

LUBRICATION SYSTEM (April, 2003)

ON-VEHICLE INSPECTION

1707J-03

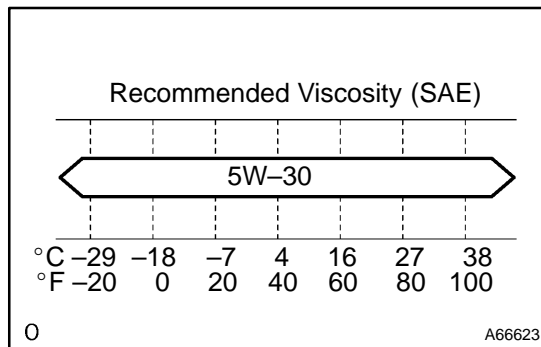
1. CHECK ENGINE OIL LEVEL

- (a) After warming up the engine and then 5 minutes after the engine stops, oil level should be between the "L" and "F" marks on the oil level gage.

If low, check for leakage and add oil up to the "F" mark.

NOTICE:

Do not fill with engine oil above the "F" mark.



2. CHECK ENGINE OIL QUALITY

- (a) Check the oil for deterioration, entry of water, discoloring or thinning.

If the quality is visibly poor, replace the oil.

Oil grade:

Use API grade SL "Energy-Conserving", or ILSAC multigrade engine oil.

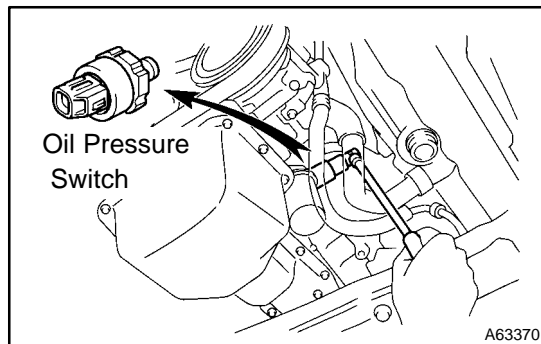
SAE 5W-30 is the best choice for good fuel economy, and good starting in cold weather.

If SAE 5W-30 is not available, SAE 10W-30 may be used.

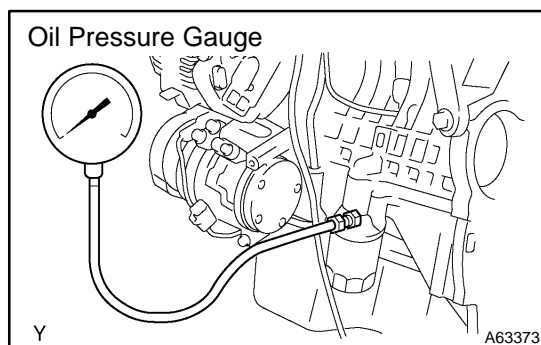
However, it should be replaced with SAE 5W-30 at the next oil replacement.

3. INSPECT OIL PRESSURE

- (a) Disconnect the oil pressure switch connector.



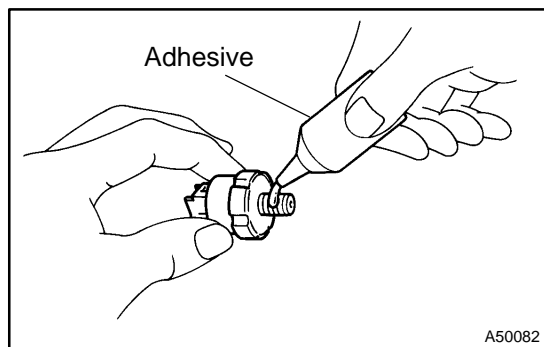
- (b) Using a 24 mm deep socket wrench, remove the oil pressure switch.



- (c) Install the oil pressure gauge.
(d) Warm up the engine.
(e) Inspect the oil pressure.

