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SECTION **LU**

ENGINE LUBRICATION SYSTEM

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PRECAUTION

PRECAUTIONS

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

INFOID:000000004784383

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the SRS and SB section of this Service Manual.

WARNING:

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SRS section.
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.
- When working near the Airbag Diagnosis Sensor Unit or other Airbag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.
- When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery, and wait at least 3 minutes before performing any service.

Precaution Necessary for Steering Wheel Rotation After Battery Disconnect

INFOID:000000004784385

NOTE:

- This Procedure is applied only to models with Intelligent Key system and NATS (NISSAN ANTI-THEFT SYSTEM).
- Remove and install all control units after disconnecting both battery cables with the ignition knob in the "LOCK" position.
- Always use CONSULT-III to perform self-diagnosis as a part of each function inspection after finishing work. If DTC is detected, perform trouble diagnosis according to self-diagnostic results.

For models equipped with the Intelligent Key system and NATS, an electrically controlled steering lock mechanism is adopted on the key cylinder.

For this reason, if the battery is disconnected or if the battery is discharged, the steering wheel will lock and steering wheel rotation will become impossible.

If steering wheel rotation is required when battery power is interrupted, follow the procedure below before starting the repair operation.

OPERATION PROCEDURE

1. Connect both battery cables.
 - NOTE:**
Supply power using jumper cables if battery is discharged.
2. Use the Intelligent Key or mechanical key to turn the ignition switch to the "ACC" position. At this time, the steering lock will be released.
3. Disconnect both battery cables. The steering lock will remain released and the steering wheel can be rotated.
4. Perform the necessary repair operation.
5. When the repair work is completed, return the ignition switch to the "LOCK" position before connecting the battery cables. (At this time, the steering lock mechanism will engage.)
6. Perform a self-diagnosis check of all control units using CONSULT-III.

PRECAUTIONS

< PRECAUTION >

[HR16DE]

INFOID:00000004784386

Precaution for Liquid Gasket

REMOVAL OF LIQUID GASKET SEALING

- After removing nuts and bolts, separate the mating surface, using Tool and remove old liquid gasket sealing.

Tool number : KV10111100 (J-37228)

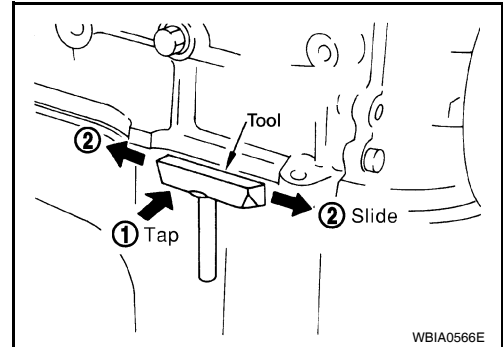
CAUTION:

Be careful not to damage the mating surfaces.

- Tap Tool to insert it (1), and then slide it by tapping on the side (2) as shown.
- In areas where Tool is difficult to use, use plastic hammer to lightly tap the parts, to remove it.

CAUTION:

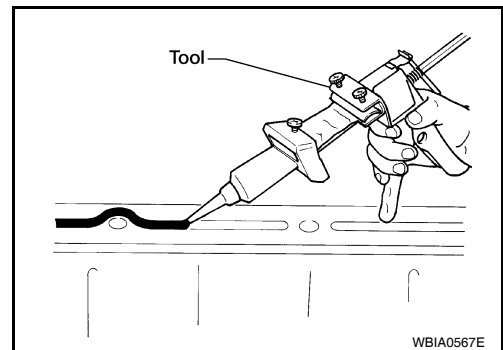
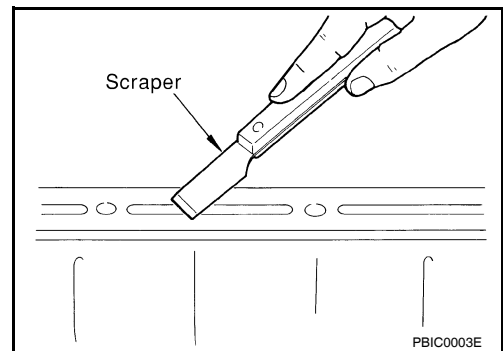
If for some unavoidable reason suitable tool such as screwdriver is used, be careful not to damage the mating surfaces.



LIQUID GASKET APPLICATION PROCEDURE

1. Remove old liquid gasket adhering to the liquid gasket application surface and the mating surface, using scraper.
 - Remove liquid gasket completely from the groove of the liquid gasket application surface, bolts, and bolt holes.
2. Thoroughly clean the mating surfaces and remove adhering moisture, grease and foreign materials.
3. Attach liquid gasket tube to Tool.

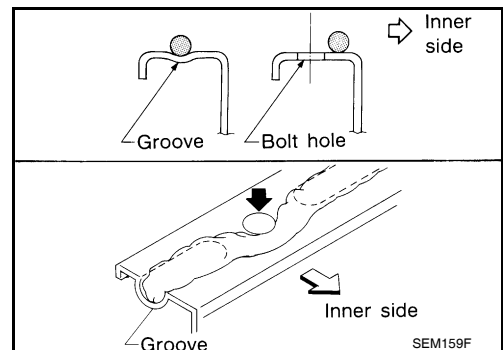
Tool number : WS39930000 (—)



Use Genuine RTV Silicone Sealant or equivalent. Refer to [GI-42, "Recommended Chemical Product and Sealant"](#).

