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SECTION LU

ENGINE LUBRICATION SYSTEM

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FUNCTION DIAGNOSIS

DESCRIPTION

Engine Lubrication System

INFOID:000000001179141

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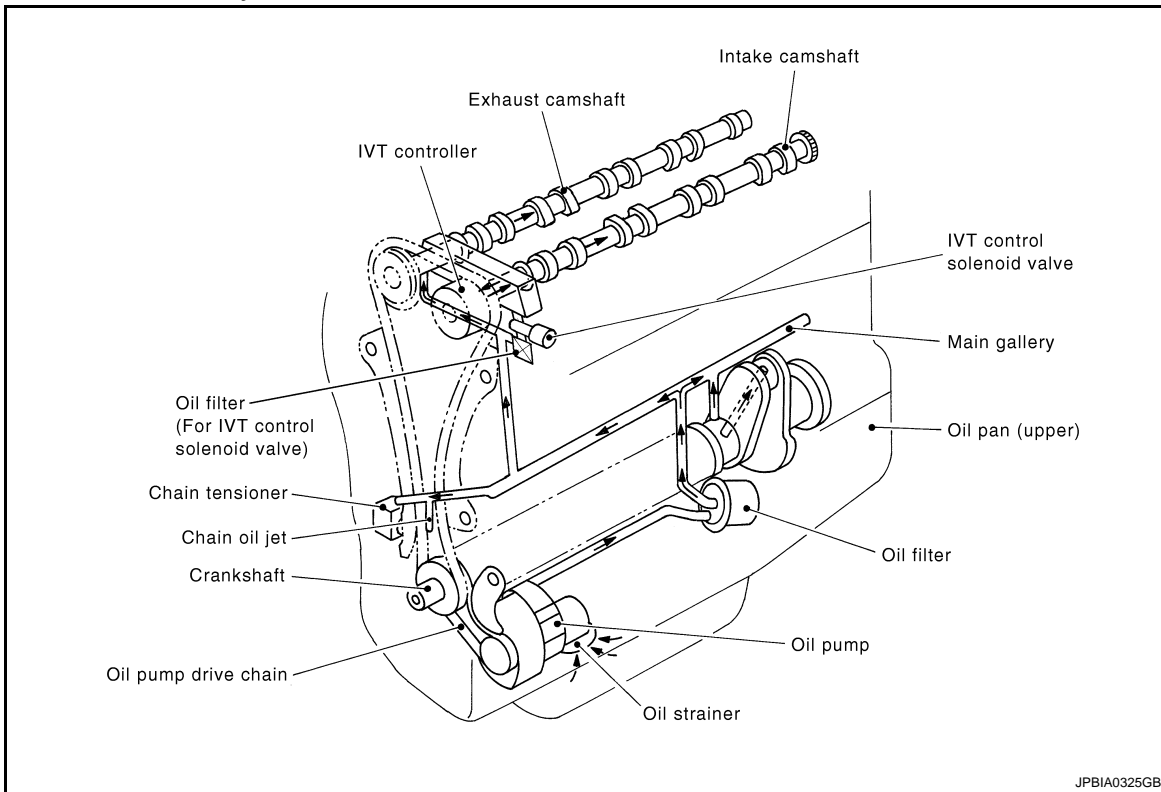
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Engine Lubrication System Schematic

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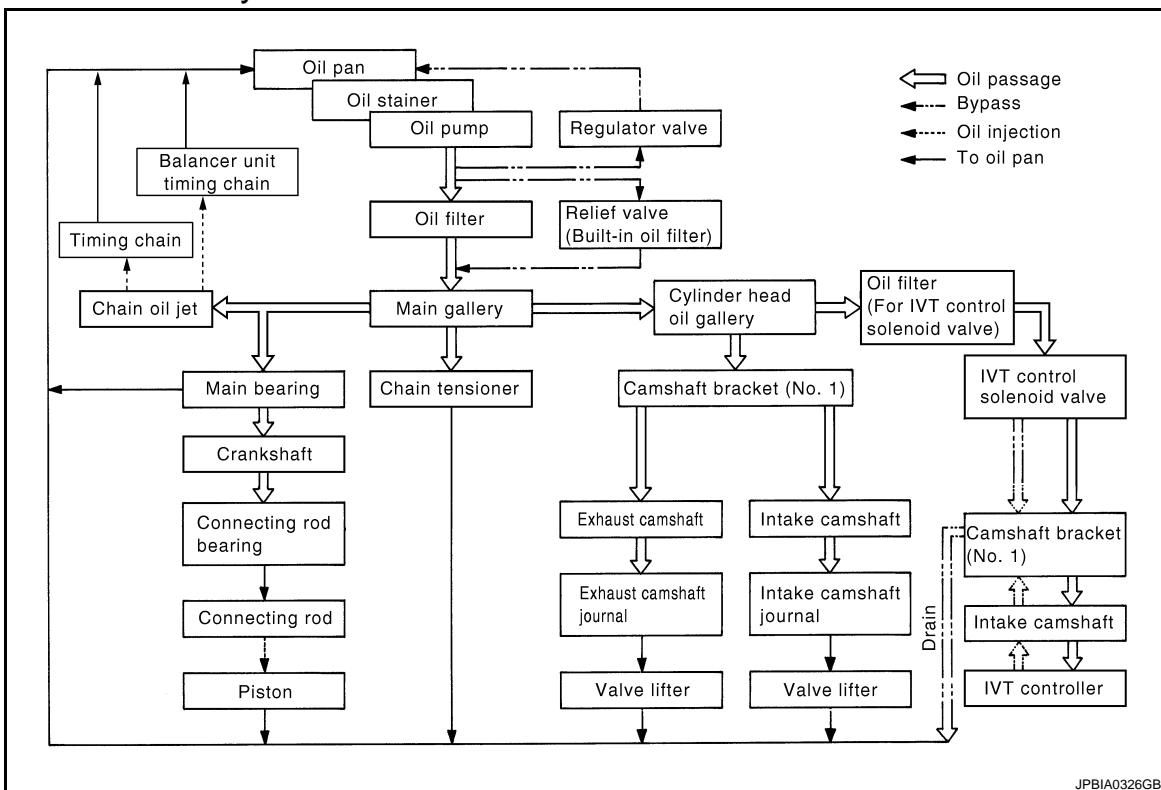
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PRECAUTION

PRECAUTIONS

Liquid Gasket

INFOID:000000001179143

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 liquid gasket or equivalent.
 - 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

< PREPARATION >

[HR16DE]

PREPARATION

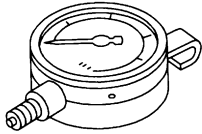
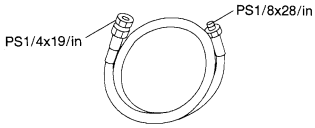
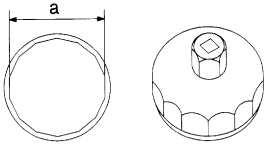
PREPARATION

Special Service Tools

INFOID:000000001179144

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Tool number Tool name	Description
ST25051001 Oil pressure gauge  NT050	Measuring oil pressure Maximum measuring range: 2,452 kPa (24.52 bar, 25 kg-cm ² , 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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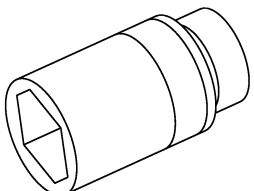
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Commercial Service Tools

INFOID:000000001179145

Tool name	Description
Deep socket  PBIC4066E	Removing and installing oil pressure switch a: 27 mm (1.06 in)

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ON-VEHICLE MAINTENANCE

ENGINE OIL

Inspection

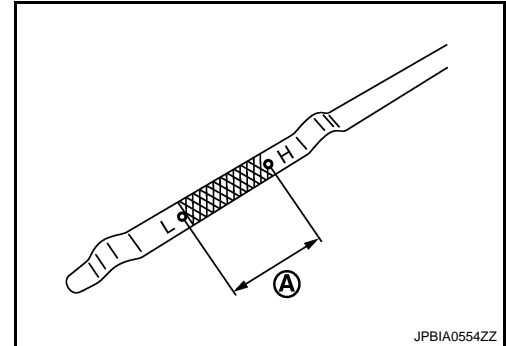
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ENGINE OIL LEVEL

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 make sure 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 level sensor
- 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 filter (for intake valve timing control)

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 "Neutral", and apply parking brake securely.

1. Check engine oil level. Refer to [LU-6. "Inspection"](#).

ENGINE OIL

[HR16DE]

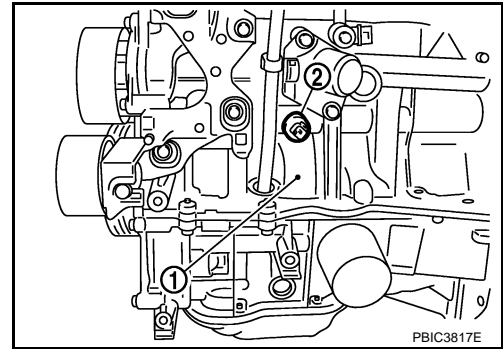
< ON-VEHICLE MAINTENANCE >

2. Disconnect harness connector at oil pressure switch (2), and remove oil pressure switch using a deep socket (commercial service tool).