Oil pressure:

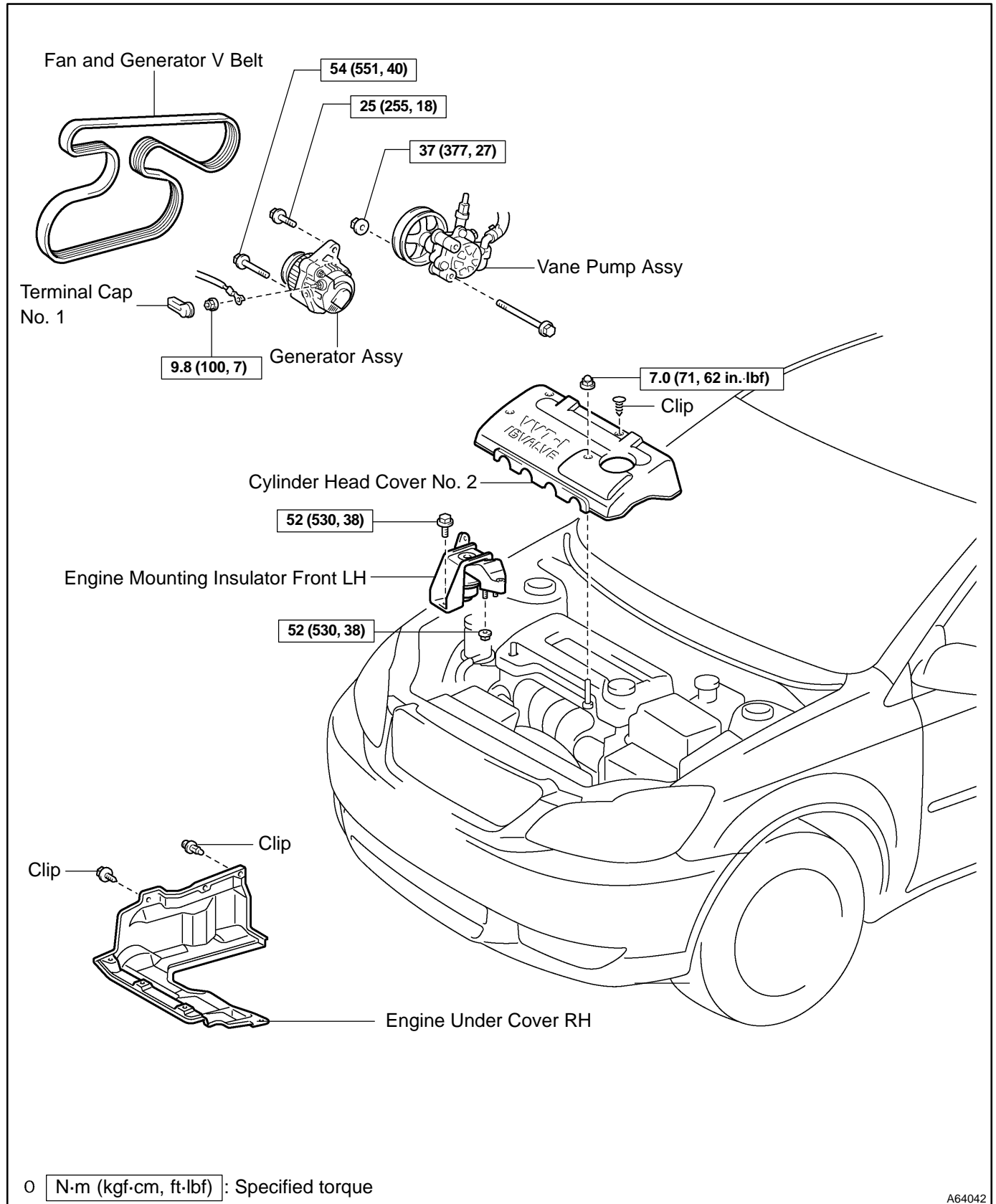
At idle	29 kPa (0.3 kgf/cm ² , 4.2 psi) or more
At 3,000 rpm	294 to 539 kPa (3.0 to 5.5 kgf/cm ² , 43 to 78 psi)