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

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



CAUTION:

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

PREPARATION

< PREPARATION >

[HR16DE]

PREPARATION

PREPARATION

Special Service Tool

INFOID:000000004788554

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

Tool number (Kent-Moore No.) Tool name	Description
ST25051001 (J-25695-1) Oil pressure gauge	Measuring oil pressure Maximum measuring range: 2,452 kPa (25 kg/cm², 356 psi)
ST25052000 (J-25695-2) Hose	Adapting oil pressure gauge to cylinder block
KV10115801 (J-38956) Oil filter wrench	Removing oil filter a: 64.3 mm (2.531 in)
WS39930000 (—) Tube presser	Pressing the tube of liquid gasket

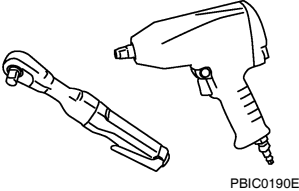
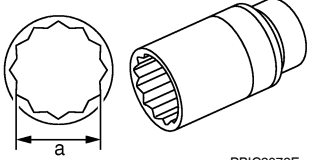
Commercial Service Tool

INFOID:000000004788555

PREPARATION

< PREPARATION >

[HR16DE]

Tool name	Description
<p>Power tool</p>  <p style="text-align: right; font-size: small;">FBIC0190E</p>	<p>Loosening nuts and bolts</p>
<p>Deep socket</p>  <p style="text-align: right; font-size: small;">PBIC2072E</p>	<p>Removing and installing oil pressure switch a: 27 mm (1.06 in)</p>

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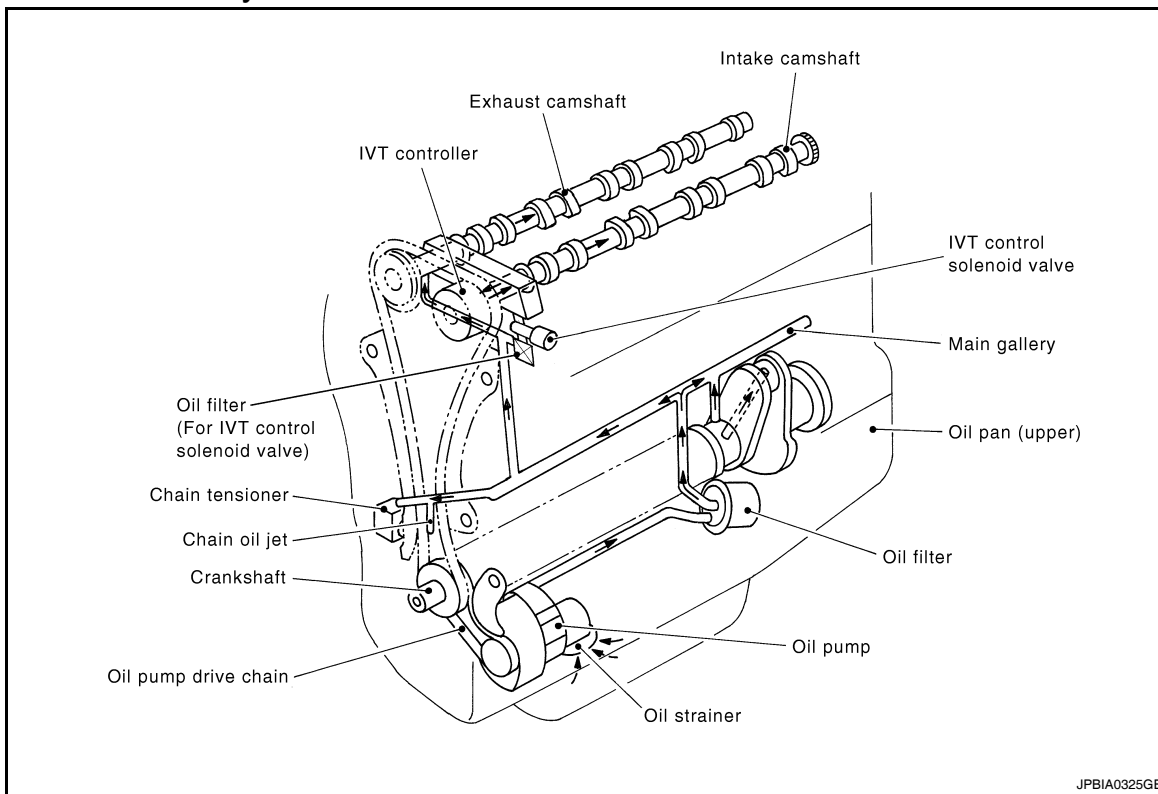
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FUNCTION DIAGNOSIS

DESCRIPTION

Engine Lubrication System

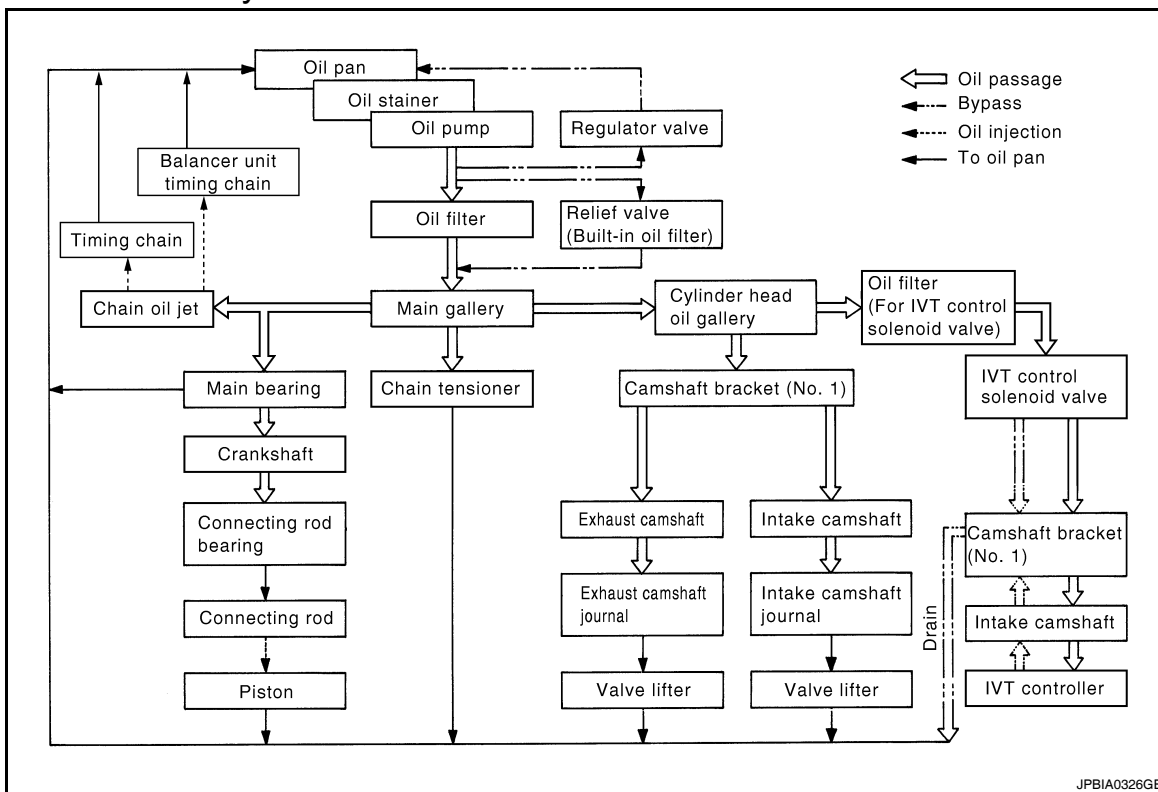
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JPBIA0325GB