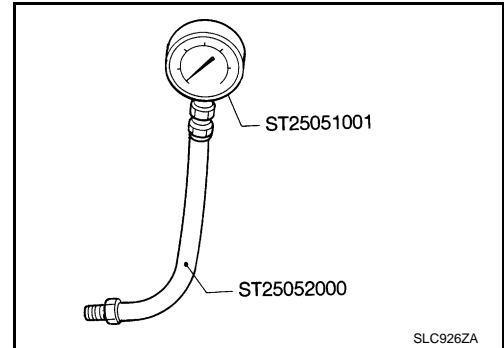
1 : Cylinder block

CAUTION:

Never drop or shock oil pressure switch.



3. Install oil pressure gauge and hose (SST).



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-10, "Engine Oil Pressure"](#).

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

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-94, "Exploded View"](#).

- c. Check engine oil level. Refer to [LU-6, "Inspection"](#).
- d. After warming up engine, make sure there is no leaks of engine oil with running engine.

Draining

INFOID:000000001179147

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-6, "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

1. Install drain plug with new washer. Refer to [EM-41, "Exploded View"](#).

CAUTION:

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

Tightening torque : Refer to [EM-41, "Exploded View"](#).

2. Refill with new engine oil.
Engine oil specification and viscosity: Refer to [MA-27, "Fluids and Lubricants"](#).

Engine oil capacity : Refer to [LU-10, "Periodical Maintenance Specification"](#).

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.
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-6, "Inspection"](#).

OIL FILTER

Removal and Installation

INFOID:000000001179149

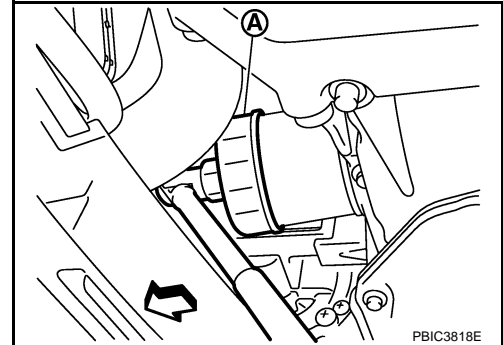
REMOVAL

- Using oil filter wrench [SST: KV10115801] (A), remove oil filter.

↶ : Vehicle front

CAUTION:

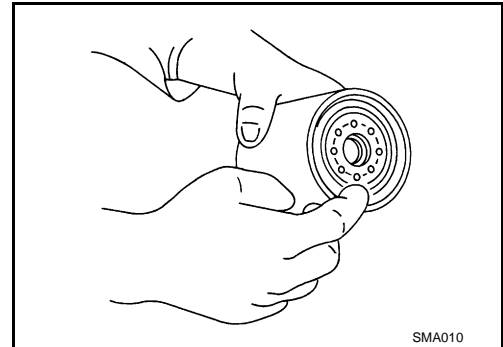
- Oil filter is provided with relief valve. Use Genuine NISSAN Oil Filter or equivalent.
- Be careful not to get burned when engine and engine oil may be hot.
- When removing, prepare a shop cloth to absorb any engine oil leakage or spillage.
- Completely wipe off any engine oil that adheres to engine and vehicle.



PBIC3818E

INSTALLATION

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

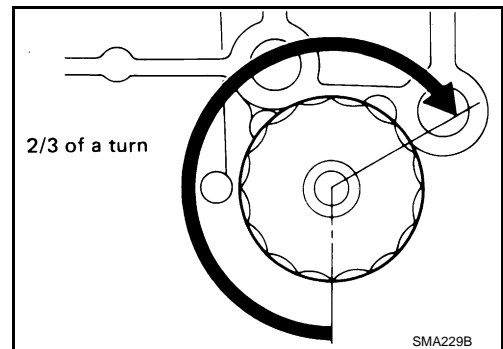


SMA010

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

Oil filter:

 : 17.7 N·m (1.8 kg-m, 13 ft-lb)



SMA229B

Inspection

INFOID:000000001179150

INSPECTION AFTER INSTALLATION

- Check the engine oil level. Refer to [LU-6. "Inspection"](#).
- Start the engine, and check there is no leak of engine oil.
- Stop the engine and wait for 10 minutes.
- Check the engine oil level, and adjust the level. Refer to [LU-6. "Inspection"](#).

SERVICE DATA AND SPECIFICATIONS (SDS)

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[HR16DE]

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Periodical Maintenance Specification

INFOID:000000001179151

ENGINE OIL CAPACITY (APPROXIMATE)

Unit: ℓ (Imp qt)

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

Engine Oil Pressure

INFOID:000000001179152

Engine speed (rpm)	Approximate discharge pressure* [kPa (bar, kg/cm ² , psi)]
Idle speed	More than 60 (0.60, 0.61, 9)
2,000	More than 270 (2.7, 2.8, 39)

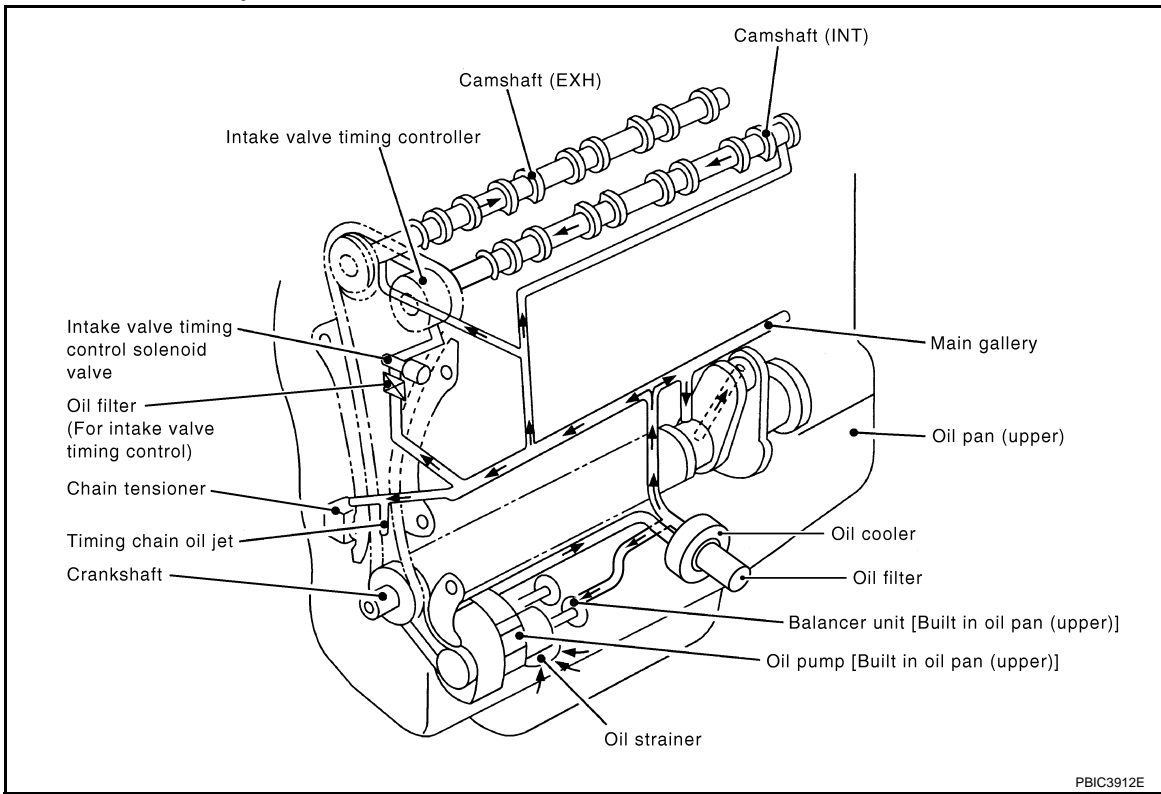
*: Engine oil temperature at 80°C (176°F)

