

DAIHATSU

F300

[HD-ENGINE]

LUBRICATION SYSTEM

TROUBLE SHOOTING	LU-2
OIL PRESSURE CHECK	LU-2
ENGINE OIL CHANGE & OIL FILTER	
REPLACEMENT	LU-4
OIL COOLER	LU-6

WN88E-LU001



TROUBLE SHOOTING

Problem	Possible causes	Remedies	Page
Oil leakage	Cylinder head, cylinder block oil cooler or oil pump body damaged or cracked Oil seal faulty Gasket faulty	Repair, if necessary. Replace oil seal. Replace gasket.	
Low oil pressure	Oil leakage Relief valve faulty Oil pump faulty Poor quality engine oil Crankshaft bearing faulty Connecting rod bearing faulty Oil filter clogged Low oil level	Repair, as necessary. Replace relief valve. Repair oil pump. Change engine oil Replace bearing. Replace bearing. Replace oil filter. Check oil level	EM-108 EM-107 LU-2 EM-90 EM-87 LU-4 LU-2
High oil pressure	Relief valve faulty	Replace relief valve.	EM-108

WN88-LU002

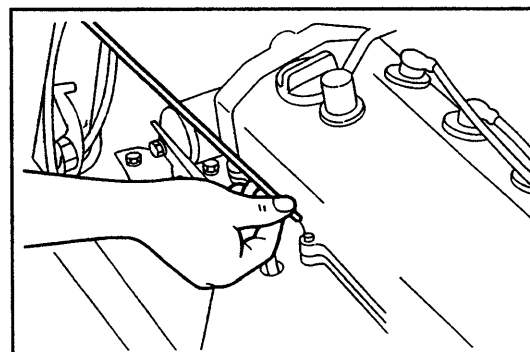
OIL PRESSURE CHECK

1. Oil quality check

Check the oil for deterioration, ingress of water, discoloring or dilution.

If oil quality is poor, change the oil.

Use API grade SE or higher multigrade viscosity, fuel-efficient oil. (See page LU-5)



WR88-LU003

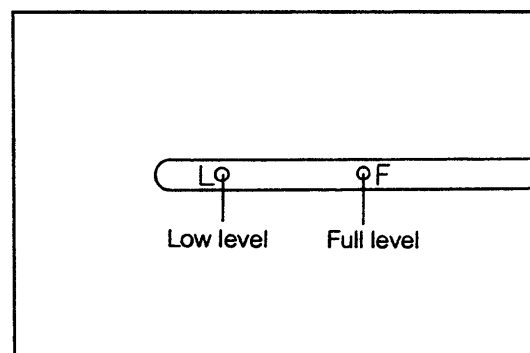
2. Oil level check

The oil level should be between the L and F levels on the dipstick.

If the level is low, check to see if any oil leakage is present. Add oil to the F level.

NOTE:

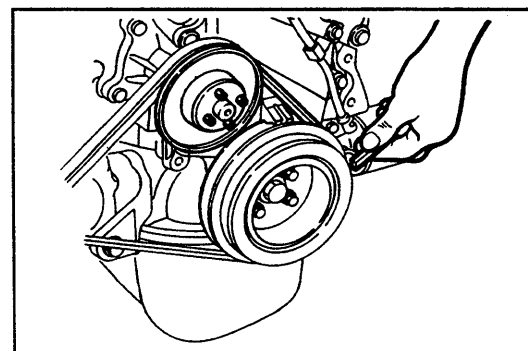
The amount of oil between the [L] level and the [F] equals to one liter (0.22 Imp. gal.).



WR88-LU004

3. Oil pressure check

(1) Disconnect the oil pressure switch connector.

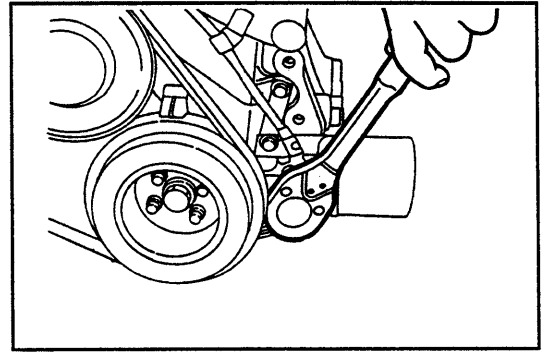


WR88-LU005

(2) Remove the oil pressure switch.