Engine Lubrication System Schematic

INFOID:000000004784332



JPBIA0326GB

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

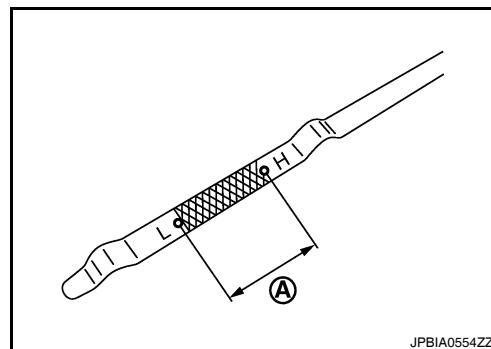
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ENGINE OIL LEVEL**NOTE:**

Park vehicle on a level surface, wait 10 minutes and check the engine oil level.

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.
3. If it is out of range, adjust it.

**ENGINE OIL APPEARANCE**

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

ENGINE OIL LEAKAGE

Check for engine oil leakage around the following areas:

- Oil 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 filter (for intake valve timing control)

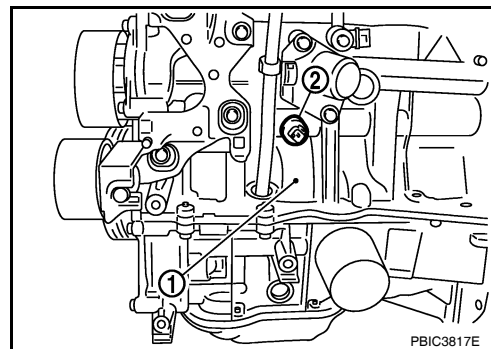
OIL PRESSURE CHECK**WARNING:**

- **Be careful not to burn yourself, as engine oil may be hot.**
- **For engine oil pressure check the transaxle should be in “ Park position” (A/T models) or “Neutral position” (M/T models), and apply the parking brake securely.**

1. Check engine oil level.
2. Disconnect harness connector at oil pressure switch (2), and remove oil pressure switch (2) from the cylinder block (1) using suitable tool.

CAUTION:

Never drop or shock oil pressure switch.



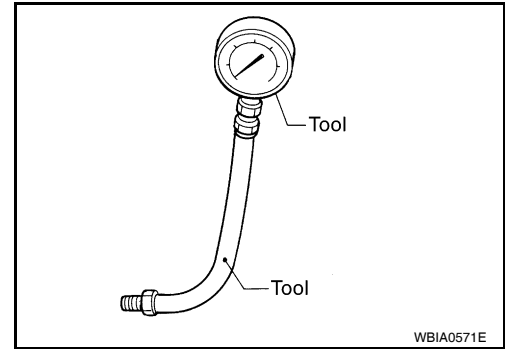
ENGINE OIL

< ON-VEHICLE MAINTENANCE >

[HR16DE]

3. Install oil pressure gauge and hose.

Tool number : ST25051001 (J-25695-1)
: ST25052000 (J-25695-2)



4. Start engine and warm it up to normal operating temperature.
5. Check oil pressure with engine running under no-load. Refer to [LU-10, "Engine Oil Pressure"](#).
If difference is extreme, check oil passage and oil pump for oil leaks.

NOTE:

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

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 Silicone RTV Sealant or equivalent. Refer to [GI-42, "Recommended Chemical Product and Sealant"](#).

Oil pressure switch : Refer to [EM-95, "Exploded View"](#).

- c. Check engine oil level.
- d. After warming up engine, make sure there are no leaks of engine oil with running engine.

Draining

INFOID:000000004784338

WARNING:

- Be careful not to burn yourself, 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, park vehicle on a level surface and check for engine oil leakage from engine components. Refer to [LU-7, "Inspection"](#).
 2. Stop the engine and wait for 10 minutes.
 3. Loosen oil filler cap.
 4. Remove drain plug and then drain engine oil.

Refilling

INFOID:000000004784339

1. Install drain plug with new washer. Refer to [EM-39, "Exploded View"](#).
CAUTION:
Be sure to clean drain plug and install with new washer.
2. Refill with new engine oil.
Engine oil specification and viscosity: Refer to [MA-14, "Fluids and Lubricants"](#).
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-7, "Inspection"](#).

OIL FILTER

Removal and Installation

INFOID:00000004788556

REMOVAL

1. Remove oil filter using Tool (A).
 - ■: Front

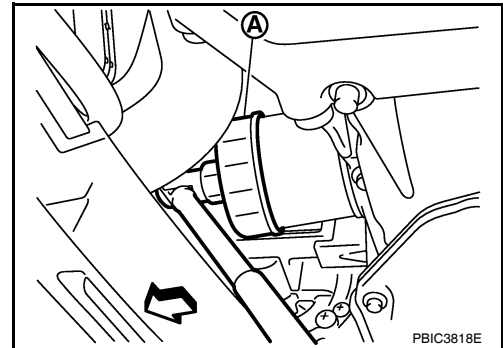
Tool number : KV10115801 (J-38956)

WARNING:

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

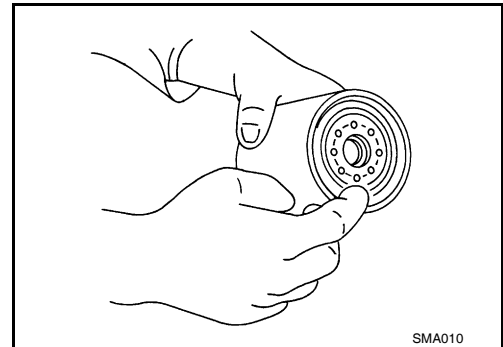
CAUTION:

- Oil filter is provided with relief valve. Use Genuine NISSAN Oil Filter or equivalent.
- When removing, prepare a shop cloth to absorb any engine oil leakage or spillage.
- Do not spill engine oil on drive belt.
- Completely wipe off any engine oil that spills on engine and vehicle.