FUNCTION DIAGNOSIS

DESCRIPTION

Engine Lubrication System

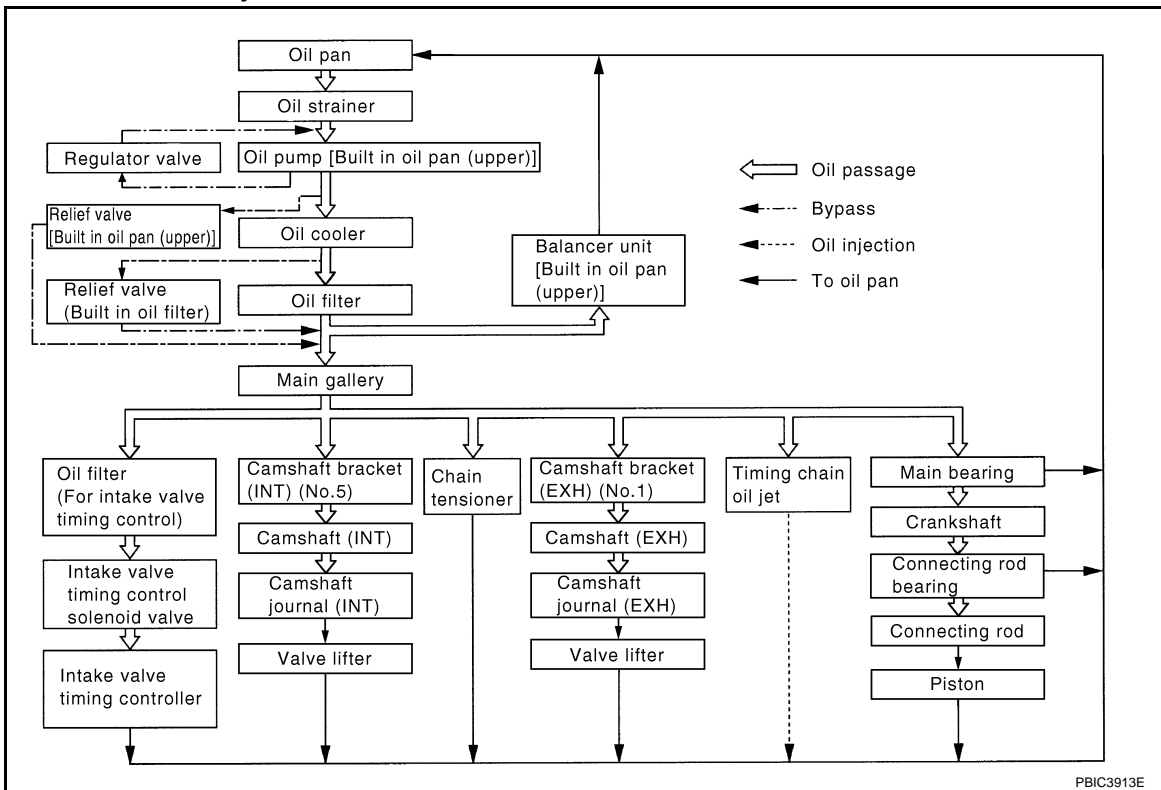
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PBIC3912E

Engine Lubrication System Schematic

INFOID:000000001179154



PBIC3913E

PRECAUTION

PRECAUTIONS

Liquid Gasket

INFOID:000000001179155

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 liquid gasket or equivalent.
 - 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

< PREPARATION >

[MR20DE]

PREPARATION

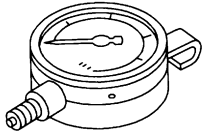
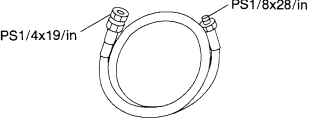
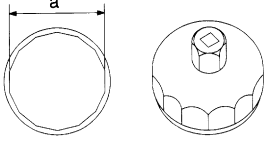
PREPARATION

Special Service Tools

INFOID:000000001179156

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Tool number Tool name	Description
ST25051001 Oil pressure gauge  NT050	Measuring oil pressure Maximum measuring range: 2,452 kPa (24.52 bar, 25 kg-cm ² , 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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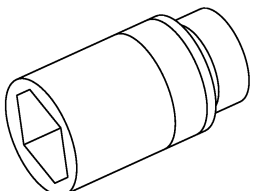
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Commercial Service Tools

INFOID:000000001179157

Tool name	Description
Deep socket  PBIC4066E	Removing and installing oil pressure switch a: 27 mm (1.06 in)

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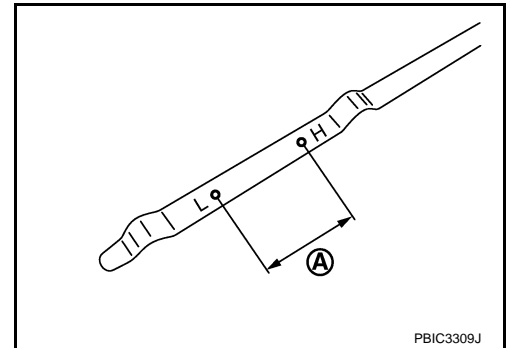
ON-VEHICLE MAINTENANCE**ENGINE OIL****Inspection**

INFOID:000000001179158

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



PBIC3309J

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 level sensor
- Oil filter
- Oil cooler
- 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” (CVT models) or “Neutral” (M/T models), and apply parking brake securely.
1. Check engine oil level. Refer to [LU-14, "Inspection"](#).

ENGINE OIL

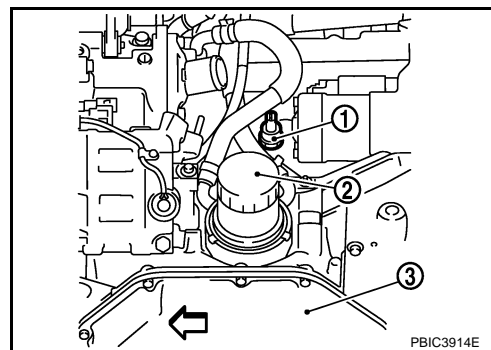
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< ON-VEHICLE MAINTENANCE >

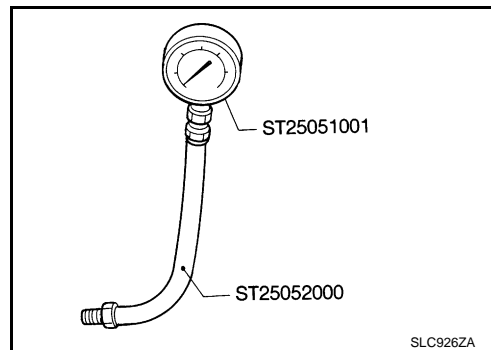
2. Disconnect harness connector at oil pressure switch (1), and remove oil pressure switch using a deep socket (commercial service tool).

- 2 : Oil filter
- 3 : Oil pan (lower)
- ⇐ : Engine front

CAUTION:
Never drop or shock oil pressure switch.



3. Install oil pressure gauge and hose (SST).



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-20, "Engine Oil Pressure"](#).

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

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-211, "Exploded View"](#).

- c. Check engine oil level. Refer to [LU-14, "Inspection"](#).
- d. After warming up engine, make sure there is no leaks of engine oil with running engine.

Draining

INFOID:000000001179159

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-14, "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

1. Install drain plug with new washer. Refer to [EM-153, "Exploded View"](#).

CAUTION:

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

Tightening torque : Refer to [EM-153, "Exploded View"](#).

2. Refill with new engine oil.

Engine oil specification and viscosity: Refer to [MA-27, "Fluids and Lubricants"](#).

Engine oil capacity : Refer to [LU-20, "Periodical Maintenance Specification"](#).

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.
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-14, "Inspection"](#).

OIL FILTER

Removal and Installation

INFOID:000000001179161

REMOVAL

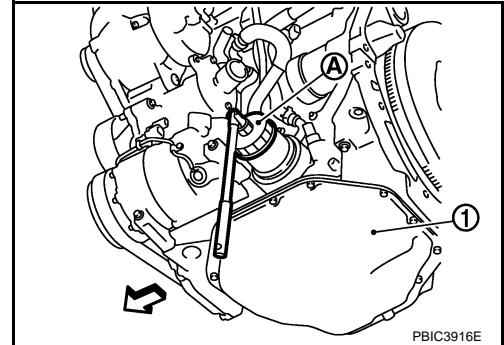
- Using oil filter wrench [SST: KV10115801] (A), remove oil filter.

1 : Oil pan (lower)

↔ : Vehicle front

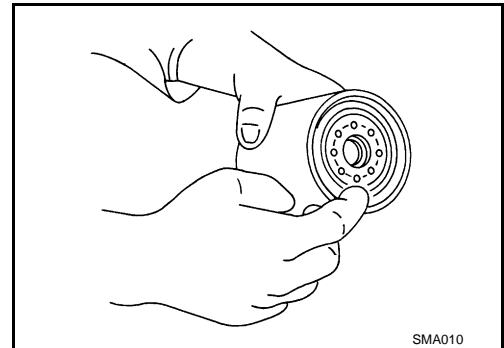
CAUTION:

- 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

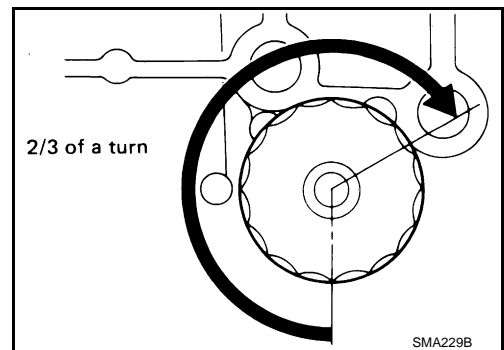
- Remove foreign materials adhering to the oil filter installation surface.
- Apply new engine oil to the oil seal contact surface of new oil filter.



