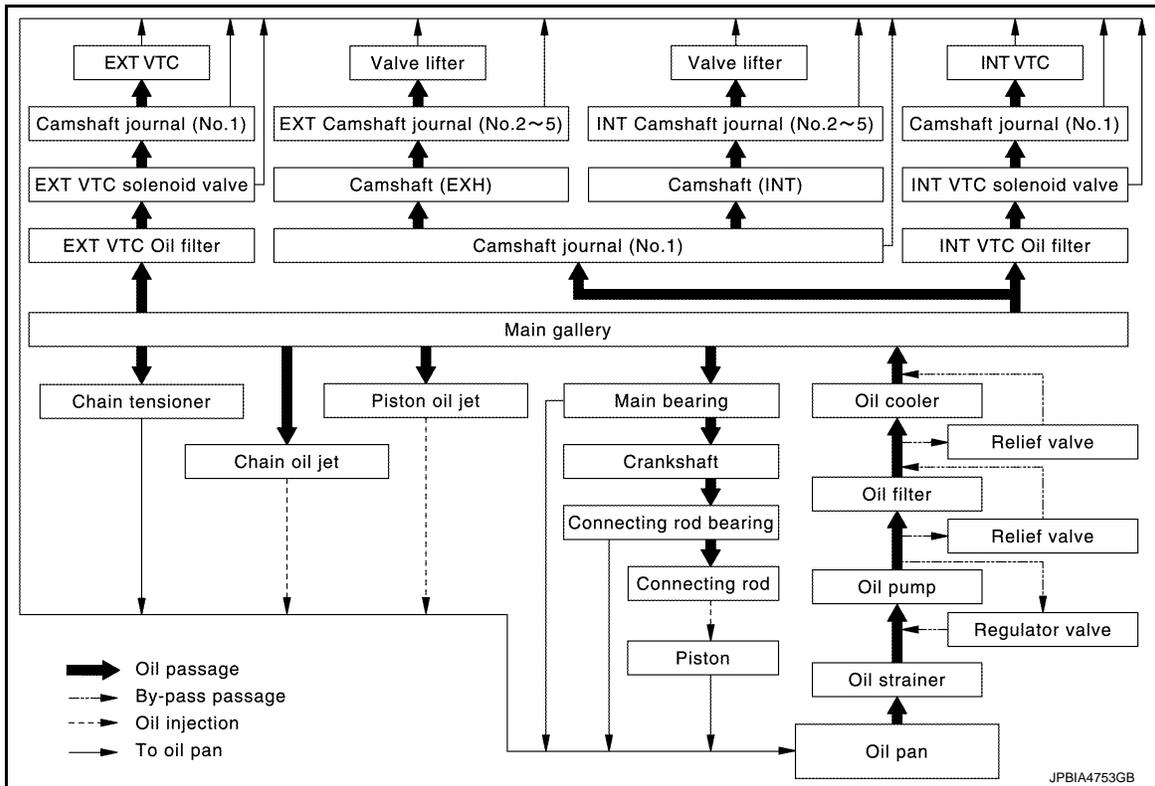
< SYSTEM DESCRIPTION >

[HR16DE]