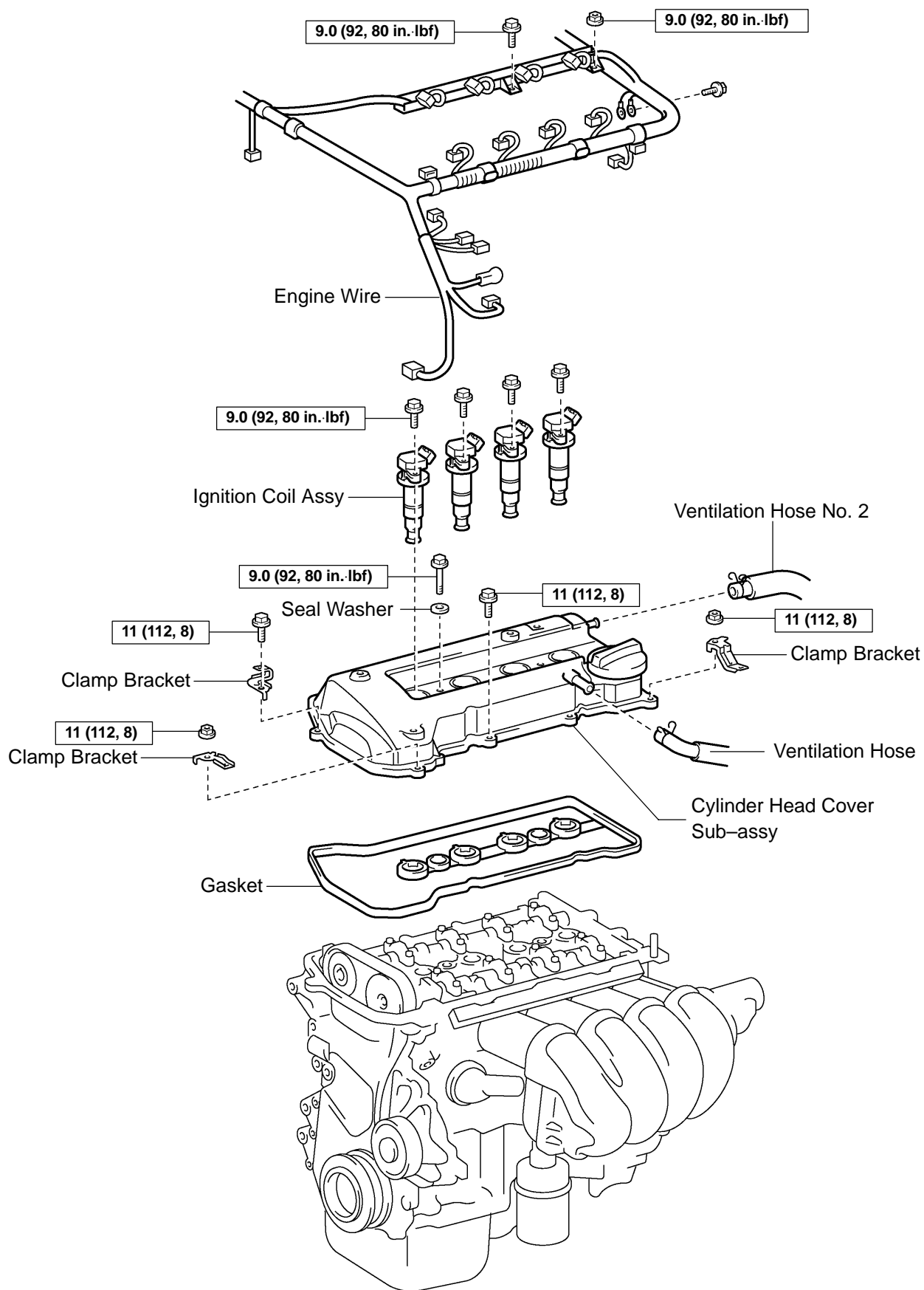
- (f) Apply adhesive to 2 or 3 threads of the oil pressure switch.
Adhesive:
Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent
- (g) Using a 24 mm deep socket wrench, install the oil pressure switch.
Torque: 15 N·m (153 kgf·cm, 11 ft·lbf)
- (h) Connect the oil pressure switch connector.
- (i) Check for the engine oil leaks.