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

Oil filter:

: 17.7 N·m (1.8 kg-m, 13 ft-lb)



Inspection

INFOID:000000001179162

INSPECTION AFTER INSTALLATION

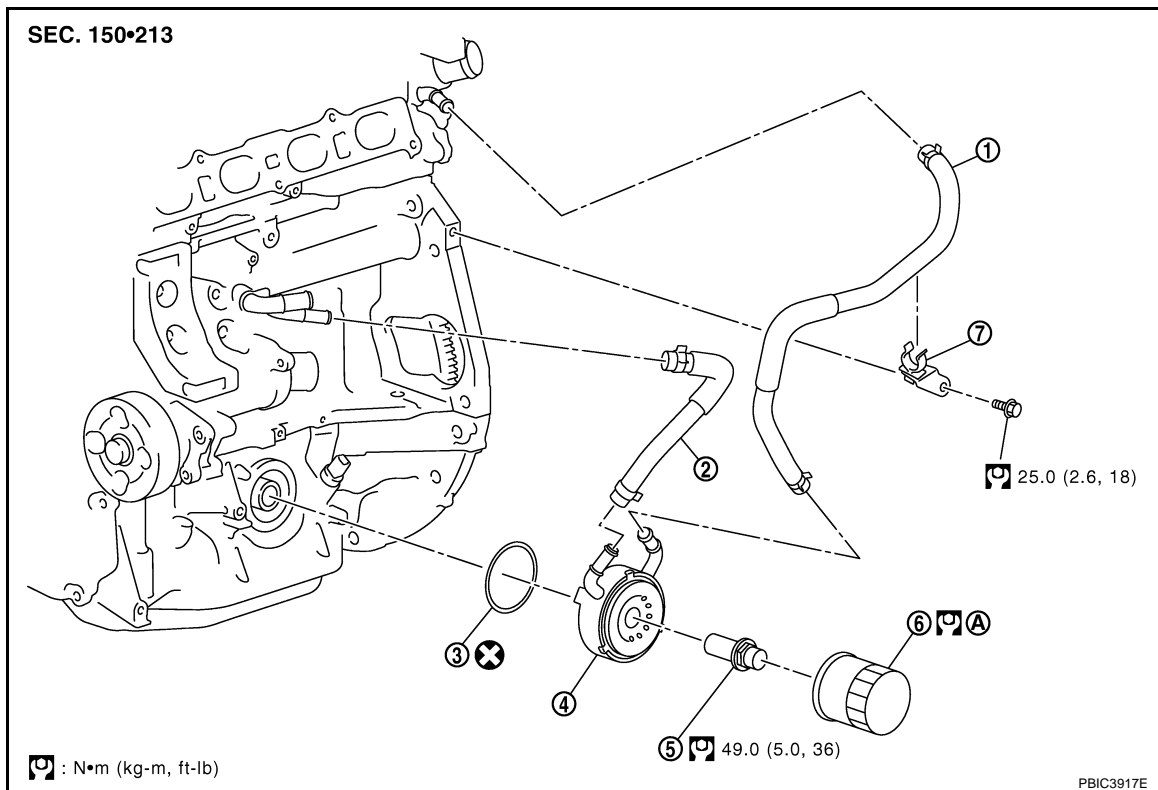
- Check the engine oil level. Refer to [LU-14, "Inspection"](#).
- Start the engine, and check there is no leak of engine oil.
- Stop the engine and wait for 10 minutes.
- Check the engine oil level, and adjust the level. Refer to [LU-14, "Inspection"](#).

ON-VEHICLE REPAIR

OIL COOLER

Exploded View

INFOID:000000001179163



- | | | |
|-----------------------------------|-------------------|---------------|
| 1. Water hose | 2. Water hose | 3. O-ring |
| 4. Oil cooler | 5. Connector bolt | 6. Oil filter |
| 7. Bracket | | |
| A. Refer to LU-17 | | |

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

Removal and Installation

INFOID:000000001179164

REMOVAL

WARNING:

Be careful not to get burn yourself, as engine oil and engine coolant may be hot.

1. Drain engine coolant from radiator and cylinder block. Refer to [CO-30, "Draining"](#) and [EM-211, "Exploded View"](#).
2. Using oil filter wrench [SST: KV10115801], remove oil filter. Refer to [LU-17, "Removal and Installation"](#).
3. Disconnect water hoses from oil cooler.
 - When removing oil cooler only, pinching water hoses near oil cooler to prevent engine coolant from spilling out.
 - Remaining engine coolant in piping will come out. Use a tray to collect it.

CAUTION:

Perform this step when the engine is cold.

4. Remove connector bolt, and remove oil cooler.

NOTE:

For reference when installing, put a matching mark on oil cooler and oil pan (upper).

INSTALLATION

OIL COOLER

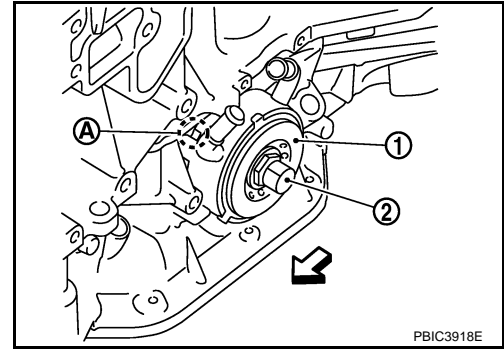
[MR20DE]

< ON-VEHICLE REPAIR >

Installation in the reverse order of removal.

- Tighten the connecting bolt (2) after aligning the stopper (A) on the oil pan (upper) side with protrusion of oil cooler (1).

← : Engine front



Inspection

INFOID:000000001179165

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.

INSPECTION AFTER INSTALLATION

1. Check the engine oil level and the engine coolant level and add engine oil and engine coolant. Refer to [LU-14, "Inspection"](#) and [CO-30, "Inspection"](#).
2. Start the engine, and check there is no leaks 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-14, "Inspection"](#) and [CO-30, "Inspection"](#).

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[MR20DE]

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Periodical Maintenance Specification

INFOID:000000001179166

ENGINE OIL CAPACITY (APPROXIMATE)

Unit: ℓ (Imp qt)

Drain and refill	With oil filter change	4.4 (3-7/8)
	Without oil filter change	4.2 (3-3/4)
Dry engine (Overhaul)		5.2 (4-5/8)

Engine Oil Pressure

INFOID:000000001179167

Engine speed (rpm)	Approximate discharge pressure* [kPa (bar, kg/cm ² , psi)]
Idle speed	More than 80 (0.80, 0.8, 12)
2,000	More than 450 (4.50, 4.6, 65)

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

< PRECAUTION >

PRECAUTION

PRECAUTIONS

Precaution for Liquid Gasket

INFOID:000000001179168

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REMOVAL OF LIQUID GASKET

- After removing the mounting bolts and nuts, separate the mating surface using a seal cutter and remove the liquid gasket.

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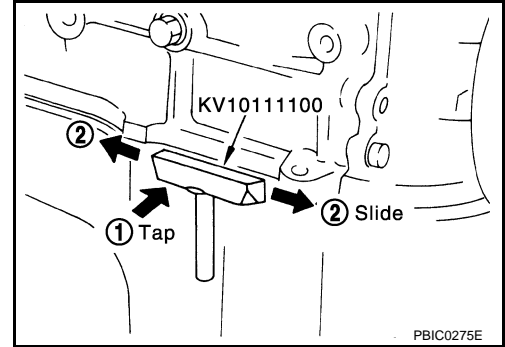
CAUTION:

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 gasket applied area.

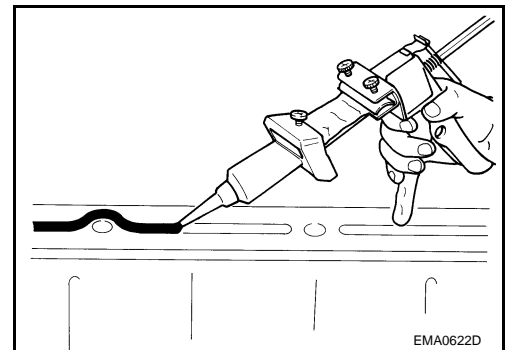
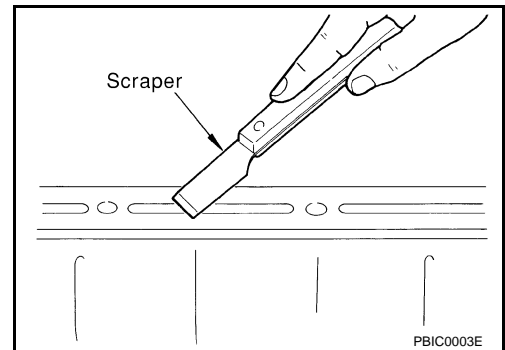
CAUTION:

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

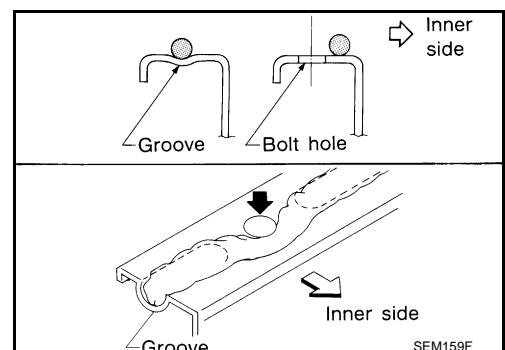


LIQUID GASKET APPLICATION PROCEDURE

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 the 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.