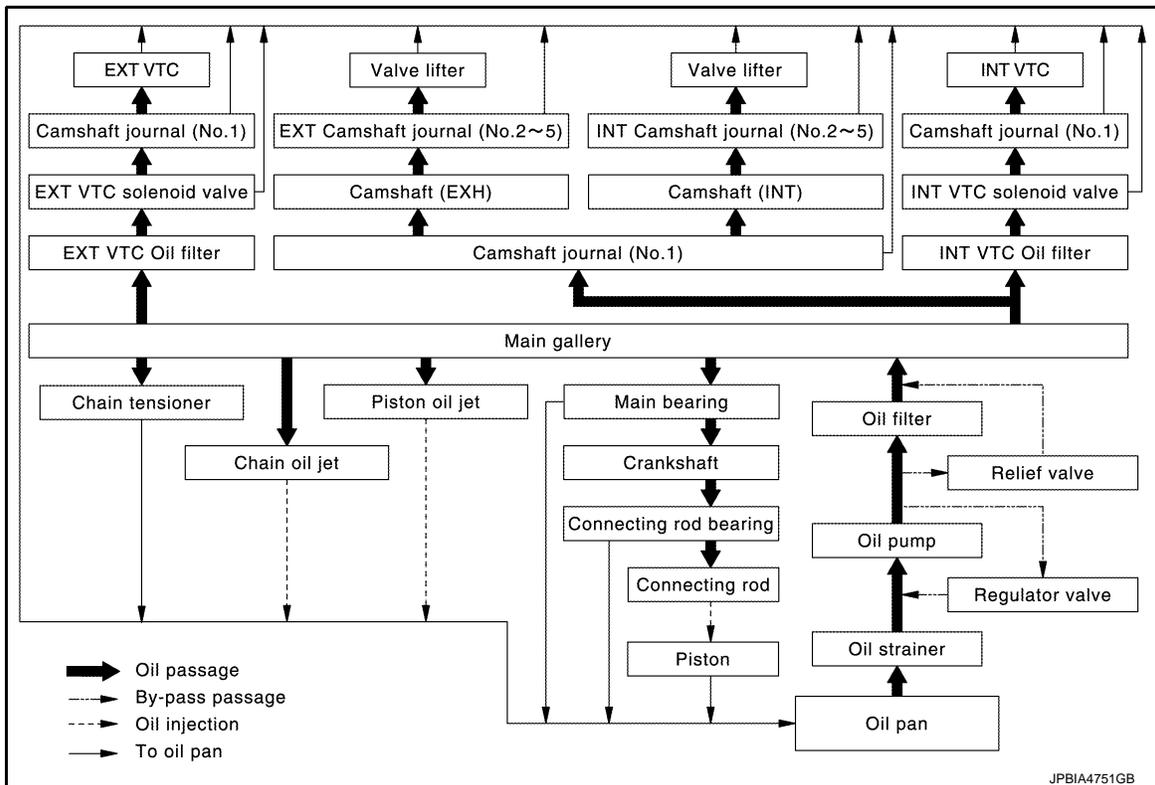
Engine Lubrication System Schematic

INFOID:000000006450020

WITH OIL COOLER



WITHOUT OIL COOLER



PERIODIC MAINTENANCE

ENGINE OIL

Inspection

INFOID:000000006450021

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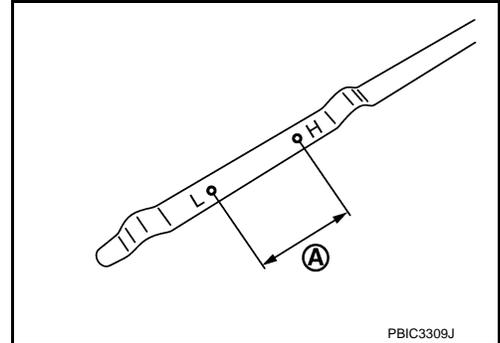
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ENGINE OIL LEVEL

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 that the engine oil level is within the range (A) shown in the figure.
3. If it is out of range, adjust it.



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 area.

- Oil pan (upper and lower)
- Oil pan drain plug
- Oil pressure switch
- Oil filter
- Intake valve timing control solenoid valve
- Front cover
- Mating surface between cylinder head and camshaft bracket
- Mating surface between cylinder block and cylinder head
- Mating surface between cylinder head and rocker cover
- Crankshaft oil seals (front and rear)

OIL PRESSURE CHECK

WARNING:

- Be careful not to get burned, as engine oil may be hot.
- When checking engine oil pressure, shift position should be "Parking position", and apply parking brake securely.

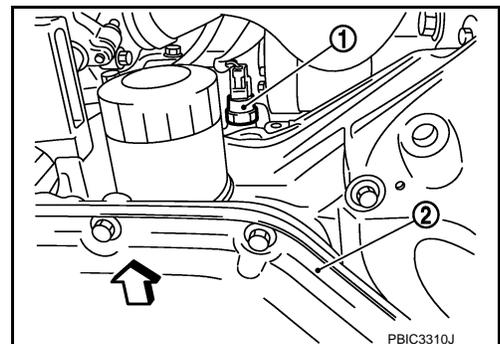
1. Check engine oil level. Refer to [LU-25. "Inspection"](#).
2. Disconnect harness connector at oil pressure switch (1), and remove oil pressure switch using a deep socket (commercial service tool).

2 : Oil pan (lower)

↔ : Vehicle front

CAUTION:

Never drop or shock oil pressure switch.



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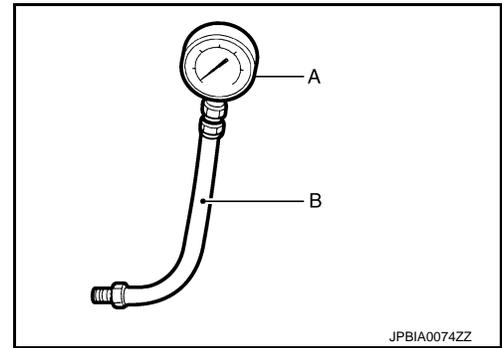
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ENGINE OIL

< PERIODIC MAINTENANCE >

[HR16DE]

3. Install oil pressure gauge [SST: ST25051001] (A) and hose [SST: ST25052000] (B).



4. Start engine and warm it up to normal operating temperature.
5. Check oil pressure with engine running under no-load.
NOTE:
When engine oil temperature is low, engine oil pressure becomes high.