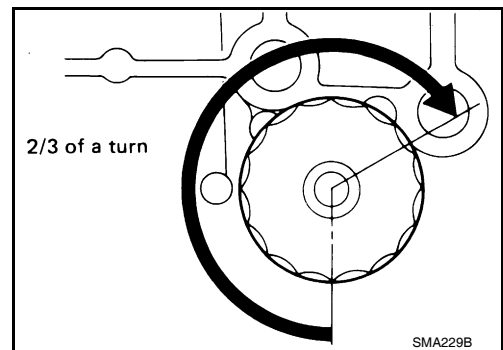
INSTALLATION

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. Or tighten to specification.

Oil filter: : 17.7 N·m (1.8 kg-m, 13 ft-lb)



INSPECTION AFTER INSTALLATION

1. Check the engine oil level. Refer to [LU-7, "Inspection"](#).
2. Start engine, and make sure there are no leaks of engine oil.
3. Stop engine and wait for 10 minutes.
4. Check the engine oil level and adjust as necessary. Refer to [LU-7, "Inspection"](#).

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[HR16DE]

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Engine Oil Capacity

INFOID:000000004784342

Unit: (US qt, Imp qt)

Drain and refill	With oil filter change	Approximately 3.0 (3 1/8, 2 5/8)
	Without oil filter change	Approximately 2.8 (3, 2 1/2)
Dry engine (engine overhaul)		Approximately 3.5 (3 3/4, 3 1/8)

Engine Oil Pressure

INFOID:000000004784343

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)

SERVICE INFORMATION

PRECAUTIONS

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

INFOID:000000004784384

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the SRS and SB section of this Service Manual.

WARNING:

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SRS section.
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.
- When working near the Airbag Diagnosis Sensor Unit or other Airbag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.
- When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery, and wait at least 3 minutes before performing any service.

Precaution Necessary for Steering Wheel Rotation After Battery Disconnect

INFOID:000000004673030

NOTE:

- This Procedure is applied only to models with Intelligent Key system and NATS (NISSAN ANTI-THEFT SYSTEM).
- Remove and install all control units after disconnecting both battery cables with the ignition knob in the "LOCK" position.
- Always use CONSULT-III to perform self-diagnosis as a part of each function inspection after finishing work. If DTC is detected, perform trouble diagnosis according to self-diagnostic results.

For models equipped with the Intelligent Key system and NATS, an electrically controlled steering lock mechanism is adopted on the key cylinder.

For this reason, if the battery is disconnected or if the battery is discharged, the steering wheel will lock and steering wheel rotation will become impossible.

If steering wheel rotation is required when battery power is interrupted, follow the procedure below before starting the repair operation.

OPERATION PROCEDURE

1. Connect both battery cables.
 - NOTE:**
Supply power using jumper cables if battery is discharged.
2. Use the Intelligent Key or mechanical key to turn the ignition switch to the "ACC" position. At this time, the steering lock will be released.
3. Disconnect both battery cables. The steering lock will remain released and the steering wheel can be rotated.
4. Perform the necessary repair operation.
5. When the repair work is completed, return the ignition switch to the "LOCK" position before connecting the battery cables. (At this time, the steering lock mechanism will engage.)
6. Perform a self-diagnosis check of all control units using CONSULT-III.

PRECAUTIONS

< SERVICE INFORMATION >

[MR18DE]

INFOID:000000004788557

Precaution for Liquid Gasket

REMOVAL OF LIQUID GASKET SEALING

- After removing nuts and bolts, separate the mating surface, using Tool and remove old liquid gasket sealing.

Tool number : KV10111100 (J-37228)

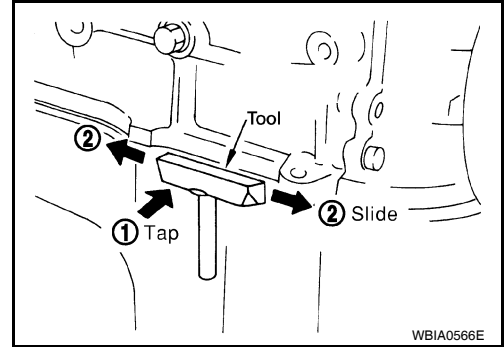
CAUTION:

Be careful not to damage the mating surfaces.

- Tap Tool to insert it (1), and then slide it by tapping on the side (2) as shown.
- In areas where Tool is difficult to use, use plastic hammer to lightly tap the parts, to remove it.

CAUTION:

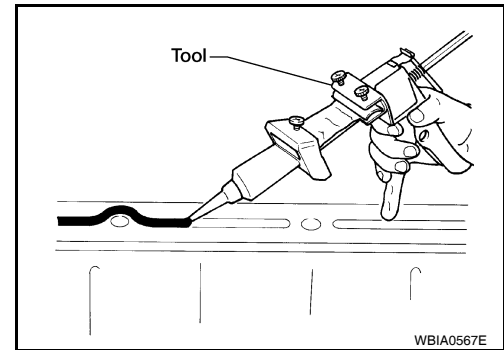
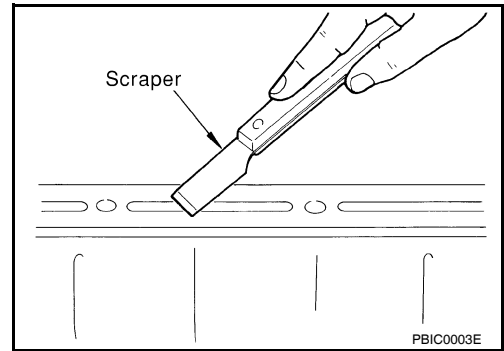
If for some unavoidable reason suitable tool such as screw-driver is used, be careful not to damage the mating surfaces.