NOTE:

Use a hexagonal long box wrench for the removal.



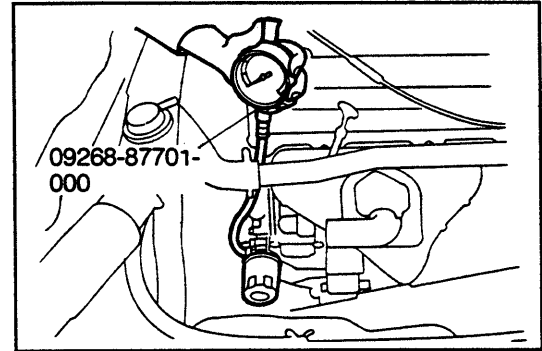
WR88-LU006

(3) Install the oil pressure gauge.

NOTE:

The pressure gauge is available as a SST.

SST: 09268-87701-000



WR88-LU007

(4) Starting engine

Start the engine and warm it to the normal operating temperature.

At Idle Speed: More Than 0.2 kg/cm^2 (2.8 psi)

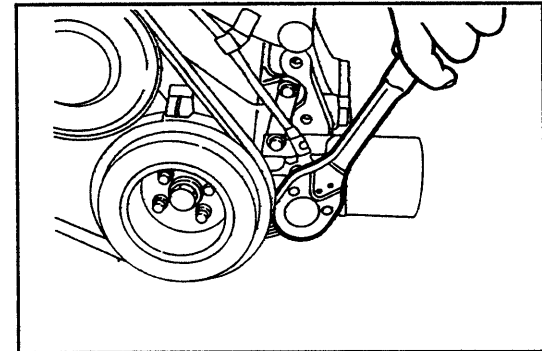
At 3000 rpm: $2.5 - 5.0 \text{ kg/cm}^2$ (35.6 - 71.0 psi)

If the measured value fails to conform to the specified value, check and repair the oil pump.

(See the section under "Cylinder Block of Engine Mechanicals.")

(5) Stop the engine.

(6) Remove the oil pressure gauge.



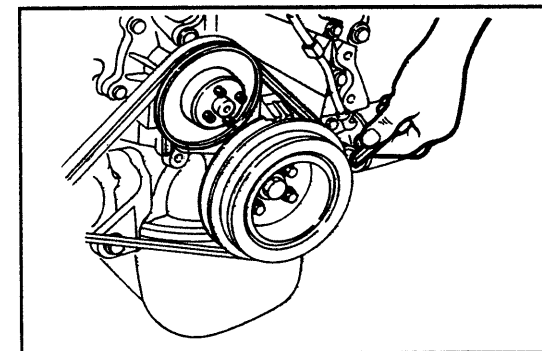
WR88-LU009

(7) Clean the threaded portion of the oil pressure switch. Wind seal tape around the threaded portion. Install the oil pressure switch in the oil pump.

Tightening Torque: $1.2 - 2.0 \text{ kg-m}$ (8.7 - 14.5 ft-lb)

NOTE:

- Use a hexagonal long box wrench for the installation.
- The new oil pressure switch is coated with sealing materials.



WR88-LU010

(8) Connect the connector of the oil pressure switch.

(9) Start the engine and check it for oil leakage.

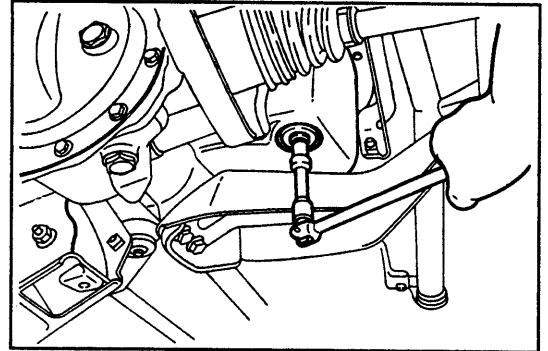
Repair the leaky point if oil leakage exists.