Engine oil pressure : Refer to [LU-29, "Engine Oil Pressure"](#).

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

6. After the inspections, install oil pressure switch as follows:
 - a. Remove old liquid gasket adhering to oil pressure switch and engine.
 - b. Apply liquid gasket and tighten oil pressure switch to specification.
Use Genuine Liquid Gasket or equivalent.

Tightening torque : Refer to [EM-169, "Exploded View"](#).

- c. Check engine oil level. Refer to [LU-25, "Inspection"](#).
- d. After warming up engine, check that there is no leakage of engine oil with running engine.

Draining

INFOID:000000006450022

WARNING:

- Be careful not to get burned, as engine oil may be hot.
 - 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-25, "Inspection"](#).
 2. Stop the engine and wait for 10 minutes.
 3. Loosen oil filler cap.
 4. Remove drain plug and then drain engine oil.

Refilling

INFOID:000000006450023

1. Install drain plug with new drain plug washer. Refer to [EM-169, "Exploded View"](#).

CAUTION:

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

Tightening torque : Refer to [EM-169, "Exploded View"](#).

2. Refill with new engine oil.
Engine oil specification and viscosity: Refer to [MA-13, "Fluids and Lubricants"](#).

Engine oil capacity : Refer to [LU-29, "Periodical Maintenance Specification"](#).

CAUTION:

- The refill capacity depends on the engine oil temperature and drain time. Use these specifications for reference only.

ENGINE OIL

< PERIODIC MAINTENANCE >

[HR16DE]

- Always use oil level gauge to determine the proper amount of engine oil in the engine.

3. Warm up engine and check area around drain plug and oil filter for engine oil leakage.
4. Stop engine and wait for 10 minutes.
5. Check the engine oil level. Refer to [LU-25. "Inspection"](#).

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OIL FILTER

Removal and Installation

INFOID:000000006450024

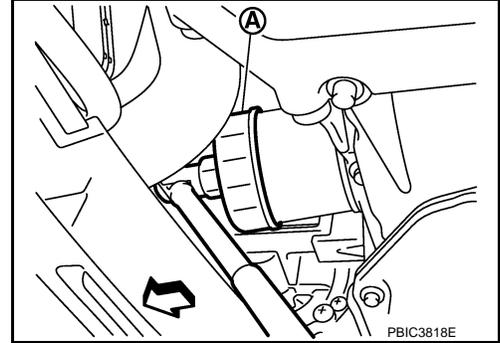
REMOVAL

1. Remove engine under cover.
2. Using oil filter wrench [SST: KV10115801] (A), remove oil filter.

↶ : Vehicle front

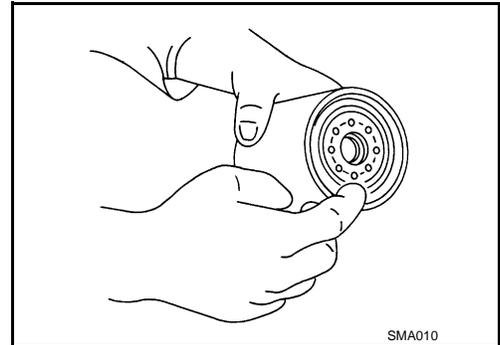
CAUTION:

- 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.
- Completely wipe off any engine oil that adheres to engine and vehicle.



INSTALLATION

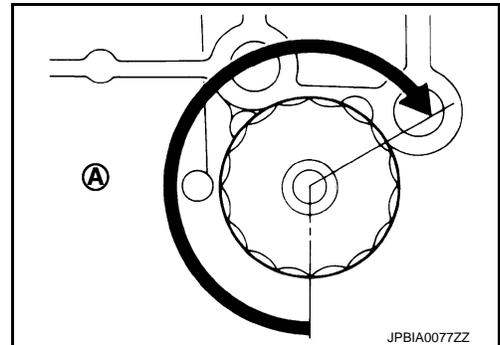
1. Remove foreign materials adhering to the oil filter installation surface.
2. Apply new engine oil to the oil seal contact surface of new oil filter.