- As for the bolt holes, normally apply the gasket inside the holes. If specified, it should be applied outside the holes. Make sure to read the instruction in this 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 instructions in this manual, observe them.

PREPARATION

< PREPARATION >

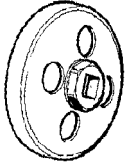
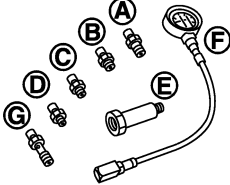
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PREPARATION

PREPARATION

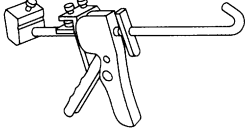
Special Service Tools

INFOID:000000001179169

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.

Commercial Service Tools

INFOID:000000001179170

NISSAN tool number Tool name	Description
WS39930000 Tube presser  S-NT052	Pressing the tube of liquid gasket

ON-VEHICLE MAINTENANCE

ENGINE OIL

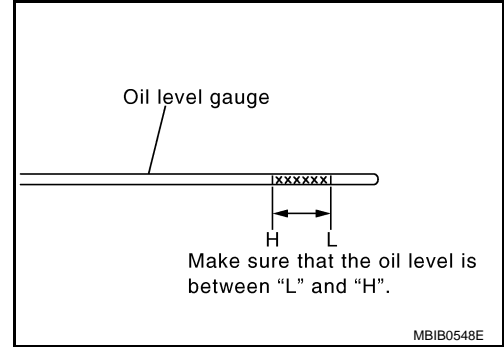
Inspection

INFOID:000000001179171

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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.
- 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.



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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.**

1. Check the oil level.
2. Remove engine undercover.
3. Remove the oil pressure switch to connect the oil pressure gauge [SST: KV113E0020 (Mot. 836-05)].
4. After warming up the engine, make sure oil pressure corresponding to the engine speed is produced.

Idle speed : Refer to [LU-30, "Engine Oil Pressure"](#).

3000 rpm : Refer to [LU-30, "Engine Oil Pressure"](#).

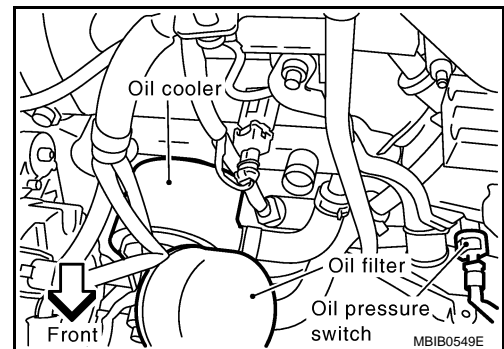
5. After checking, install the oil pressure switch as follows.
 - a. Remove old sealant adhering to the switch and engine.
 - b. Apply thread sealant.

Use Genuine Liquid Gasket or equivalent.

Oil pressure switch:

: **25 N·m (2.55 kg-m, 18.4 ft-lb)**

6. Start engine and check for oil leakage.



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Draining

INFOID:000000001179172

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. Put vehicle horizontally.
2. Warm up engine, and check for oil leakage from engine components.
3. Stop engine and wait for 10 minutes.
4. Loosen oil filler cap.
5. Remove drain plug and then drain engine oil.

Refilling

INFOID:000000001179173

1. Refill with new engine oil.
 - Refer to [MA-27, "Fluids and Lubricants"](#).

Oil capacity (Approximate)

: Refer to [LU-30, "Periodical Maintenance Specification"](#).

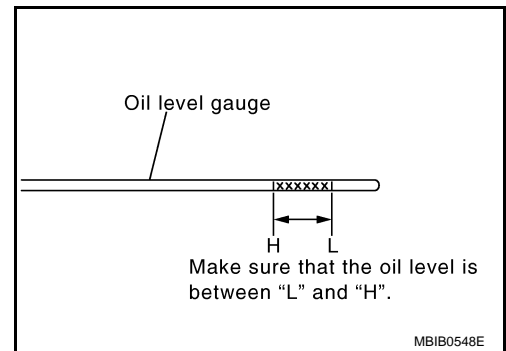
- The refill capacity depends on the oil temperature and drain time. Use these specifications for reference only. Always use the dipstick to determine when the proper amount of oil is in the engine.

CAUTION:

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

2. Warm up engine and check area around drain plug and oil filter for oil leakage.
3. Stop engine and wait for 10 minutes.
4. Check oil level.



OIL FILTER

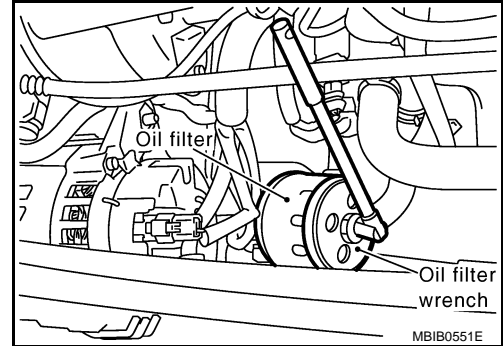
Replacement

INFOID:000000001179174

- Using an oil filter wrench [SST: KV113C0010 (Mot. 1329)], 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 adhere to the engine and the vehicle.



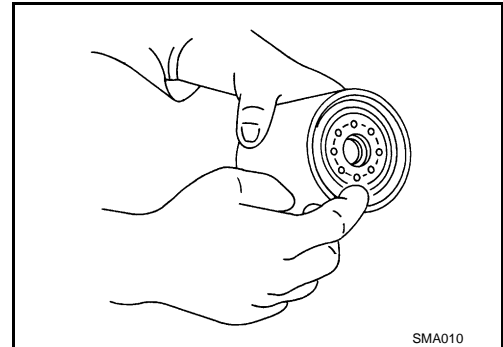
- Remove foreign materials adhering to the oil filter installation surface.

- 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.
- Using an oil filter wrench [SST: KV113C0010 (Mot. 1329)], tighten oil filter.



 **14 N·m (1.4 kg-m, 10 ft-lb)**

- After warming up the engine, check for engine oil leakage.
- Check oil level and add engine oil. Refer to [LU-23](#).

Inspection

INFOID:000000001572034

INSPECTION AFTER INSTALLATION

- Check the engine oil level. Refer to [LU-23, "Inspection"](#).
- Start the engine, and check there is no leak of engine oil.
- Stop the engine and wait for 10 minutes.
- Check the engine oil level, and adjust the level. Refer to [LU-23, "Inspection"](#).

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OIL FILTER BRACKET

< ON-VEHICLE REPAIR >

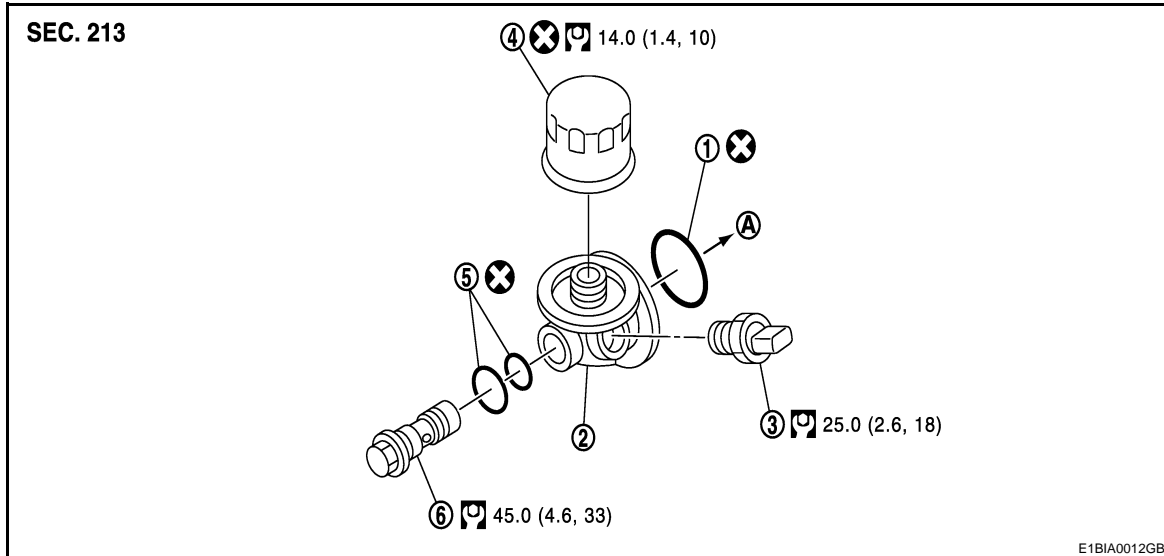
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ON-VEHICLE REPAIR

OIL FILTER BRACKET

Exploded View

INFOID:000000001179175



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

Refer to [GI-4, "Components"](#) for symbols not described on the above.