OIL PUMP ASSY COMPONENTS

1707L-01

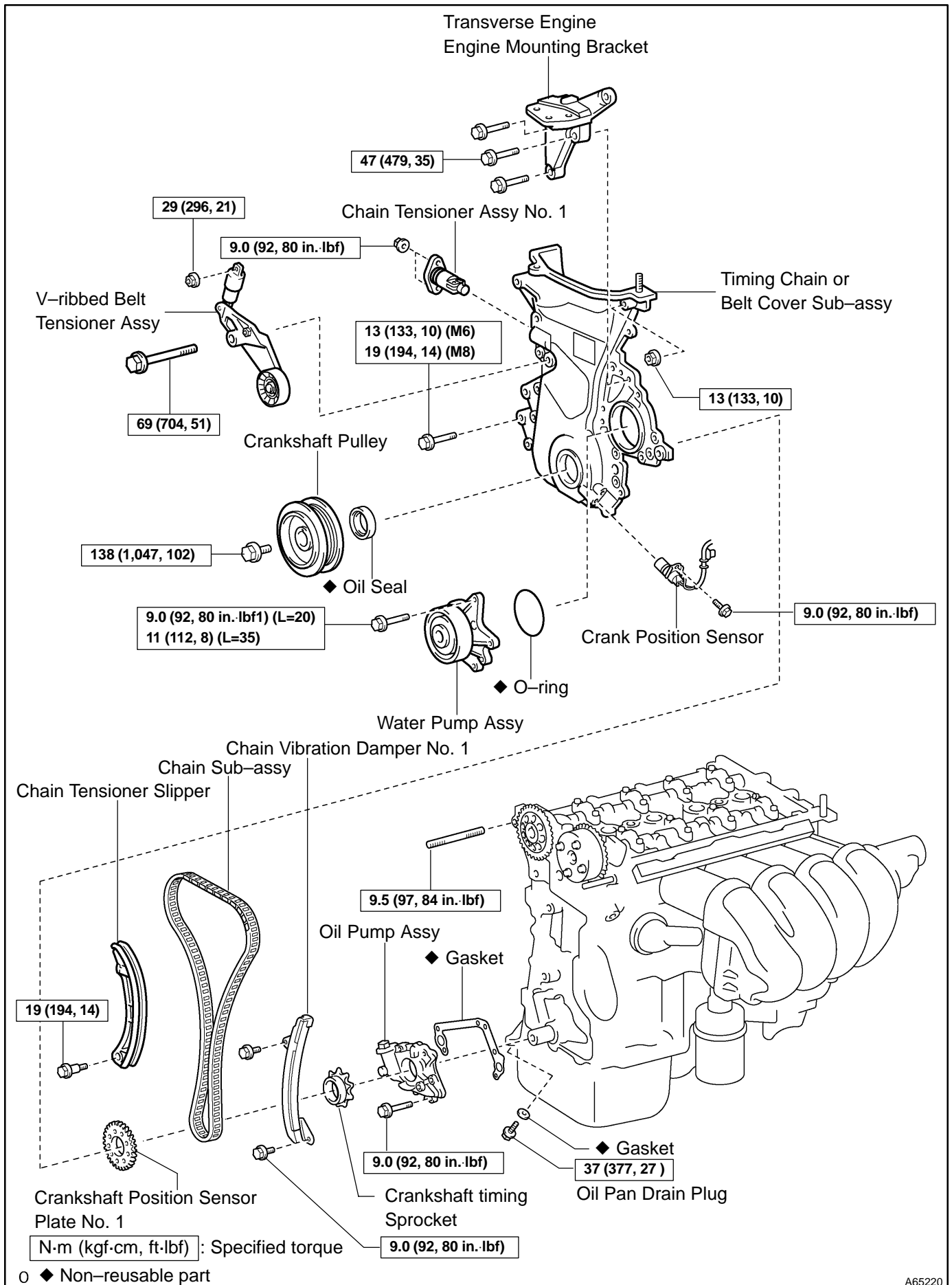


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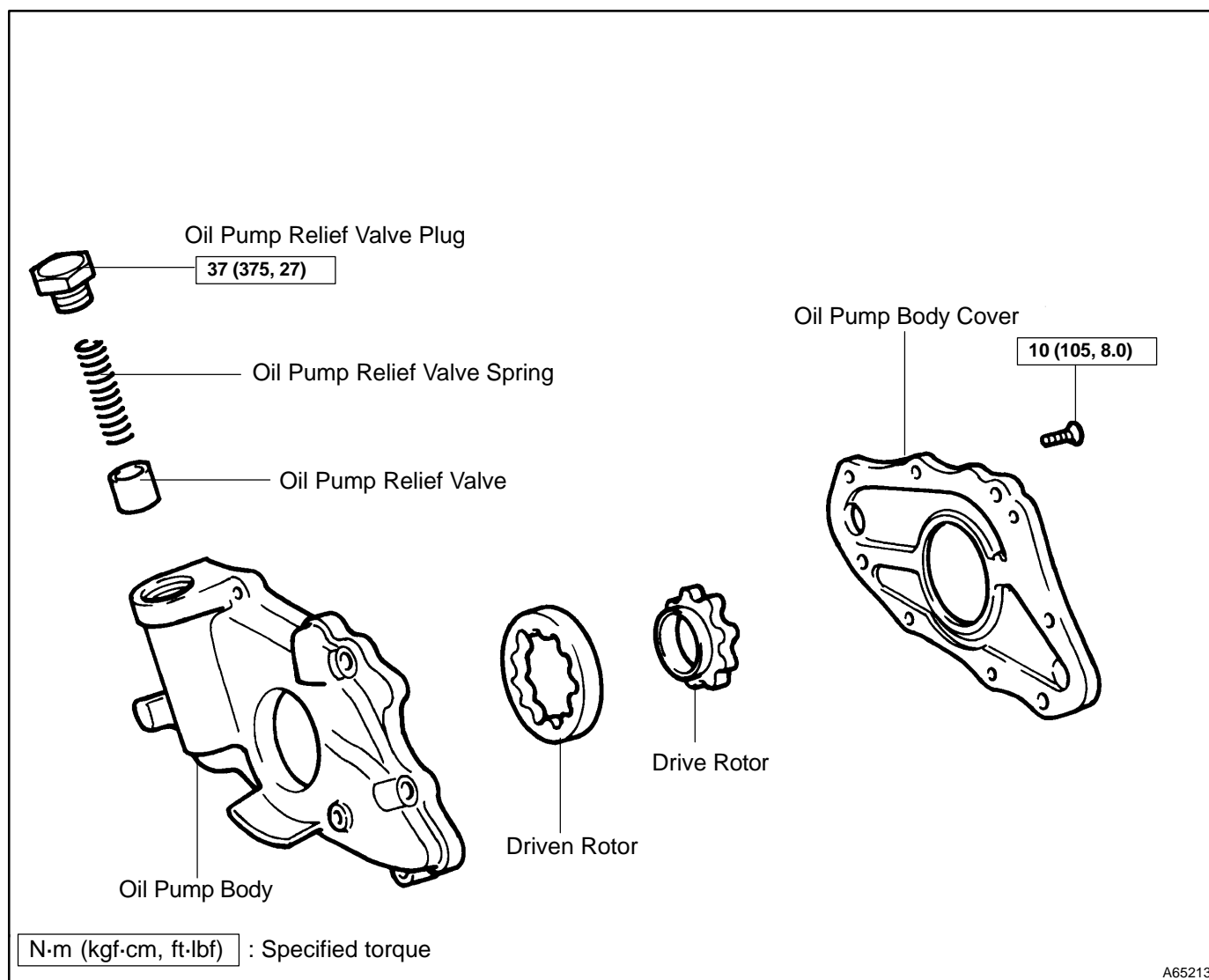


0 N·m (kgf·cm, ft·lbf) : Specified torque

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REPLACEMENT