WR88-LU011

ENGINE OIL CHANGE & OIL FILTER REPLACEMENT

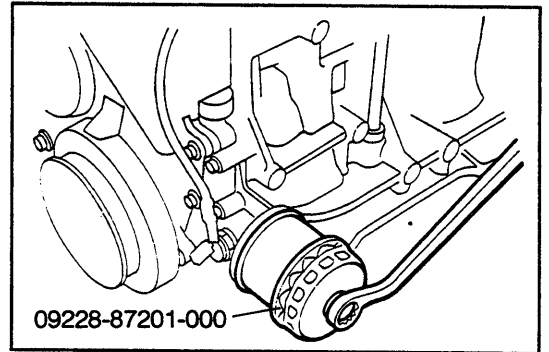
1. Drain the engine oil as follows:
 - (1) Place a suitable container under the oil drain plug.
 - (2) Drain the oil by removing the oil drain plug.

CAUTION:
When the oil is still hot, care must be exercised to avoid getting scalded.

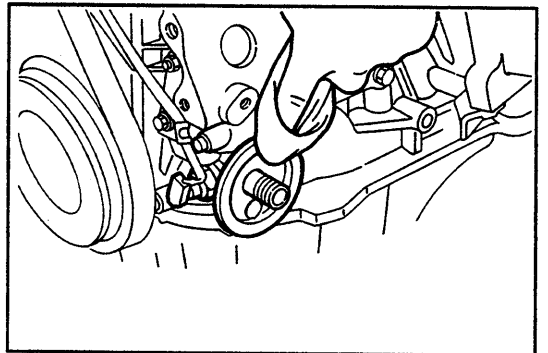


2. Oil filter replacement
 - (1) Remove the oil filter element, using the following SST.
SST: 09228-87201-000

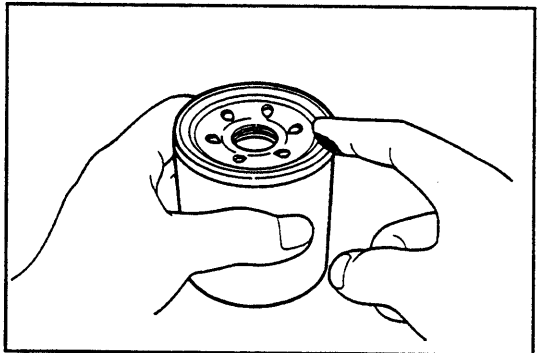
NOTE:
Place a suitable container under the oil filter because the engine oil flows out.



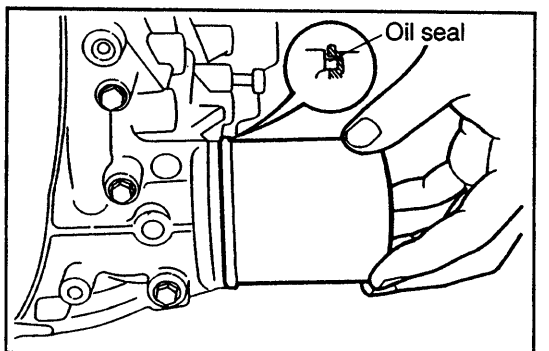
- (2) Inspect and clean the oil filter installation surface.



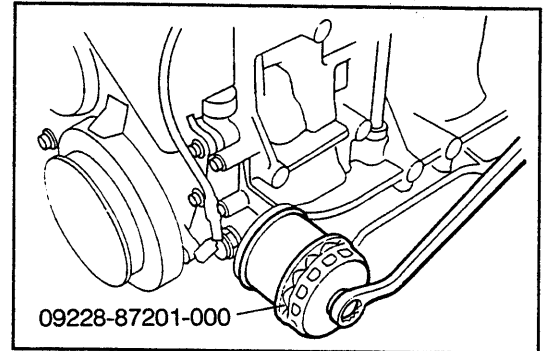
- (3) Thinly apply engine oil to the "O" ring of a new oil filter.



- (4) Screw in the oil filter by hand, until the "O" ring of the oil filter contacts the oil filter installing surface.