LIQUID GASKET APPLICATION PROCEDURE

1. Remove old liquid gasket adhering to the liquid gasket application surface and the mating surface, using scraper.
 - Remove liquid gasket completely from the groove of the liquid gasket application surface, bolts, and bolt holes.
2. Thoroughly clean the mating surfaces and remove adhering moisture, grease and foreign materials.
3. Attach liquid gasket tube to Tool.

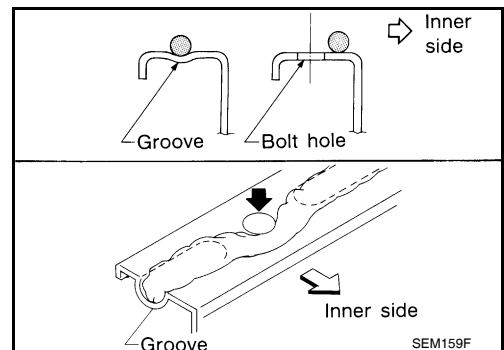
Tool number : WS39930000 (—)



Use Genuine RTV Silicone Sealant or equivalent. Refer to [GI-42, "Recommended Chemical Product and Sealant"](#).

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

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



CAUTION:

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

PREPARATION

< SERVICE INFORMATION >

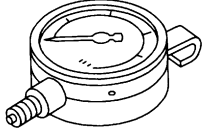
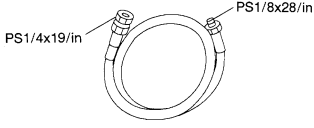
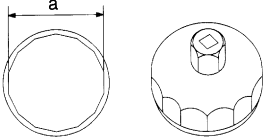
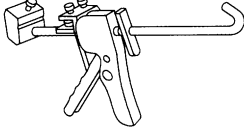
[MR18DE]

PREPARATION

Special Service Tool

INFOID:000000004307165

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

Tool number (Kent-Moore No.) Tool name	Description
ST25051001 (J-25695-1) Oil pressure gauge  NT050	Measuring oil pressure Maximum measuring range: 2,452 kPa (25 kg/cm², 356 psi)
ST25052000 (J-25695-2) Hose  S-NT559	Adapting oil pressure gauge to oil pan (upper)
KV10115801 (J-38956) Oil filter wrench  S-NT375	Removing oil filter a: 64.3 mm (2.531 in)
WS39930000 (—) Tube presser  NT052	Pressing the tube of liquid gasket

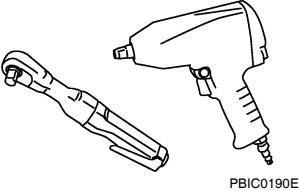
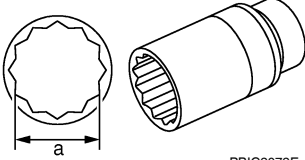
Commercial Service Tool

INFOID:000000004307166

PREPARATION

< SERVICE INFORMATION >

[MR18DE]

Tool name	Description
<p data-bbox="162 199 272 226">Power tool</p>  <p data-bbox="852 415 922 436">PBIC0190E</p>	<p data-bbox="1010 199 1263 226">Loosening nuts and bolts</p>
<p data-bbox="162 451 289 478">Deep socket</p>  <p data-bbox="852 667 922 688">PBIC2072E</p>	<p data-bbox="1010 451 1445 508">Removing and installing oil pressure switch a: 26 mm (1.02 in)</p>