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

Oil filter:

: 17.7 N·m (1.8 kg·m, 13 ft·lb)



Inspection

INFOID:000000006450025

INSPECTION AFTER INSTALLATION

1. Check the engine oil level. Refer to [LU-25, "Inspection"](#).
2. Start the engine, and check that 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-25, "Inspection"](#).

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[HR16DE]

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Periodical Maintenance Specification

INFOID:000000006450026

ENGINE OIL CAPACITY (APPROXIMATE)

Unit: ℓ (US qt, Imp qt)

Drain and refill	With oil filter change	4.3 (4-4/8, 3-6/8)
	Without oil filter change	4.1 (4-3/8, 3-5/8)
Dry engine (Overhaul)		4.8 (5-1/8, 4-2/8)

Engine Oil Pressure

INFOID:000000006450027

Unit: kPa (kg/cm², psi)

Engine speed	Approximate discharge pressure*
Idle speed	60 (0.61, 9)
2,000 rpm	270 (2.8, 39)

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

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PRECAUTION

PRECAUTIONS

Liquid Gasket

INFOID:000000006450028

REMOVAL OF LIQUID GASKET

- After removing mounting nuts and bolts, separate the mating surface using the seal cutter [SST: KV10111100] (A) and remove old liquid gasket sealing.

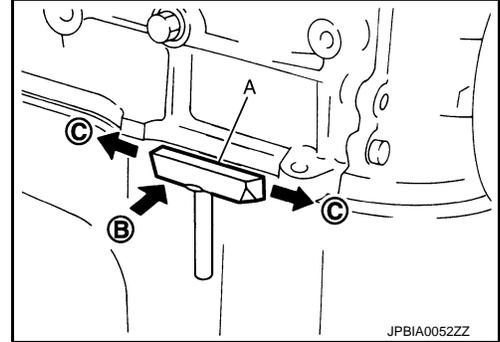
CAUTION:

Be careful not to damage the mating surfaces.

- Tap the seal cutter [SST: KV10111100] to insert it (B), and then slide it (C) by tapping on the side as shown in the figure.
- In areas where the seal cutter [SST: KV10111100] is difficult to use, lightly tap the parts using a plastic hammer to remove it.

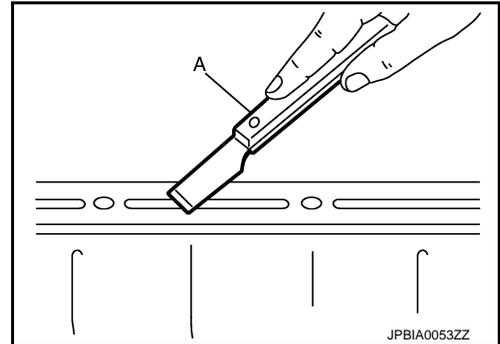
CAUTION:

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

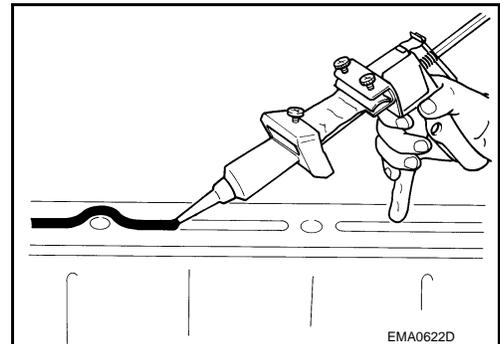


LIQUID GASKET APPLICATION PROCEDURE

1. Using a scraper (A), remove old liquid gasket adhering to the liquid gasket application surface and the mating surface.
 - Remove liquid gasket completely from the groove of 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. Attach liquid gasket tube to the tube presser (commercial service tool).
Use Liquid Gasket or equivalent.
4. Apply liquid gasket without gaps to the specified location according to the specified dimensions.
 - If there is a groove for liquid gasket application, apply liquid gasket to the groove.



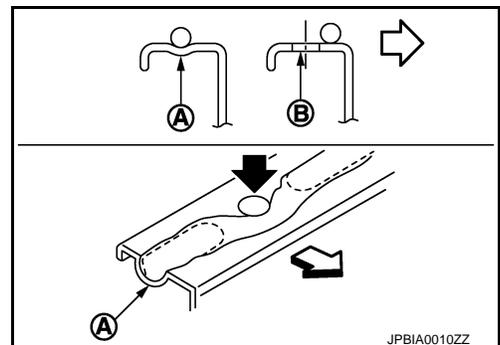
- As for bolt holes (B), normally apply liquid gasket inside the holes. Occasionally, it should be applied outside the holes. Check to read the text of this manual.