- (5) Tighten the oil filter three fourths to one complete turn, using the following SST.
SST: 09228-87201-000



WR88-LU017

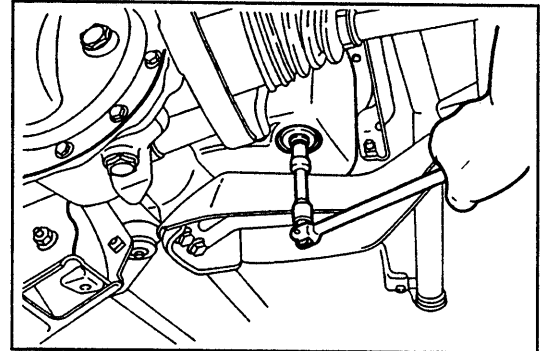
3. Filling engine oil

- (1) Clean the oil drain plug. Install it with a new gasket interposed.

NOTE:

Remove any remaining gasket material from the oil pan, using a gasket scraper.

Tightening Torque: 2.0 - 3.0 kg-m (14.5 - 21.7 ft-lb)



WR88-LU018

- (2) Fill the engine with engine oil.
 The oil should be API grade SE or higher multigrade viscosity, fuel-efficient oil.

Oil capacity

When only engine oil is changed:

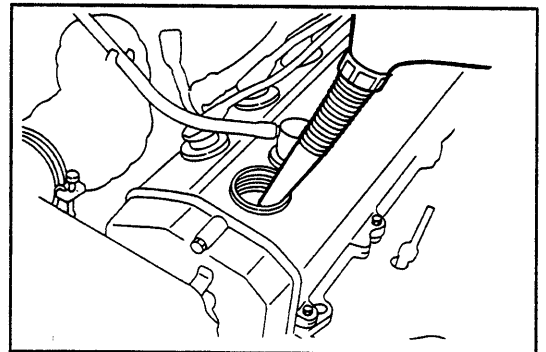
3.3 liter (2.9 IMP qt)

When engine oil is changed and oil filter is replaced:

3.5 liter (3.08 IMP qt)

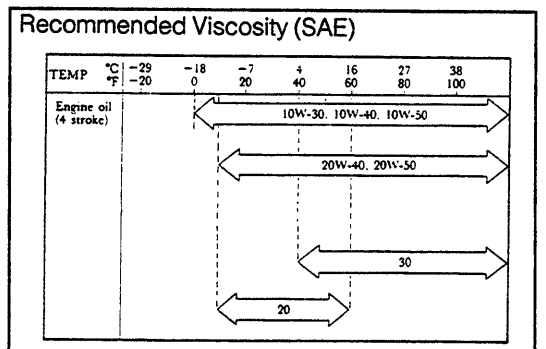
After engine has been overhauled or when engine oil has been drained completely from engine:

3.8 liter (3.52 IMP qt)



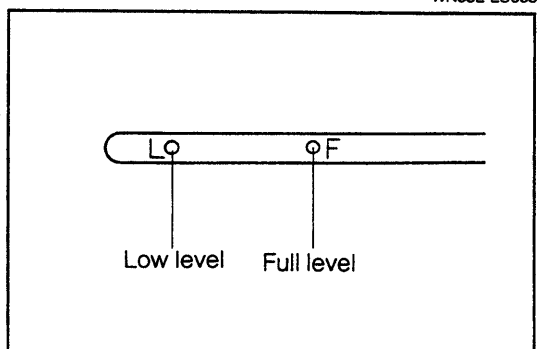
NOTE:

On the oil cooler-equipped vehicle, the oil capacity is 79 cc greater than the amount specified above,



