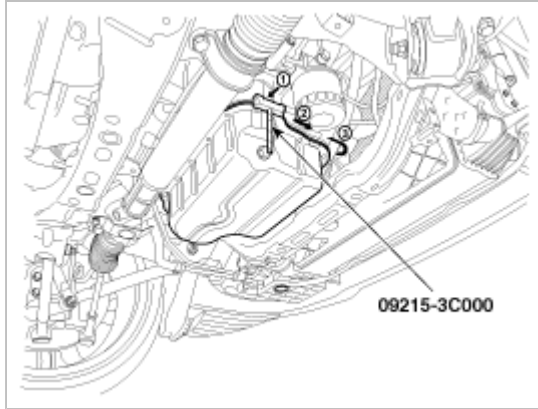


Removal

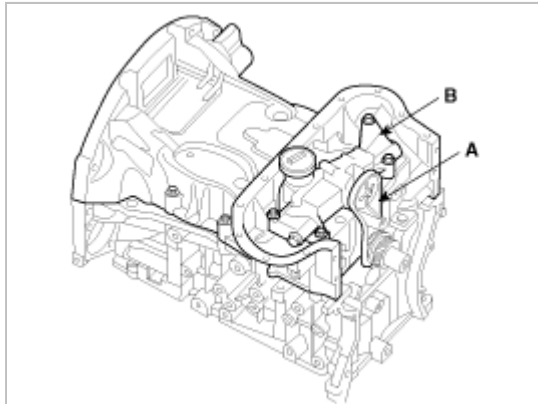
1. Drain the engine oil.
2. Remove the oil pan.
Insert the blade of SST(09215-3C000) between the ladder frame and the oil pan. Cut off applied sealer and remove the lower oil pan.



NOTE

- Insert the SST between the oil pan and the ladder frame by tapping it with a plastic hammer in the direction of arrow (1).
- After tapping the SST with a plastic hammer along the direction of arrow (2) around more than 2/3 edge of the oil pan, remove it from the ladder frame.
- Do not turn over the SST abruptly without tapping. It be result in damage of the SST.
- Be careful not to damage the contact surfaces of Upper oil pan and lower oil pan.

3. Remove the timing chain.
(Refer to Timing system in this group)
4. Remove the oil pump (B), oil pump chain (A) and sprocket.

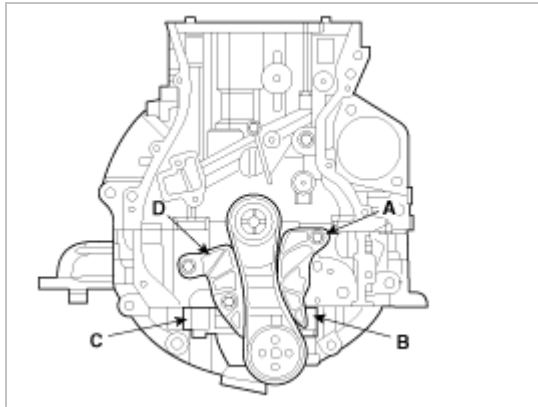


Installation

1. The key of crankshaft should be aligned with the mating face of main bearing cap. As a result of this, the piston of No.1 cylinder is placed at the top dead center on compression stroke.
2. Assemble the crankshaft sprocket on the crankshaft as the front mark on the crankshaft sprocket to be outward.
3. Tighten the oil pump tensioner bolt 'A' after placing the tensioner spring on the dowel pin located in ladder frame and then insert stopper pin to fix the oil pump chain tensioner 'B'.

Tightening torque :

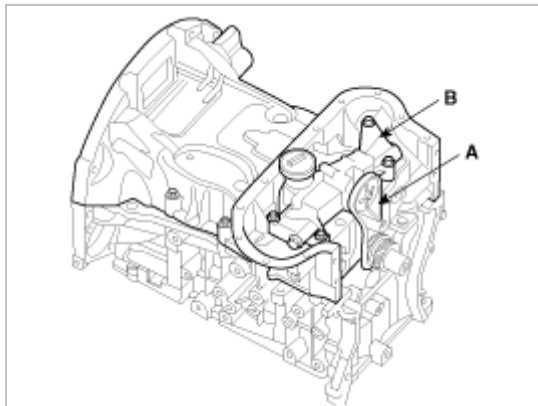
9.8~ 11.8N.m (1.0 ~ 1.2kgf.m, 7.2 ~ 8.7lb-ft)