A : Groove

⇐ : Inside

- 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.

CAUTION:



PRECAUTIONS

< PRECAUTION >

[K9K]

If there are specific instructions in this manual, observe them.

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PREPARATION

< PREPARATION >

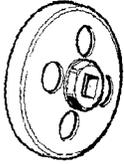
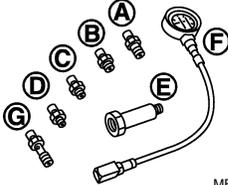
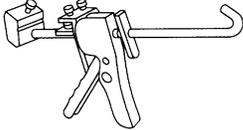
[K9K]

PREPARATION

PREPARATION

Special Service Tool

INFOID:000000006450029

NISSAN tool number (RENAULT tool number) Tool name	Description
KV113C0010 (Mot.1329) Oil filter wrench  MBIB0369E	Removing and installing oil filter
KV113E0020 (Mot.836-05) Oil pressure gauge set  MBIB0663E	Measuring oil pressure Use C, E, F.
WS39930000 (—) Tube presser  S-NT052	Pressing the tube of liquid gasket

PERIODIC MAINTENANCE

ENGINE OIL

Inspection

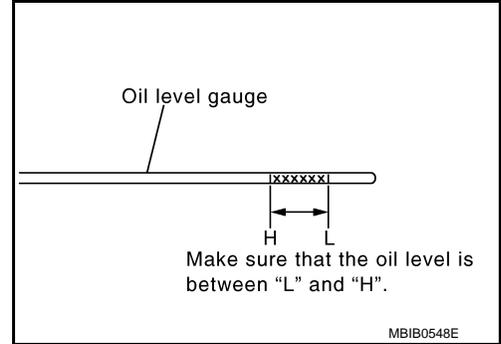
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OIL LEVEL AND MUDDINESS

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



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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.

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OIL LEAKAGE

Check for oil leakage around the following area.

- Oil pan
- Oil pan drain plug
- Oil pressure switch
- Oil filter bracket
- Vacuum pump
- Oil pump housing
- Mating surface between cylinder block and cylinder head
- Mating surface between cylinder head and rocker cover
- Oil cooler
- Crankshaft oil seals

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OIL PRESSURE CHECK

WARNING:

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

L

1. Check the oil level. Refer to "OIL LEVEL MUDDINES".
2. Remove engine undercover.
3. Disconnect harness connector at oil pressure switch (1), and remove oil pressure switch using a deep socket (commercial service tool).

M

- 2 : Oil pan
- ← : Vehicle front

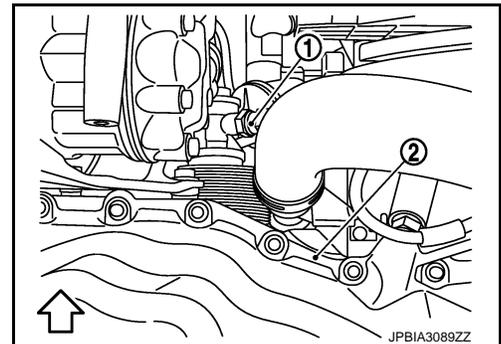
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CAUTION:

Never drop or shock oil pressure switch.



4. Install oil pressure gauge [SST:KV113E0020 (Mot. 836-05)]
5. After warming up the engine, make sure oil pressure corresponding to the engine speed is produced.

Engine oil pressure : Refer to [LU-39, "Standard and Limit"](#).

ENGINE OIL

[K9K]

< PERIODIC MAINTENANCE >

6. After checking, install the oil pressure switch as follows.
 - a. Remove old liquid gasket adhering to the switch and engine.
 - b. Apply liquid gasket and tighten oil pressure switch to specification.
Use Genuine Liquid Gasket or equivalent.

Tightening torque : Refer to [LU-35, "Exploded View"](#).

7. Start engine and check for oil leakage.

Draining

INFOID:000000006450031

WARNING:

- **Be careful not to get burned, as engine oil may be hot.**
 - **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-25, "Inspection"](#).
 2. Stop the engine and wait for 10 minutes.
 3. Loosen oil filler cap.
 4. Remove drain plug and then drain engine oil.

Refilling

INFOID:000000006450032

1. Refill with new engine oil.
Engine oil specification and viscosity: Refer to [MA-13, "Fluids and Lubricants"](#).

Engine oil capacity : Refer to [LU-39, "Standard and Limit"](#).

CAUTION:

- **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 the engine.**
2. Warm up engine and check area around drain plug and oil filter for engine oil leakage.
 3. Stop engine and wait for 10 minutes.
 4. Check the engine oil level. Refer to [LU-33, "Inspection"](#).