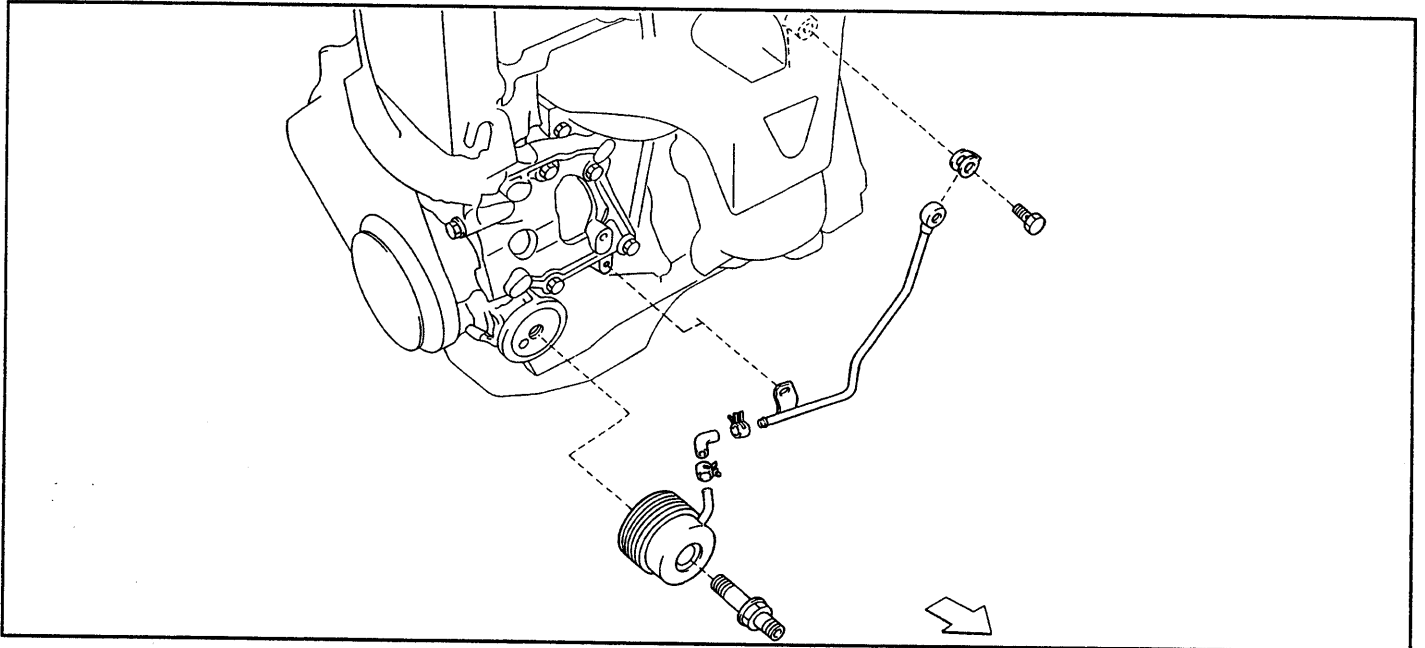
WN88E-LU003

- (3) Start the engine and check it for leakage.
 Repair the leaky point if oil leakage exists.
- (4) Stop the engine. After a lapse of two or three minutes, check the oil level.
 If oil level is less than the high level, replenish the oil to the full level.



WR88-LU021

OIL COOLER (Oil Cooler-Equipped Vehicle Only) COMPONENTS



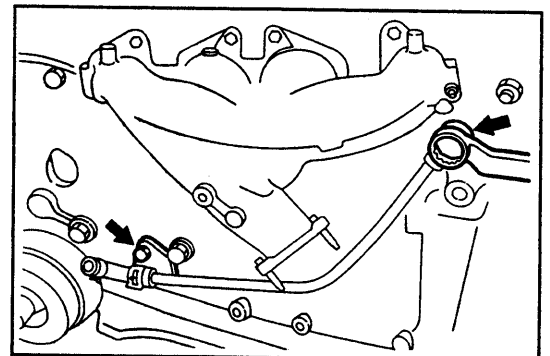
WR88-LU022

REMOVAL OF OIL COOLER

1. Disconnect the battery ground cable from the negative (-) terminal of the battery.
2. Drain the coolant. (See page CO-3.)
3. Remove the oil filter. (See page LU-4.)
4. Disconnect the oil cooler hose at the radiator side.