LUBRICATION SYSTEM

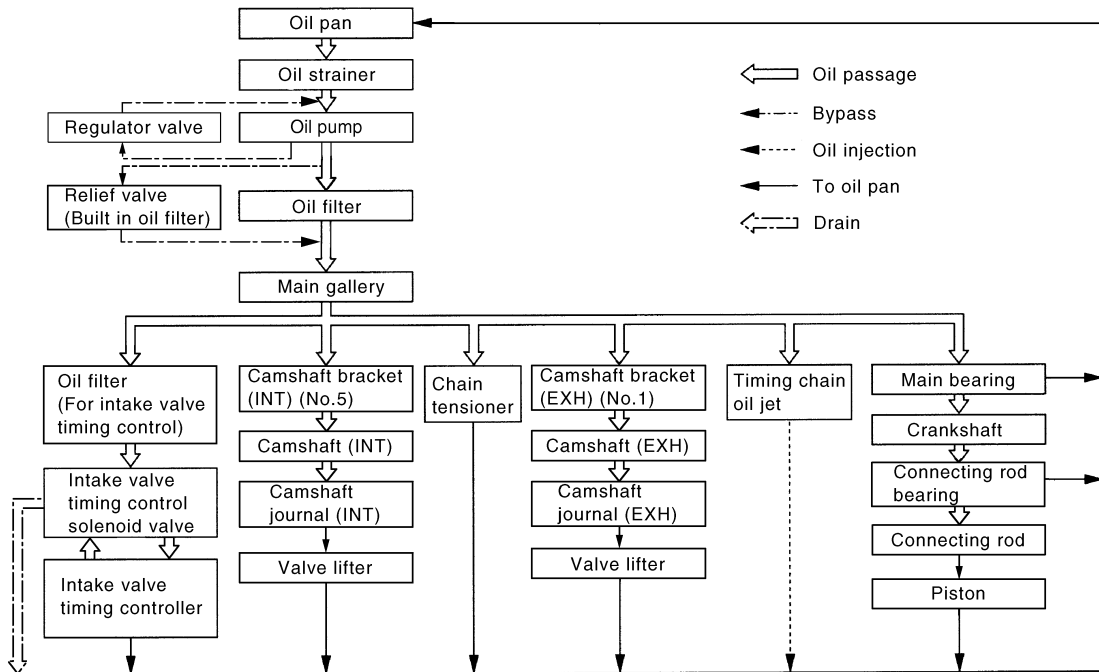
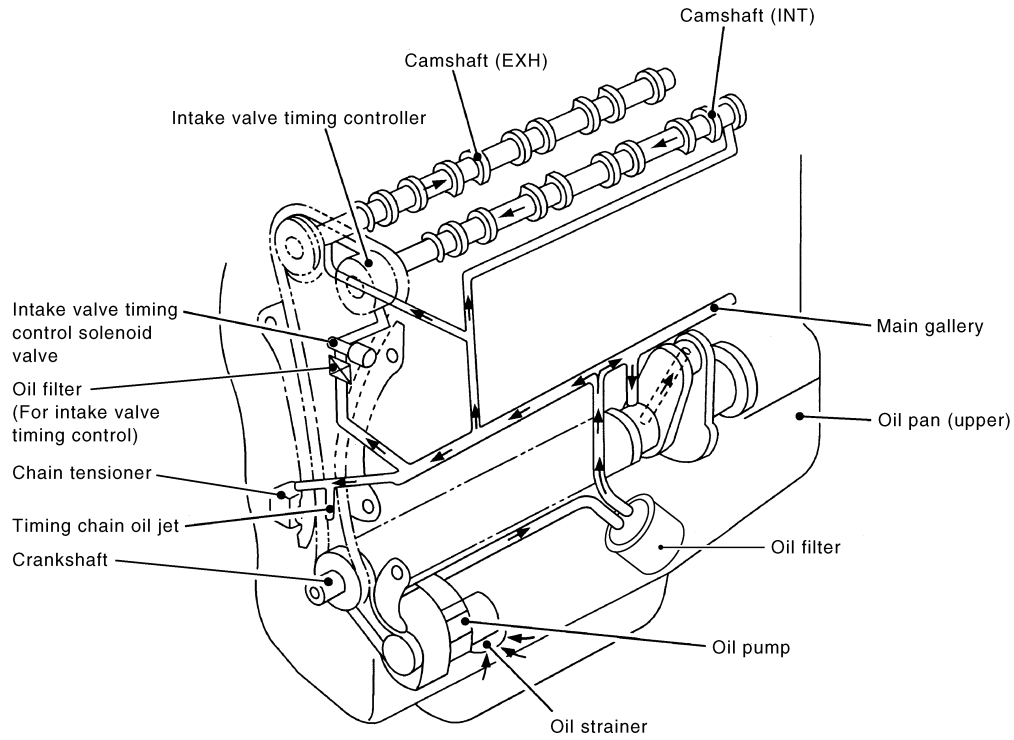
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[MR18DE]

LUBRICATION SYSTEM

Lubrication Circuit

INFOID:000000004307167



PBIC4575E

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LU

ENGINE OIL

Inspection

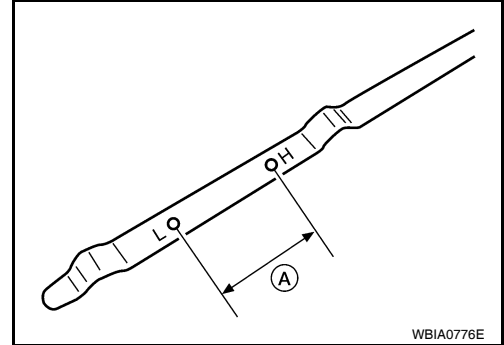
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ENGINE OIL LEVEL

NOTE:

Park vehicle on a level surface, wait 10 minutes and check the engine oil level.

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) as shown.
3. If it is out of range, adjust it.



ENGINE OIL APPEARANCE

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

ENGINE OIL LEAKAGE

Check for engine oil leakage around the following areas:

- Oil 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 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:

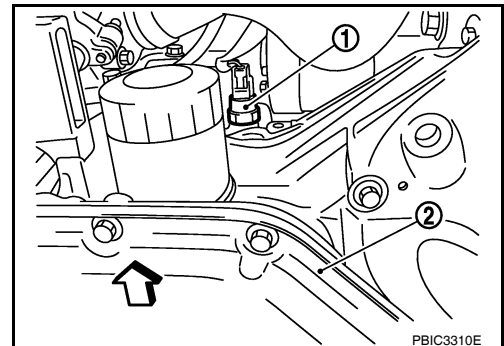
- Be careful not to burn yourself, as engine oil may be hot.
- For engine oil pressure check the transaxle should be in “ Park position” (A/T models) and (CVT models) or “Neutral position” (M/T models), and apply the parking brake securely.

1. Check engine oil level.
2. Remove undercover using power tool.
3. Disconnect harness connector at oil pressure switch (1), and remove oil pressure switch using a suitable tool.

- Oil pan (lower) (2)
- ← Front

CAUTION:

Do not drop or shock oil pressure switch.



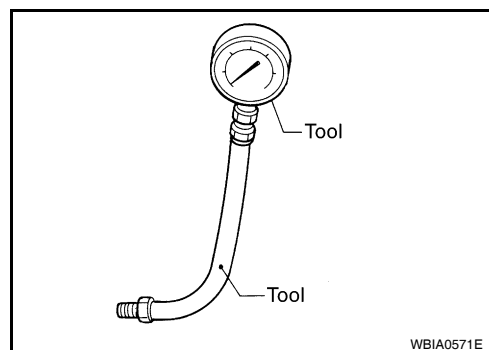
ENGINE OIL

< SERVICE INFORMATION >

[MR18DE]

4. Install oil pressure gauge and hose.

Tool number : ST25051001 (J-25695-1)
: ST25052000 (J-25695-2)



5. Start engine and warm it up to normal operating temperature.
6. Check oil pressure with engine running under no-load. Refer to [LU-22, "Standard and Limit"](#).
If difference is extreme, check oil passage and oil pump for oil leaks.

NOTE:

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

7. 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 Silicone RTV Sealant or equivalent. Refer to [GI-42, "Recommended Chemical Product and Sealant"](#).

Oil pressure switch : 14.7 N·m (1.5 kg-m, 11 ft-lb)

- c. Check engine oil level.
- d. After warming up engine, make sure there are no leaks of engine oil with running engine.