4. Assemble the oil pump chain on the crankshaft sprocket.
 5. Assemble the oil pump assembly (B) as placing oil pump sprocket in to oil pump chain (A).
-

Tightening torque :

7.8 + 16.6 + 25.5 N.m (0.9 + 1.7 + 2.6kgf.m, 5.8+ 12.3 + 18.8 lb-ft)



Bolting order

- A. Assemble the bolts with seting torque 25.5 N.m (2.6kgf.m,18.8 lb-ft)
 - B. Loosen the bolts as reverse bolting order.
 - C. Assemble the bolts (4EA) with seting torque 0.9 N.m (7.8kgf.m, 5.8 lb-ft)
 - D. Assemble the bolts (4EA) with seting torque 1.7 N.m (16.6kgf.m, 12.3 lb-ft)
 - E. Assemble the bolts with seting torque 25.5 N.m (2.6kgf.m,18.8 lb-ft) as bolting order.
6. Remove the tensioner pin after installing the oil pump chain guide (D).
-

Tightening torque :

9.8~ 11.8N.m (1.0 ~ 1.2kgf.m, 7.2 ~ 8.7lb-ft)

7. Install the timing chain.
(Refer to Timing system in this group)

Engine Oil And Filter Replacement

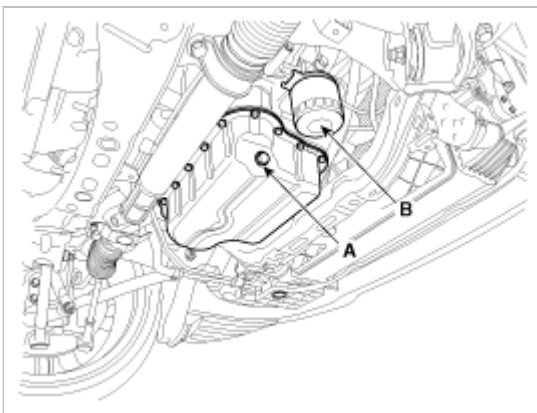
CAUTION

- 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. Drain the engine oil.
 - (1) Remove the oil filler cap.
 - (2) Remove the oil drain plug, and drain the oil into a container.
2. Replace the oil filter.
 - (1) Remove the oil filter.
 - (2) Check and clean the oil filter installation surface.
 - (3) Check the part number of the new oil filter is as same as old one.
 - (4) Apply clean engine oil to the gasket of a new oil filter.
 - (5) Lightly screw the oil filter into place, and tighten it until the gasket contacts the seat.
 - (6) Tighten it with the torque below.

Tightening torque :

11.8 ~ 15.7N.m (1.2 ~ 1.6kgf.m, 8.7 ~ 11.6lb-ft)



3. Refill with engine oil.
 - (1) Clean and install the oil drain plug with a new gasket.

Tightening torque :

34.3 ~ 44.1N.m (3.5 ~ 4.5kgf.m, 25.3 ~ 32.5lb-ft)

- (2) Fill with fresh engine oil.

Capacity :

Total : 5.9L (6.23US qt, 5.19Imp qt)

Oil pan : 5.0L (5.28US qt, 4.41Imp qt)

Drain and refill including oil filter : 5.3L (5.60US qt, 4.66Imp qt)

(3) Install the oil filler cap.

4. Start engine and check for oil leaks and check the oil gauge or light for an indication of oil pressure.

5. Recheck the engine oil level.

Inspection

1. Check the engine oil quality.

Check the oil deterioration, entry of water, discoloring or thinning. If the quality is visibly poor, replace the oil.

2. Check the engine oil level.

After engine warm up stop the engine wait 5 minutes then check the oil level. Oil level should be between the "L" and "F" marks on the dipstick. If low check for leakage and add oil up to the "F" mark.

NOTE

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

Selection Of Engine Oil

API classification : SL, SM or above

ILSAC classification : GF3, GF4 or above

SAE viscosity grade : 5W-20, 5W-30, 5W-40

NOTE

For best performance and maximum protection of all types of operation, select only those lubricants which :

1. Satisfy the requirement of the API or ILSAC classification.
2. Lubricants that do not have both an SAE grade number and API or ILSAC service classification on the container should not be used.