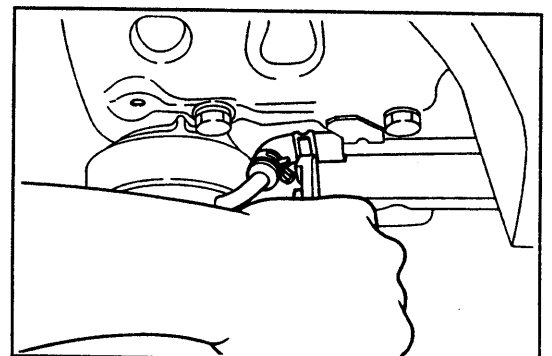
WR88-LU023

5. Disconnect the oil cooler pipe from the cylinder block.



WR88-LU023A

6. Remove the oil cooler pipe from the hose by sliding the hose bands.



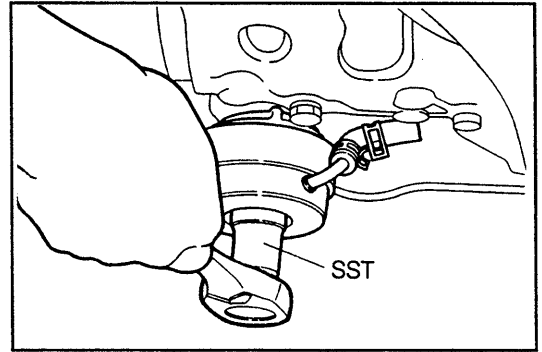
WR88-LU023B

- Remove the oil cooler, using the following SST.
SST: 09268-87704-000

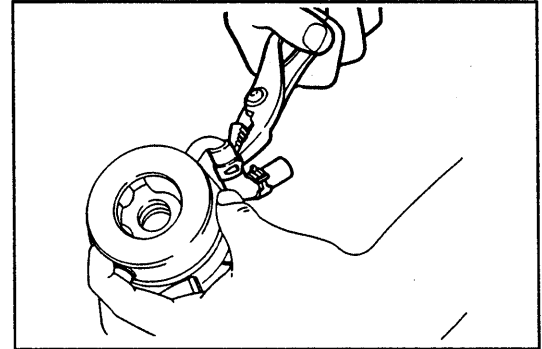
NOTE:

Place a suitable container below the oil cooler attaching section so as to receive any oil and water flowing from the oil cooler.

- Disconnect the water hose from the oil cooler.