Removal and Installation

INFOID:000000001179176

REMOVAL

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.

1. Remove oil filter. Refer to [LU-25, "Replacement"](#).
2. Remove oil filter bracket.

INSTALLATION

Install in the reverse order of removal.

OIL COOLER

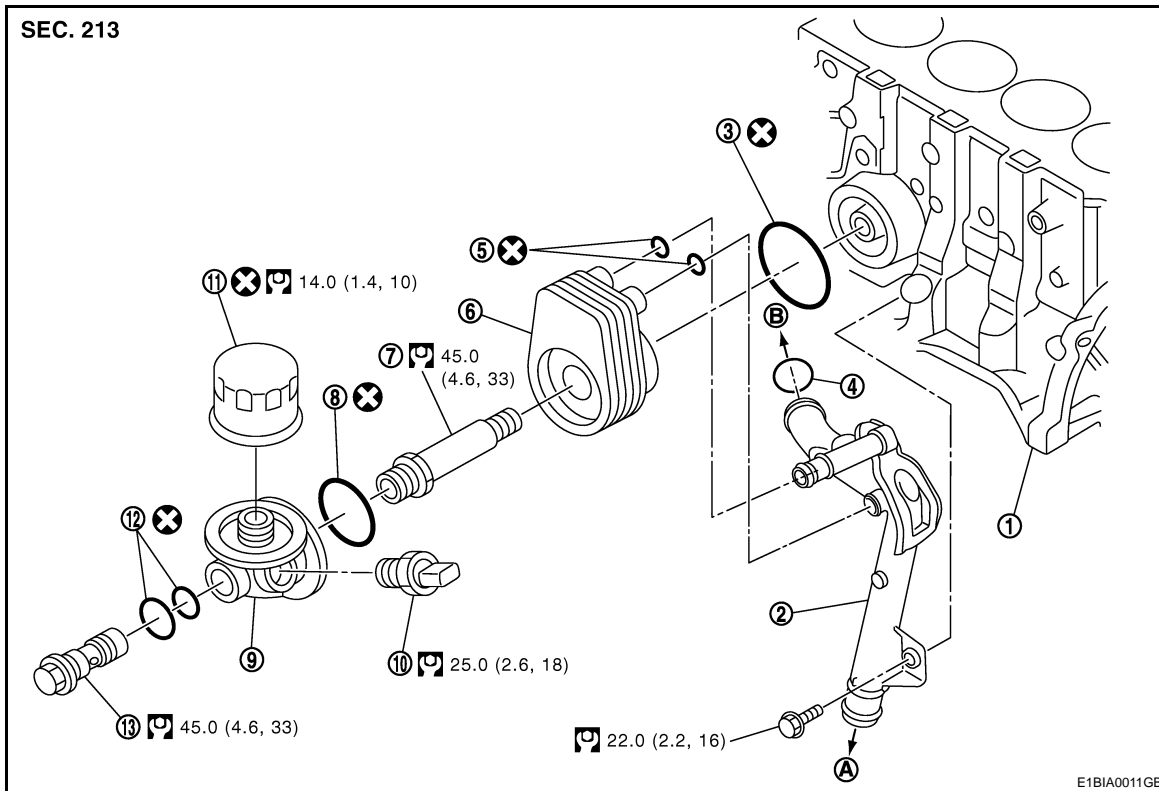
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OIL COOLER

Exploded View

INFOID:000000001179177



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|-------------------------|----------------|-----------------------|
| 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

Refer to [GI-4, "Components"](#) for symbols not described on the above.

Removal and Installation

INFOID:000000001179178

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

1. Drain engine coolant. Refer to [CO-52, "Draining"](#).
CAUTION:
Perform when engine is cold.
2. Remove oil filter and oil filter bracket. Refer to [LU-26, "Removal and Installation"](#).
3. Remove water hoses from oil cooler.
4. Remove oil cooler.

INSTALLATION

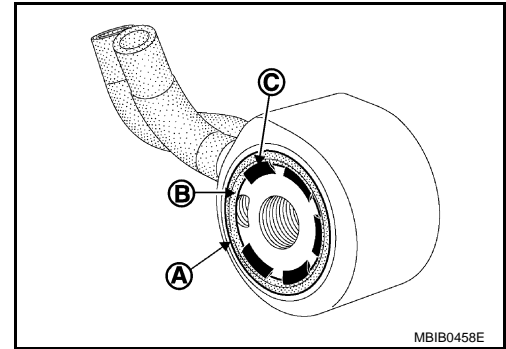
Installation is in reverse order of removal.

OIL COOLER

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< ON-VEHICLE REPAIR >

- 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

INFOID:000000001179179

INSPECTION AFTER REMOVAL

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

OIL PUMP

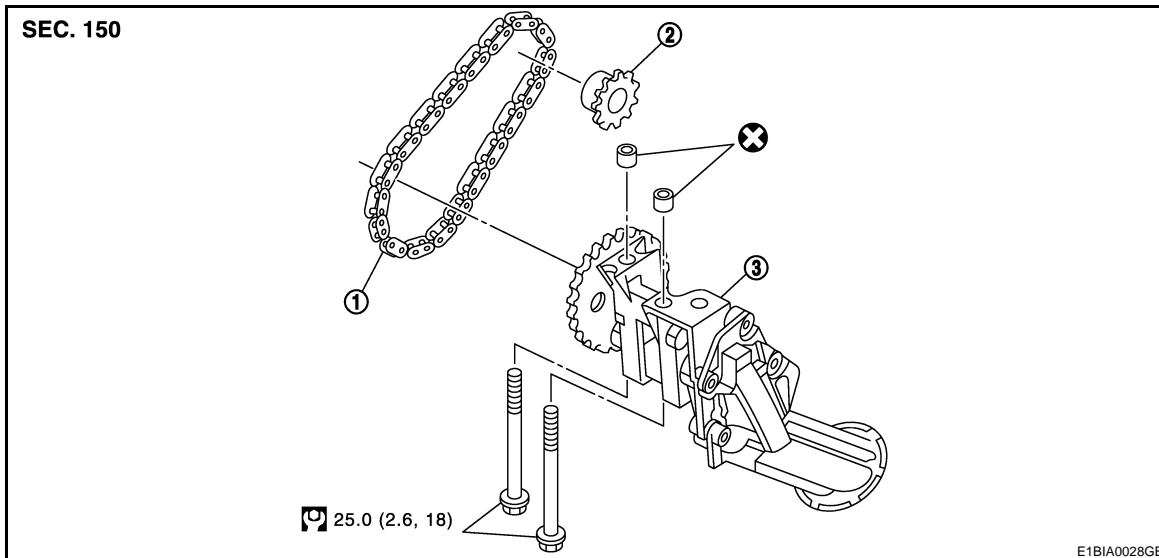
< ON-VEHICLE REPAIR >

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OIL PUMP

Exploded View

INFOID:000000001179180



1. Oil pump drive chain
2. Crankshaft sprocket (oil pump drive chain)
3. Oil pump chain

Refer to [GI-4, "Components"](#) for symbols not described on the above.

Removal and Installation

INFOID:000000001179181

REMOVAL

1. Remove the following parts.
 - Battery ground cable
 - Undercover
 - RH front wheel
2. Remove right side splash cover.
3. Remove drive belt. Refer to [EM-260, "Removal and Installation"](#).
4. Remove oil pan. Refer to [EM-281, "Removal and Installation"](#).
5. Remove rear oil seal retainer. Refer to [EM-311, "Disassembly and Assembly"](#).
6. Remove oil pump drive chain. Refer to [EM-311, "Disassembly and Assembly"](#).
7. Remove oil pump assembly.

INSTALLATION

Refer to [EM-311, "Disassembly and Assembly"](#).