Changing Engine Oil

INFOID:000000004307169


WARNING:

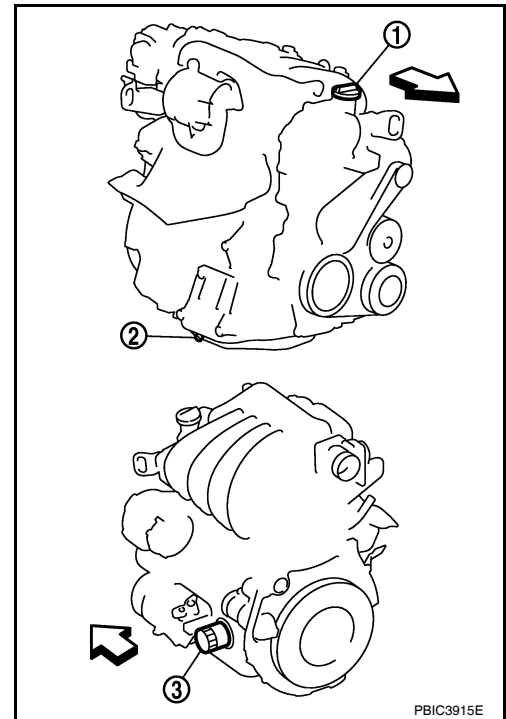
- **Be careful not to burn yourself, as engine oil may be hot.**
 - **Prolonged and repeated contact with used engine oil may cause skin cancer. Try to avoid direct skin contact with used engine oil. If skin contact is made, wash thoroughly with soap or hand cleaner as soon as possible.**
1. Warm up the engine, park vehicle on a level surface and check for engine oil leakage from engine components. Refer to [LU-16, "Inspection"](#).
 2. Stop the engine and wait for 10 minutes.

ENGINE OIL

[MR18DE]

< SERVICE INFORMATION >

3. Loosen oil filler cap (1) and then remove drain plug (2).
 - Oil filter (3)
 - : Engine front
4. Drain engine oil.
5. Install drain plug (2) with new washer. Refer to [EM-147. "Component"](#).
CAUTION:
Be sure to clean drain plug (2) and install with new washer.
6. Refill with new engine oil.
Refer to [MA-14](#).
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.**
7. Warm up engine and check area around drain plug (2) and oil filter (3) for engine oil leakage.
8. Stop engine and wait for 10 minutes.
9. Check the engine oil level. Refer to [LU-16. "Inspection"](#).



OIL FILTER

Removal and Installation

INFOID:00000004307170

REMOVAL

1. Remove oil filter using Tool (A).
 - ■: Front

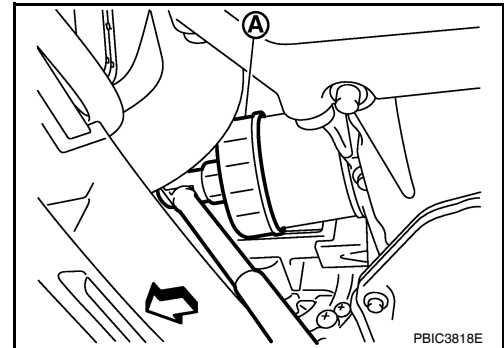
Tool number : KV10115801 (J-38956)

WARNING:

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

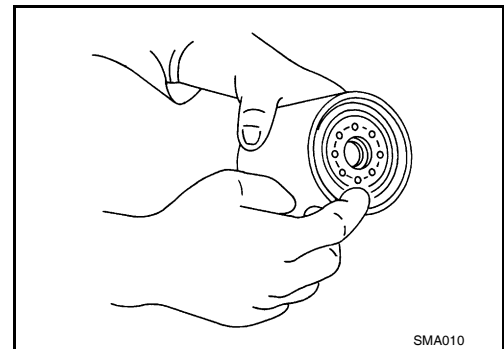
CAUTION:

- Oil filter is provided with relief valve. Use Genuine NISSAN Oil Filter or equivalent.
- When removing, prepare a shop cloth to absorb any engine oil leakage or spillage.
- Do not spill engine oil on drive belt.
- Completely wipe off any engine oil that spills on engine and vehicle.



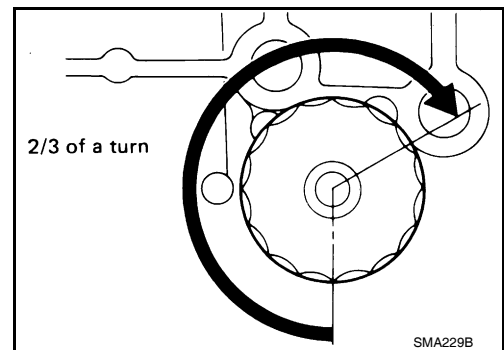
INSTALLATION

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. Or tighten to specification.

Oil filter: : 17.7 N·m (1.8 kg-m, 13 ft-lb)



INSPECTION AFTER INSTALLATION

1. Check the engine oil level. Refer to [LU-16, "Inspection"](#).
2. Start engine, and make sure there are no leaks of engine oil.
3. Stop engine and wait for 10 minutes.
4. Check the engine oil level and adjust as necessary. Refer to [LU-16, "Inspection"](#).