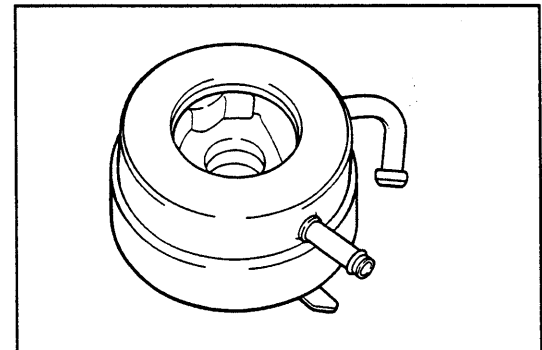
WR88-LU023C



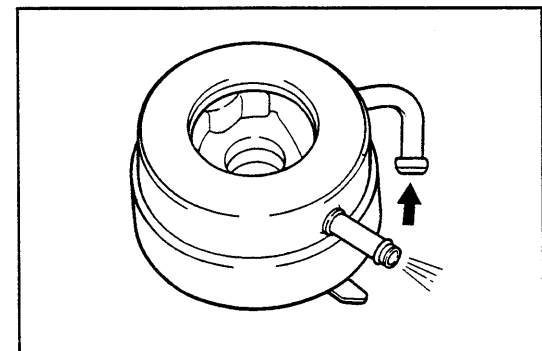
WR88-LU024

INSPECTION OF OIL COOLER

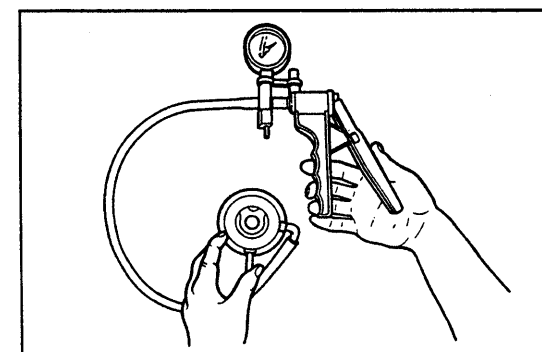
- Check the oil cooler for damage.
Replace the oil cooler if the oil cooler exhibits damage.
- Blow air from one end of the oil cooler pipe. Ensure that air continuity exists.
- With one end of the oil cooler pipe plugged with your finger, apply a negative pressure of 100 mmHg (3.937 inchHg) to the other end, using a MityVac or a vacuum pump. Ensure that the applied negative pressure is retained.
If the negative pressure is not kept, replace the oil cooler.



WR88-LU025



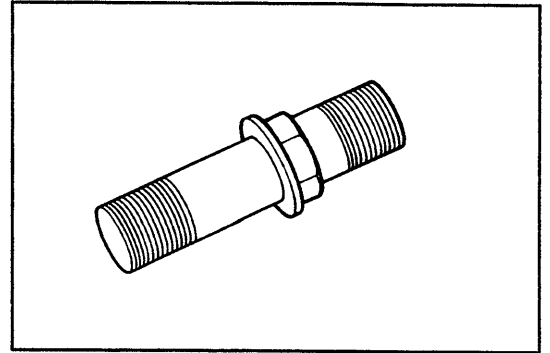
WR88-LU026



WR88-LU027

LUBRICATION SYSTEM

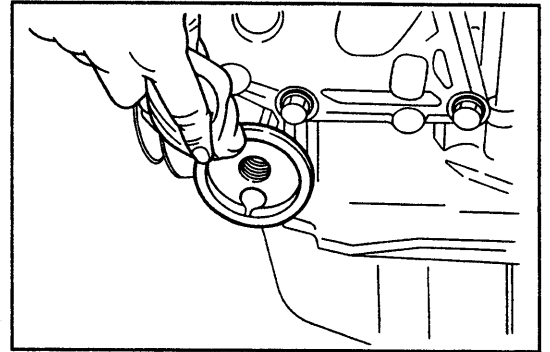
4. Check the oil cooler set bolt for damage.
Replace the oil cooler set bolt if it exhibits damage.



WR88-LU028

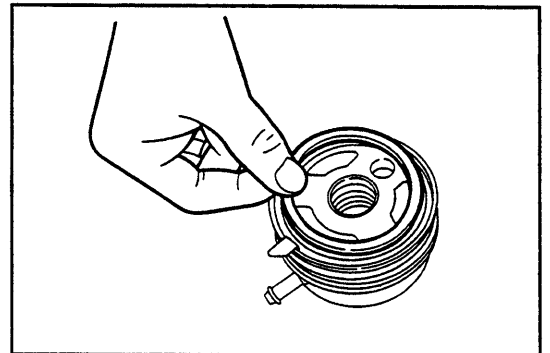
INSTALLATION OF OIL COOLER

1. Clean the oil cooler attaching surface of the oil pump.



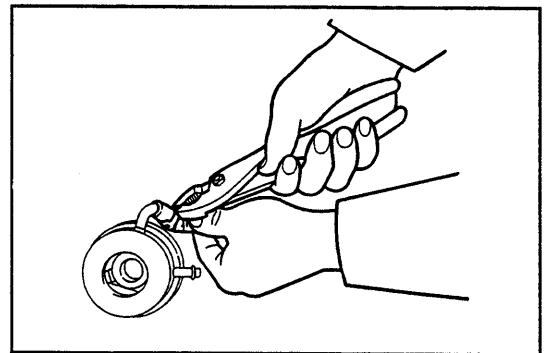
WR88-LU029A

2. Install the new "O" ring on the cooler.



WR88-LU029B

3. Connect the water hose to the oil cooler. Attach the hose bands.

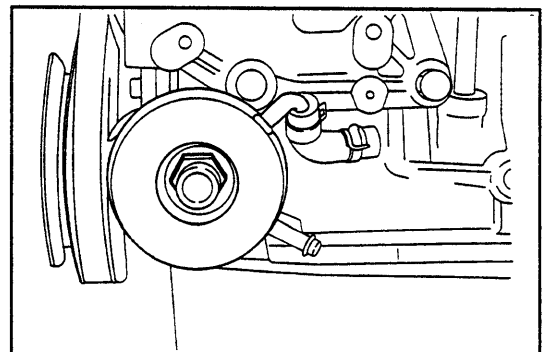


WR88-LU030

4. Using the set bolts, install the oil cooler by making the locating rib of the oil cooler contact with the cylinder block.