OIL FILTER

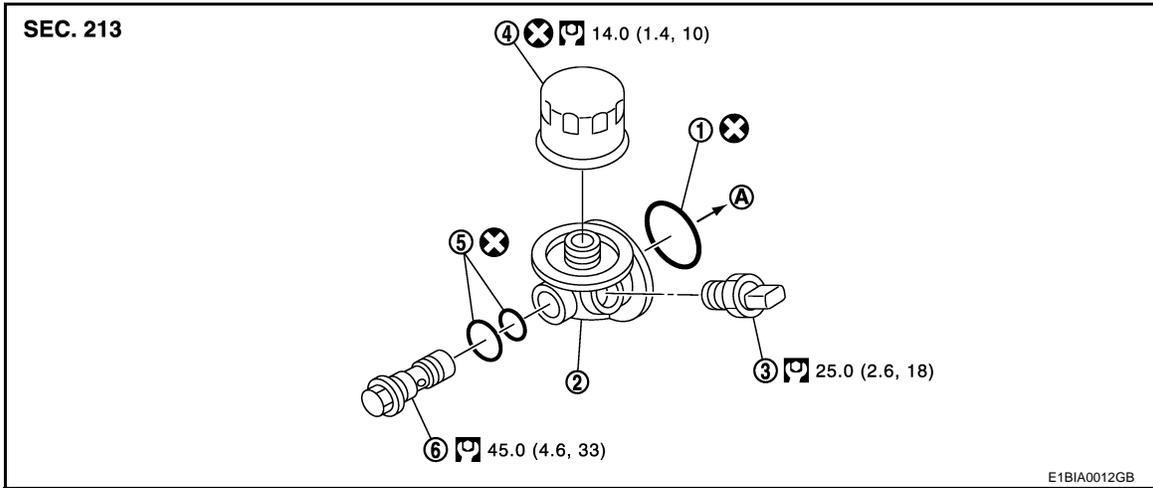
< PERIODIC MAINTENANCE >

[K9K]

OIL FILTER

Exploded View

INFOID:000000006450033



- | | | |
|------------------|-----------------------|------------------------|
| 1. O-ring | 2. Oil filter bracket | 3. Oil pressure switch |
| 4. Oil filter | 5. O-ring | 6. Connecting bolt |
| A. To oil cooler | | |

 : N-m (kg-m, ft-lb)

 : Always replace after every disassembly.

Removal and Installation

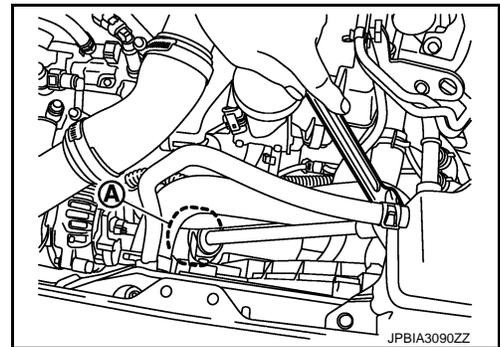
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REMOVAL

- Using an oil filter wrench [SST:KV113C0010 (Mot.1329)] (A) 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.
- Never allow engine oil to adhere to the drive belts.
- Completely wipe off any oil that adhere to the engine and the vehicle.



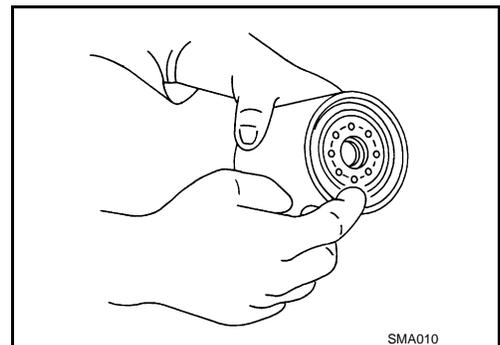
INSTALLATION

- Remove foreign materials adhering to the oil filter installation surface.
- Install oil filter bracket to oil cooler.

CAUTION:

Install oil filter bracket, positioning lug in the hole of oil cooler.

- Apply engine oil to the oil seal contact surface of the new oil filter.
- Install the oil filter until it comes into contact with the oil seal on the engine bracket.
- Tighten the oil filter three-quarters of a turn by hand.
- After warming up the engine, check for engine oil leakage.
- Check oil level and add engine oil. Refer to [LU-33](#).