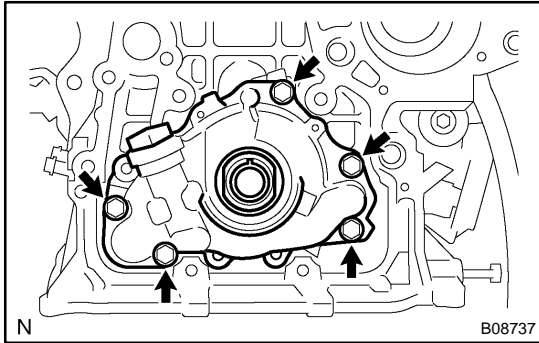
1. DRAIN ENGINE OIL

- (a) Remove the oil pan drain plug and drain the engine oil.

2. REMOVAL & INSTALLATION CHAIN SUB-ASSY(See page 14-82)

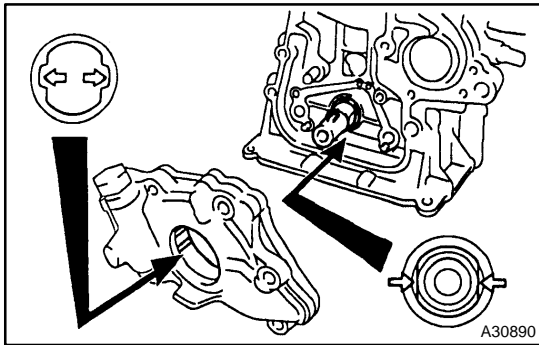
3. REMOVE CHAIN VIBRATION DAMPER NO.1

- (a) Remove 2 bolts and chain vibration damper No. 1.