NOTE:

Care must be exercised to ensure that the "O" ring may not be displaced during the installation.

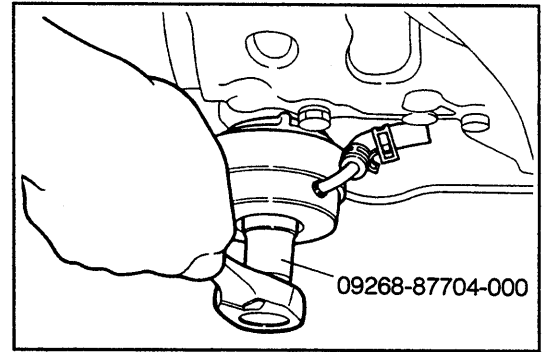


WR88-LU031A

5. Tighten the set bolts to the specified torque, using the following SST.

SST: 09268-87704-000

Tightening Torque: 2.5 - 3.5 kg-m (18.1 - 25.3 ft-lb)

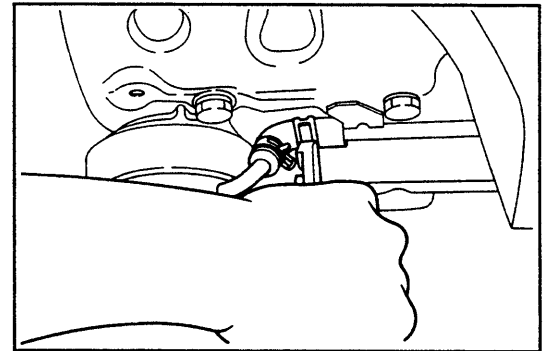


WR88-LU031B

6. Connect the oil cooler inlet pipe to the oil cooler hose that has been installed on the oil cooler.

NOTE:

Install the oil cooler pipe, by taking into consideration an angle at which it is mounted on the cylinder block.



WR88-LU031C

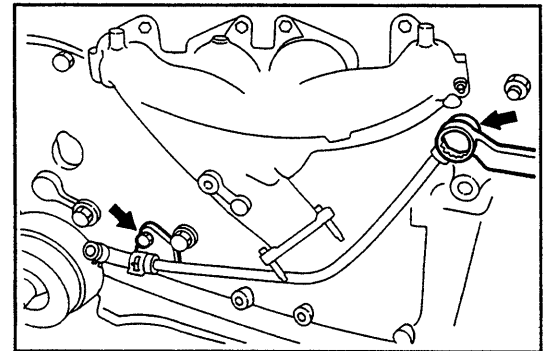
7. Install the oil cooler pipe on the cylinder block with a new gasket interposed.

Tightening Torque (Union bolt):

2.5 - 3.5 kg-m (18.1 - 25.3 ft-lb)

NOTE:

Never reuse the gasket.



WR88-LU032

8. Installation of oil filter

(1) Clean the oil filter installation surface of the oil cooler.

(2) Install the oil filter. (See page LU-5.)

9. Connect the oil cooler hose at the radiator side. Attach the hose bands.

10. Fill coolant. (See page CO-3.)

11. Connect the battery ground cable to the negative (-) terminal of the battery.

12. Start the engine. Check to see if any oil leakage or fuel leakage is present.

If the engine exhibits any defect, repair it or replace the defective part, as required.

13. Stop the engine. After two or three minutes, check the engine oil level, using the oil level gauge. Replenish engine oil to the FULL level, as required. (See page LU-5.)

(1) Screw in the oil filter by hand, until the "O" ring of the oil filter contacts the oil filter installing surface.

(2) Screw in the oil filter third fourths to one turn, using the following SST.

SST: 09228-87201-000

WR88-LU034