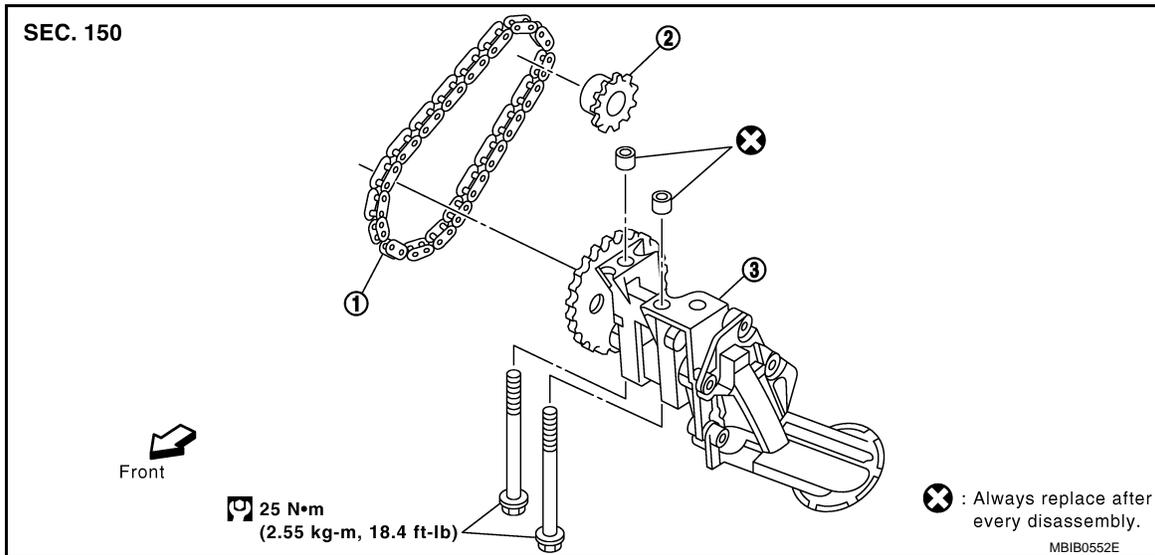


REMOVAL AND INSTALLATION

OIL PUMP

Exploded View

INFOID:000000006450035



1. Oil pump drive chain 2. Crankshaft sprocket 3. Oil pump assembly

Removal and Installation

INFOID:000000006450036

REMOVAL

1. Disconnect the battery cable from the negative terminal.
2. Remove engine under cover.
3. Remove front wheel RH. Refer to [WT-7, "Exploded View"](#).
4. Remove fender protector RH. Refer to [EXT-22, "Exploded View"](#).
5. Remove drive belt. Refer to [EM-276, "Removal and Installation"](#).
6. Remove oil pan. Refer to [EM-288, "Exploded View"](#).
7. Remove rear oil seal retainer. Refer to [EM-302, "Exploded View"](#).
8. Remove oil pump drive chain. Refer to [EM-330, "Disassembly and Assembly"](#).
9. Remove oil pump assembly.

INSTALLATION

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

Rear Oil Seal Retainer and Oil Pump

- Refer to [EM-330, "Disassembly and Assembly"](#).