OIL PUMP

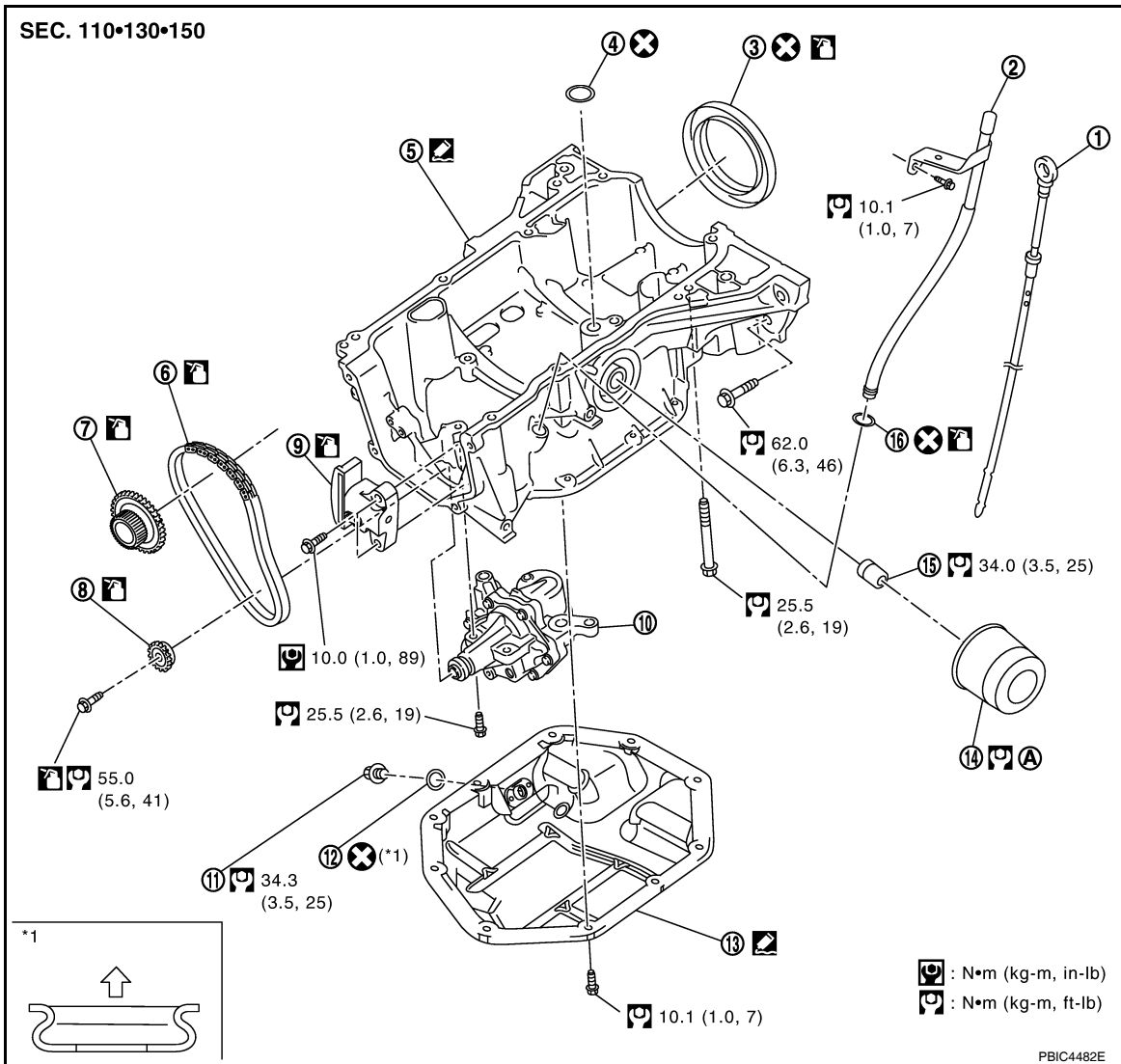
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[MR18DE]

OIL PUMP

Component

INFOID:000000004673031



- | | | |
|------------------------|-----------------------------------|--|
| 1. Oil level gauge | 2. Oil level gauge guide | 3. Rear oil seal |
| 4. O-ring | 5. Oil pan (upper) | 6. Oil pump drive chain |
| 7. Crankshaft sprocket | 8. Oil pump sprocket | 9. Timing chain tensioner (for oil pump) |
| 10. Oil pump | 11. Drain plug | 12. Drain plug washer |
| 13. Oil pan (lower) | 14. Oil filter | 15. Connector bolt |
| 16. O-ring | A. Refer to LU-20 | ■ Oil pan side |

Removal and Installation

INFOID:000000004673032

REMOVAL

1. Remove the timing chain and oil pump drive chain. Refer to [EM-161, "Removal and Installation"](#).

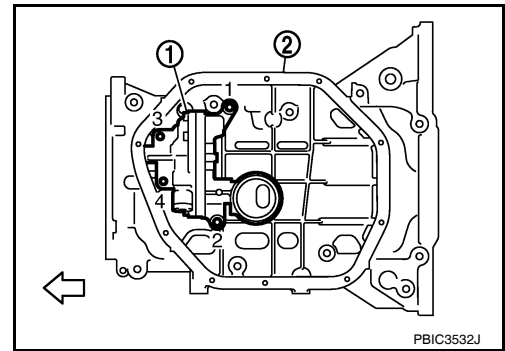
OIL PUMP

[MR18DE]

< SERVICE INFORMATION >

- Remove oil pump.
 - Loosen bolts in reverse order as shown.

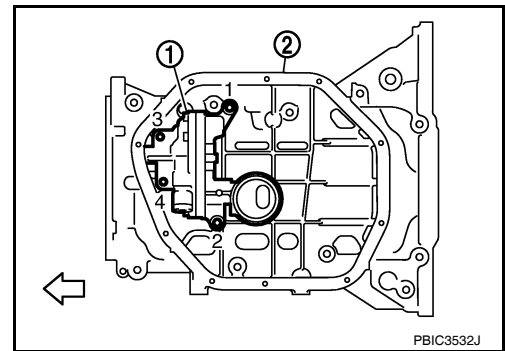
- 1 : Oil pump
- 2 : Oil pan (upper)
- : Engine front



INSTALLATION

- Install oil pump.
 - Tighten bolts in numerical order as shown.

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



- Install the timing chain and oil pump drive chain. Refer to [EM-161. "Removal and Installation"](#).

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SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE INFORMATION >

[MR18DE]

SERVICE DATA AND SPECIFICATIONS (SDS)

Standard and Limit

INFOID:000000004307171

ENGINE OIL PRESSURE

Engine speed rpm	Approximate discharge pressure kPa (bar, kg/cm ² , psi)
Idle speed	60 (0.60, 0.61, 9)
2,000	200 (2.0, 2.0, 29)

ENGINE OIL CAPACITY

Unit: ■ (US qt, Imp qt)

Drain and refill	With oil filter change	Approximately 4.1 (4 3/8, 3 5/8)
	Without oil filter change	Approximately 3.9 (4 1/8, 3 3/8)
Dry engine (engine overhaul)		Approximately 4.9 (5 1/8, 4 3/8)