SERVICE DATA AND SPECIFICATIONS (SDS)

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SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Periodical Maintenance Specification

INFOID:000000001179182

ENGINE OIL CAPACITY (APPROXIMATE)

Unit: ℓ · (Imp qt)

With oil filter change	4.55 (4)
Without oil filter change	4.39 (3-7/8)
Dry engine (overhaul)	4.71 (4-1/8)

Engine Oil Pressure

INFOID:000000001179183

kPa (bar, kg/cm², psi)

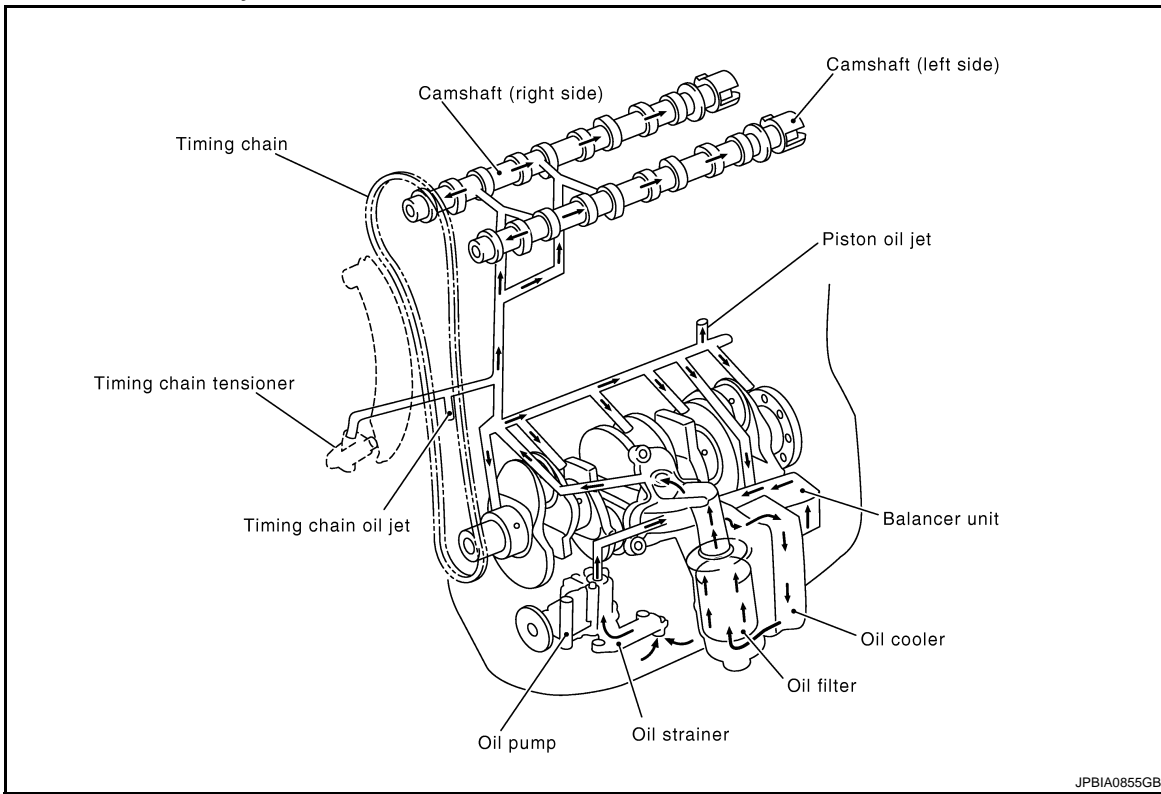
Engine speed	Approximate discharge pressure
Idle speed	120 (1.2, 1.22, 17.4)
3,000 rpm	350 (3.5, 5.57, 50.8)

FUNCTION DIAGNOSIS

DESCRIPTION

Engine Lubrication System

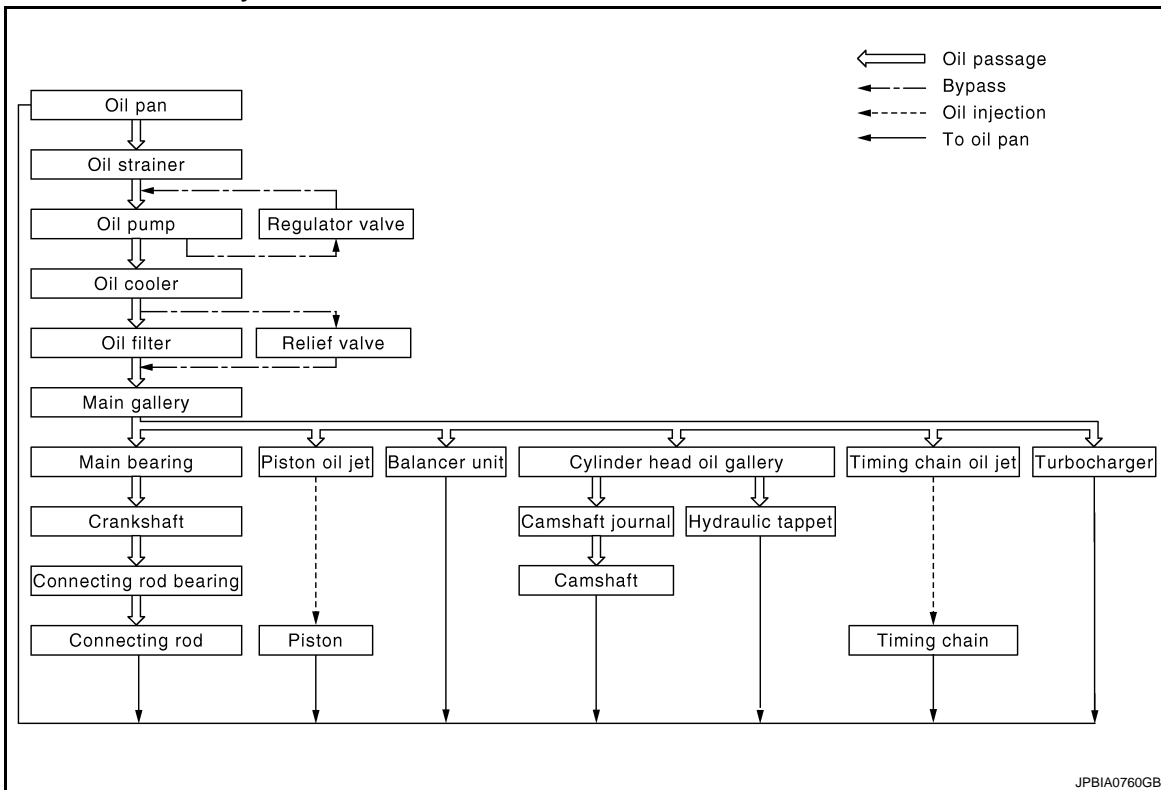
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JPBIA0855GB

Engine Lubrication System Schematic

INFOID:000000001366144



JPBIA0760GB

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PREPARATION

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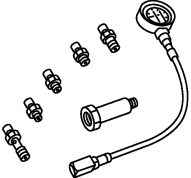
[M9R]

PREPARATION

PREPARATION

Special Service Tools

INFOID:000000001603931

NISSAN tool number (RENAULT tool number) Tool name	Description
KV113E0020 (Mot.836-05) Oil pressure gauge set  JPBIA0949ZZ	Measuring oil pressure

ON-VEHICLE MAINTENANCE

ENGINE OIL

Inspection

INFOID:000000001366146

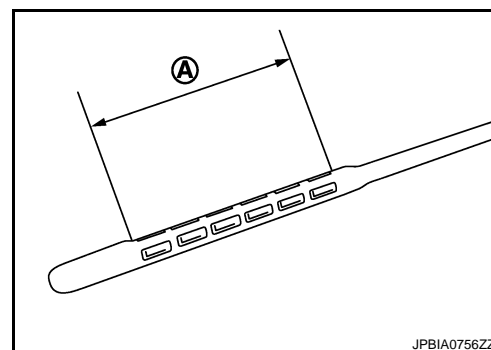
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ENGINE OIL LEVEL

NOTE:

Before starting engine, put vehicle horizontally and check that 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 that 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 level sensor
- Oil filter body
- Oil cooler
- Fuel pump
- Vacuum pump
- Turbocharger
- Crankshaft position sensor
- Camshaft position sensor
- Front cover
- Mating surface between cylinder head and cylinder head housing
- Mating surface between cylinder block and cylinder head
- Mating surface between cylinder head housing and oil separator
- Front oil seal
- Rear oil seal retainer

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” (A/T models) or “Neutral” (M/T models), and apply parking brake securely.

1. Check engine oil level. Refer to [LU-33, "Inspection"](#).
2. Disconnect harness connector at oil pressure switch, and remove oil pressure switch using a deep socket.

CAUTION:

Handle oil pressure switch carefully and avoid impacts.

3. Install oil pressure gauge set [SST:KV113E0020 (Mot.836-05)].
4. Start engine and warm it up to normal operating temperature.

ENGINE OIL

[M9R]

< ON-VEHICLE MAINTENANCE >

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-38, "Engine Oil Pressure"](#).

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

6. After the inspections, install oil pressure switch with the following procedure:

- a. Tighten oil pressure switch to specification.

Tightening torque : Refer to [LU-36, "Exploded View"](#).

- b. Check engine oil level. Refer to [LU-33, "Inspection"](#).
- c. After warming up engine, check that there is no leakage of engine oil with running engine.

Draining

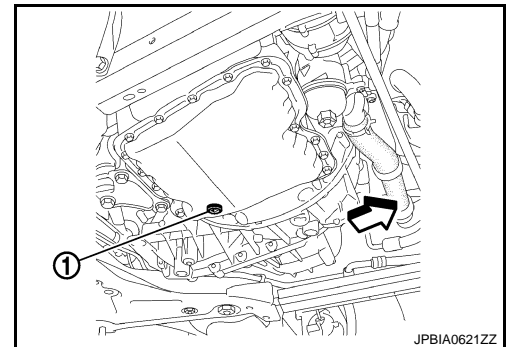
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WARNING:

- Be careful not to get burned, as engine oil may be hot.
- 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-33, "Inspection"](#).
2. Stop the engine and wait for 10 minutes.
3. Remove engine undercover.
4. Loosen oil level gauge.
5. Remove oil pan drain plug (1) using a square driver [8 mm (0.315 in)]. Drain engine oil.