OIL COOLER

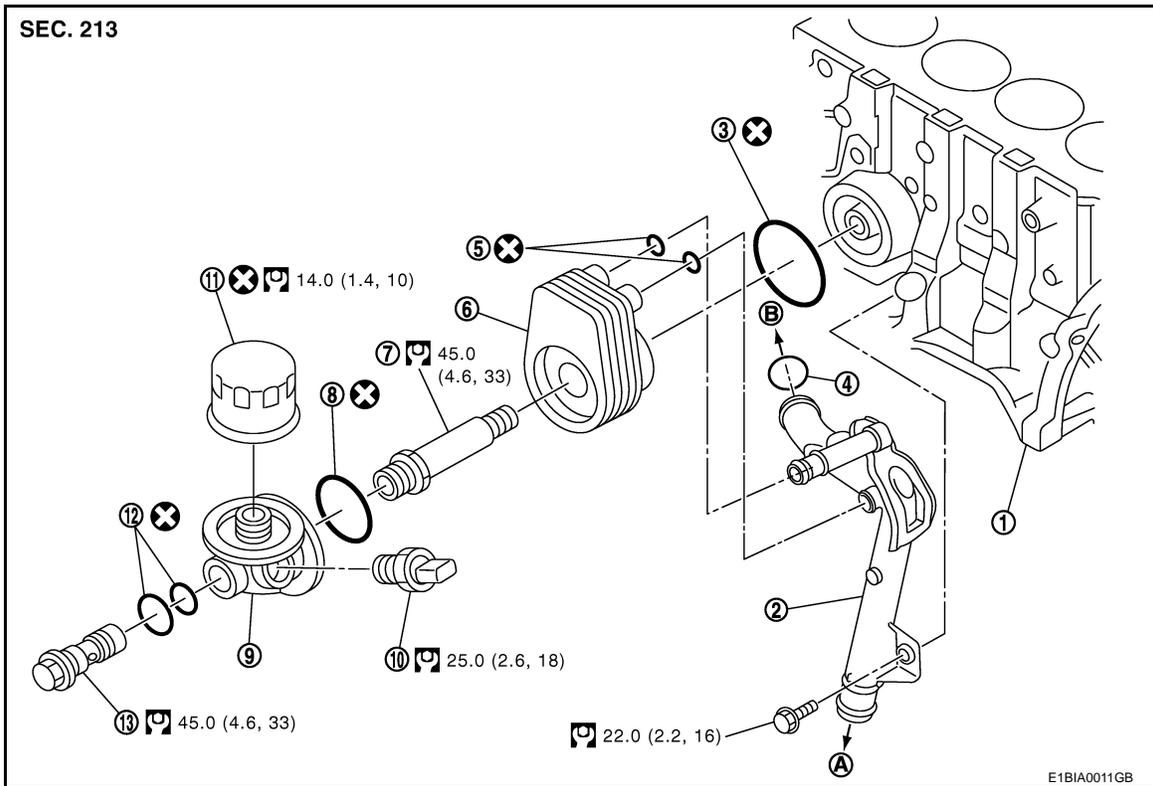
< REMOVAL AND INSTALLATION >

[K9K]

OIL COOLER

Exploded View

INFOID:000000006450037



- | | | |
|-------------------------|----------------|-----------------------|
| 1. Cylinder block | 2. Water pipe | 3. O-ring |
| 4. O-ring | 5. O-ring | 6. Oil cooler |
| 7. Connecting stud | 8. O-ring | 9. Oil filter bracket |
| 10. Oil pressure switch | 11. Oil filter | 12. O-ring |
| 13. Connecting bolt | | |

A. : To radiator lower hose

B. : To water pump

 : N·m (kg-m, ft-lb)

 : Always replace after every disassembly.

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.
- Completely wipe off any oil that adhere to the engine and the vehicle.

Removal and Installation

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REMOVAL

1. Drain engine coolant. Refer to [CO-62. "Draining"](#).
CAUTION:
Perform when engine is cold.
2. Remove oil filter and oil filter bracket. Refer to [LU-35. "Exploded View"](#).
3. Remove alternator.
4. Remove oil cooler.

INSTALLATION

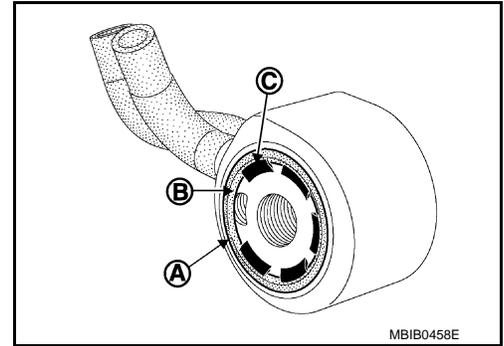
Installation is in reverse order of removal.

OIL COOLER

< REMOVAL AND INSTALLATION >

[K9K]

- Replace the O-ring (A) of the oil cooler, positioning the lip (B) of the seal behind the lug (C) of the oil cooler.



- Confirm that no foreign objects are adhering to the installation planes of the oil cooler and block.

Inspection

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INSPECTION AFTER REMOVAL

Oil Cooler

Check oil cooler for cracks and clogging by blowing through coolant inlet. If necessary, replace oil cooler assembly.

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[K9K]

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Standard and Limit

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A
C
D
E
F
G
H
I
J
K
L
M
N
O
P

LU

OIL PRESSURE

Engine speed rpm	Approximate discharge pressure kPa (bar, kg/cm ² , psi)
Idle speed 3,000	120 (1.2, 1.22, 17.4) 350 (3.5, 5.57, 50.8)

OIL CAPACITY (APPROXIMATE)

Unit: ℓ · (Imp qt)

With oil filter change	4.40 (3 - 7/8 Imp qt)
Without oil filter change	4.24 (3 - 3/4 Imp qt)
Dry engine (overhaul)	4.56 (4 Imp qt)

TIGHTENING TORQUE

Unit: N·m (kg·m, ft·lb)

Oil pressure switch	25 (2.55, 18.4)
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