4. REMOVE OIL PUMP ASSY

- (a) Remove the 5 bolts.
(b) Remove the oil pump assy and gasket.



5. INSTALL OIL PUMP ASSY

- (a) Place a new gasket on the cylinder block.
(b) Engage the spline teeth of the oil pump drive rotor with the large teeth of the crankshaft, and side the oil pump.
(c) Install the oil pump with the 5 bolts.

Torque: 9.0 N·m (92 kgf·cm, 80 in·lbf)

6. INSTALL CHAIN VIBRATION DAMPER NO.1

- (a) Install the chain vibration damper No. 1 with 2 bolts.

Torque: 9.0 N·m (92 kgf·cm, 8.0 in·lbf)

7. INSTALL OIL PAN DRAIN PLUG

- (a) Clean and install the oil pan drain plug with a new gasket.

Torque: 37 N·m (377 kgf·cm, 27 ft·lbf)

8. ADD ENGINE OIL

Capacity:

Drain and refill w/ Oil filter change 3.7 liters (3.9 US qts, 3.3 Imp. qts)

Drain and refill w/o Oil filter change 3.5 liters (3.7 US qts, 3.1 Imp. qts)

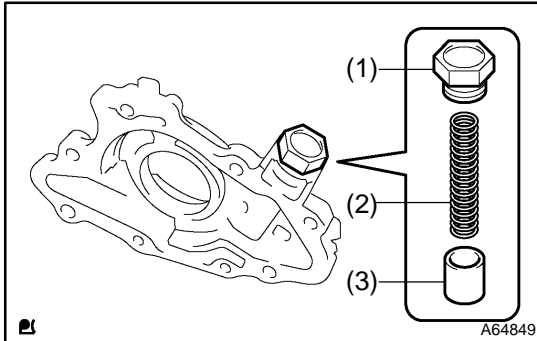
Dry fill 4.2 liters (4.4 US qts, 3.7 Imp. qts)

9. ADD COOLANT(See page 16-7)

10. INSPECT OIL LEAK

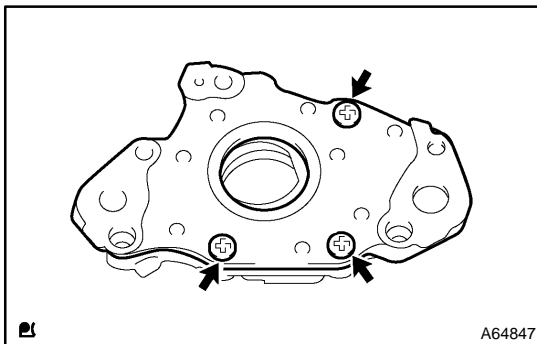
11. INSPECT CHECK ENGINE COOLANT LEAK(See page 16-1)

OVERHAUL



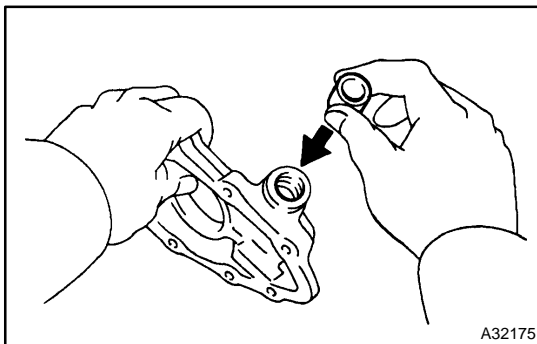
1. REMOVE OIL PUMP RELIEF VALVE

- (a) Remove the oil pump relief valve plug, oil pump relief valve spring and oil pump relief valve.
 - (1) Oil pump relief valve plug
 - (2) Oil pump relief valve spring
 - (3) Oil pump relief valve

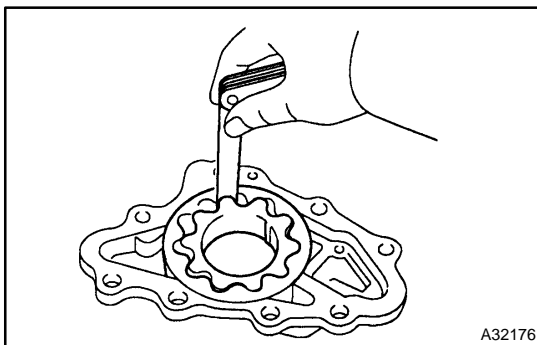


2. INSPECT OIL PUMP ASSY

- (a) Remove 3 screws and oil pump cover.