← : Vehicle front



Refilling

INFOID:000000001366148

1. Install drain plug with new washer.

CAUTION:

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

Tightening torque : Refer to [EM-371, "Exploded View"](#).

2. Refill with new engine oil.
Engine oil specification and viscosity: Refer to [MA-27, "Fluids and Lubricants"](#).

Engine oil capacity : Refer to [LU-38, "Periodical Maintenance Specification"](#).

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

OIL FILTER

< ON-VEHICLE MAINTENANCE >

[M9R]

OIL FILTER

Removal and Installation

INFOID:000000001366149

REMOVAL

WARNING:

Be careful not to get burned when engine and engine oil may be hot.

CAUTION:

- 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.

1. Remove engine undercover.
2. Loosen oil filter body assembly using a socket [27 mm (1.06 in)].
3. Remove oil filter body, and then remove oil filter and O-ring.

CAUTION:

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

INSTALLATION

1. Completely remove all foreign objects adhering to the inside of oil filter body or O-ring mounting area.
2. Install oil filter and O-ring to oil filter body.
3. Install oil filter body assembly to oil cooler.

Tightening torque: Refer to [LU-36, "Exploded View"](#).

Inspection

INFOID:000000001366150

INSPECTION AFTER INSTALLATION

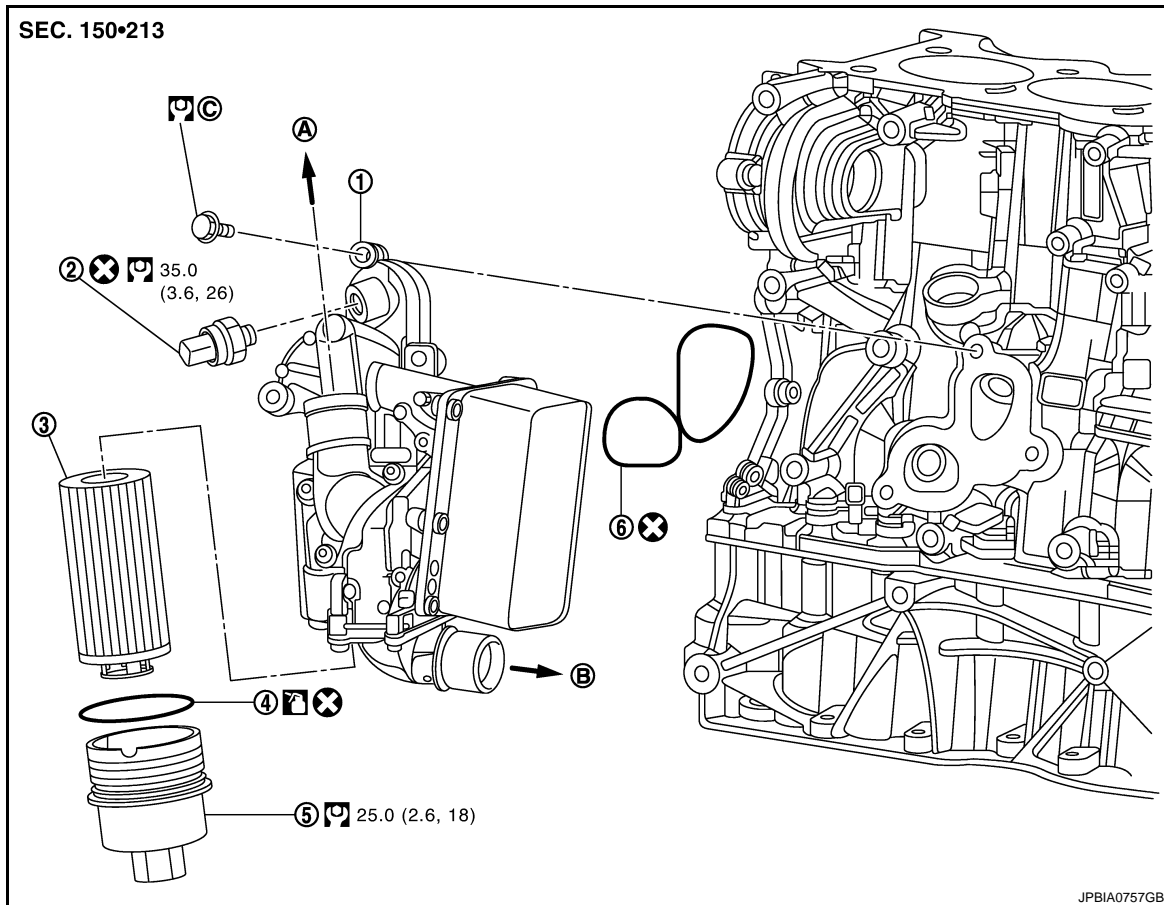
1. Check that the engine oil level. Refer to [LU-33, "Inspection"](#).
2. Start the engine, and check that there is no leak of engine oil.
3. Stop the engine and wait for 10 minutes.
4. Check that the engine oil level, and adjust the level. Refer to [LU-33, "Inspection"](#).

ON-VEHICLE REPAIR

OIL COOLER

Exploded View

INFOID:000000001366151



- | | | |
|--------------------------|------------------------|-----------------------------------|
| 1. Oil cooler | 2. Oil pressure switch | 3. Oil filter |
| 4. O-ring | 5. Oil filter body | 6. Gasket |
| A. To water suction pipe | B. To radiator | C. Refer to LU-36 |

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

Removal and Installation

INFOID:000000001366152

REMOVAL

WARNING:

Be careful not to get burn yourself, as engine oil and engine coolant may be hot.

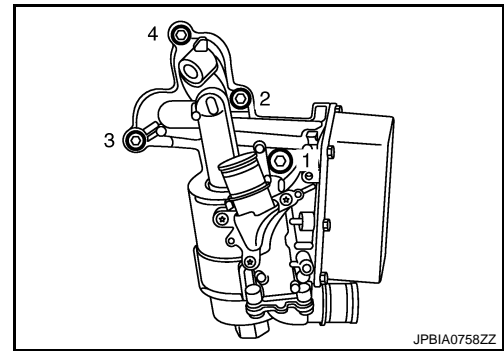
1. Drain engine coolant from radiator. Refer to [CO-71, "Draining"](#).
CAUTION:
Perform this step when the engine is cold.
2. Disconnect water hose and radiator hose (lower). Refer to [CO-79, "Exploded View"](#) and [CO-75, "Exploded View"](#).
CAUTION:
Never adhere the engine coolant to electronic equipments. (alternator etc.)
3. Remove oil pressure switch, if necessary.
CAUTION:
Handle oil pressure switch carefully and avoid impacts.
4. Remove oil cooler.

OIL COOLER

< ON-VEHICLE REPAIR >

[M9R]

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



INSTALLATION

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

Oil Cooler

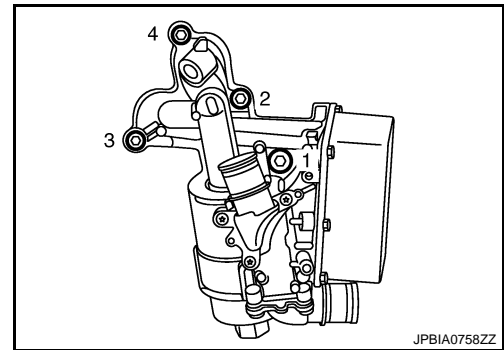
- Tighten mounting bolts in the following steps in numerical order as shown in the figure.

1. Tighten mounting bolts No.2 and 4.

: **5.0 N·m (0.51 kg·m, 4 ft·lb)**

2. Tighten all mounting bolts.

: **25.0 N·m (2.6 kg·m, 18 ft·lb)**



Inspection

INFOID:000000001366153

INSPECTION AFTER REMOVAL

Oil Cooler

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

INSPECTION AFTER INSTALLATION

1. Check that the engine oil level and the engine coolant level and add engine oil and engine coolant. Refer to [LU-33. "Inspection"](#) and [CO-71. "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 that the engine oil level and the engine coolant level again. Refer to [LU-33. "Inspection"](#) and [CO-71. "Draining"](#).

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[M9R]

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Periodical Maintenance Specification

INFOID:000000001366154

ENGINE OIL CAPACITY (APPROXIMATE)

Unit: ℓ (Imp qt)

Drain and refill	With oil filter change	7.4 (6-1/2)
	Without oil filter change	7.0 (6-1/8)
Dry engine (Overhaul)		8.4 (7-3/8)

Engine Oil Pressure

INFOID:000000001366155

Unit: kPa (bar, kg/cm², psi)

Engine speed	Approximate discharge pressure*
Idle speed	More than 88 (0.9, 0.9, 13)
3,000 rpm	More than 402 (4, 4.1, 58)

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