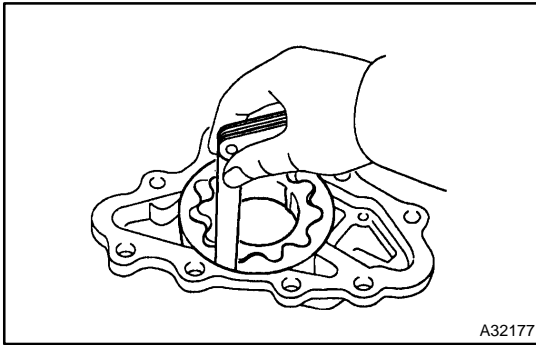
- (b) Inspect the oil pump relief valve.
 - (1) Coat the valve with engine oil and check that it falls smoothly into the valve hole by its own weight.
- (c) Inspect the oil pump rotor sub-assembly.
 - (1) Coat the oil pump gear set with engine oil and place them into the oil pump body. Check that the rotors revolve smoothly.



- (d) Inspect rotor tip clearance.
 - (1) Using a feeler gauge, measure the clearance between the drive and driven rotor tips.

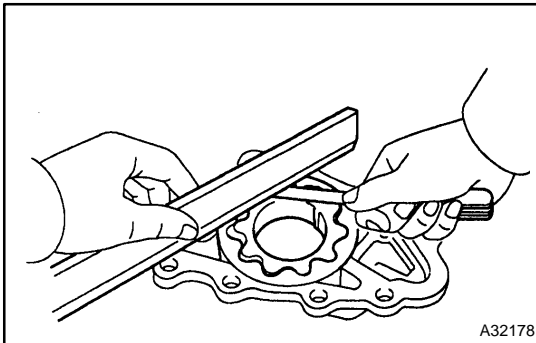
Standard tip clearance:

0.040 – 0.160 mm (0.0016 – 0.0063 in.)



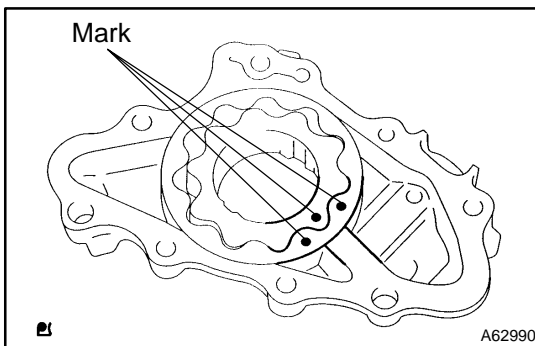
- (e) Inspect body clearance.
 (1) Using a feeler gauge, measure the clearance between the driven rotor and body.

Standard body clearance:
0.260 – 0.325 mm (0.0102 – 0.0128 in.)

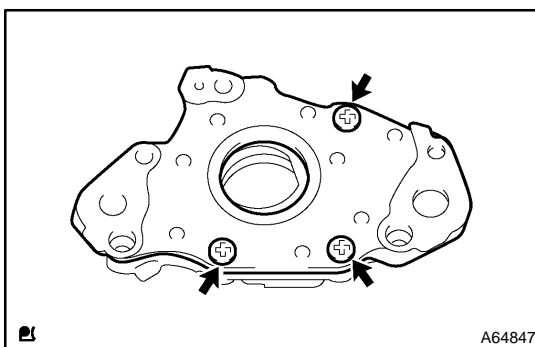


- (f) Inspect rotor side clearance.
 (1) Using a feeler gauge and precision straight edge, measure the clearance between the rotors and precision straight edge.

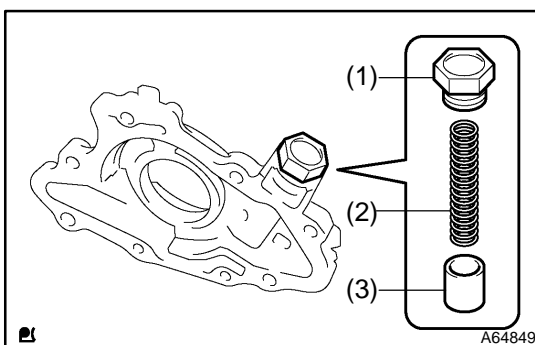
Standard side clearance:
0.025 – 0.071 mm (0.0010 – 0.0028 in.)



- (g) Install oil pump rotor sub-assembly.
 (1) Coat the oil pump gear set with engine oil and place it into pump body with the marks facing the pump body cover side.



- (h) Install the oil pump cover with 3 screws.
Torque: 10 N·m (105 kgf·cm, 8.0 ft·lbf)



3. INSTALL OIL PUMP RELIEF VALVE

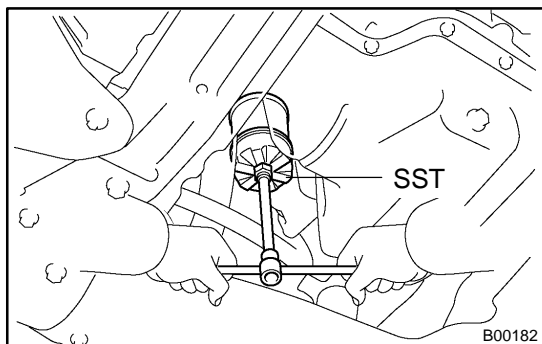
- (a) Install the oil pump relief valve plug, oil pump relief valve spring and oil pump relief valve.
Torque: 37 N·m (375 kgf·cm, 27 ft·lbf)
 (1) Oil pump relief valve plug
 (2) Oil pump relief valve spring
 (3) Oil pump relief valve

OIL FILTER SUB-ASSY REPLACEMENT

1707K-01

CAUTION:

- Prolonged and repeated contact with mineral oil will result in the removal of natural fats from the skin, leading to dryness, irritation and dermatitis. In addition, used engine oil contains potentially harmful contaminants which may cause skin cancer.
 - Exercise caution in order to minimize the length and frequency of contact of your skin to used oil. Wear protective clothing and gloves. Wash your skin thoroughly with soap and water, or use water-less hand cleaner to remove any used engine oil. Do not use gasoline, thinners, or solvents.
 - In order to preserve the environment, used oil and used oil filter must be disposed of only at designated disposal sites.
1. **REMOVE ENGINE UNDER COVER RH**
 2. **DRAIN ENGINE OIL**
 - (a) Remove the oil pan drain plug and drain the engine oil.

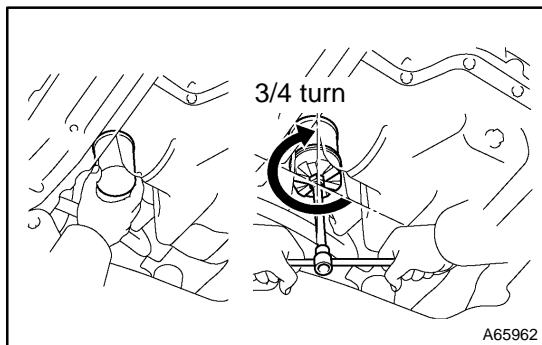


3. REMOVE OIL FILTER SUB-ASSY

- (a) Using SST, remove the oil filter
SST 09228-06501

4. INSTALL OIL FILTER SUB-ASSY

- (a) Check and clean the oil filter installation surface.
- (b) Apply clean engine oil to the gasket of a new oil filter.
- (c) Lightly screw the oil filter into place, and tighten it until the gasket contacts the seat.
- (d) Using SST, tighten it an additional 3/4 turn.
SST 09228-06501



5. INSTALL OIL PAN DRAIN PLUG

- (a) Clean and install the oil pan drain plug with a new gasket.
Torque: 37 N·m (377 kgf·cm, 27 in.·lbf)

6. ADD ENGINE OIL**Capacity:****Drain and refill w/ Oil filter change 3.7 liters (3.9 US qts, 3.3 Imp. qts)****Drain and refill w/o Oil filter change 3.5 liters (3.7 US qts, 3.1 Imp. qts)****Dry fill 4.2 liters (4.4 US qts, 3.7 Imp. qts)****7. INSPECT OIL LEAK**