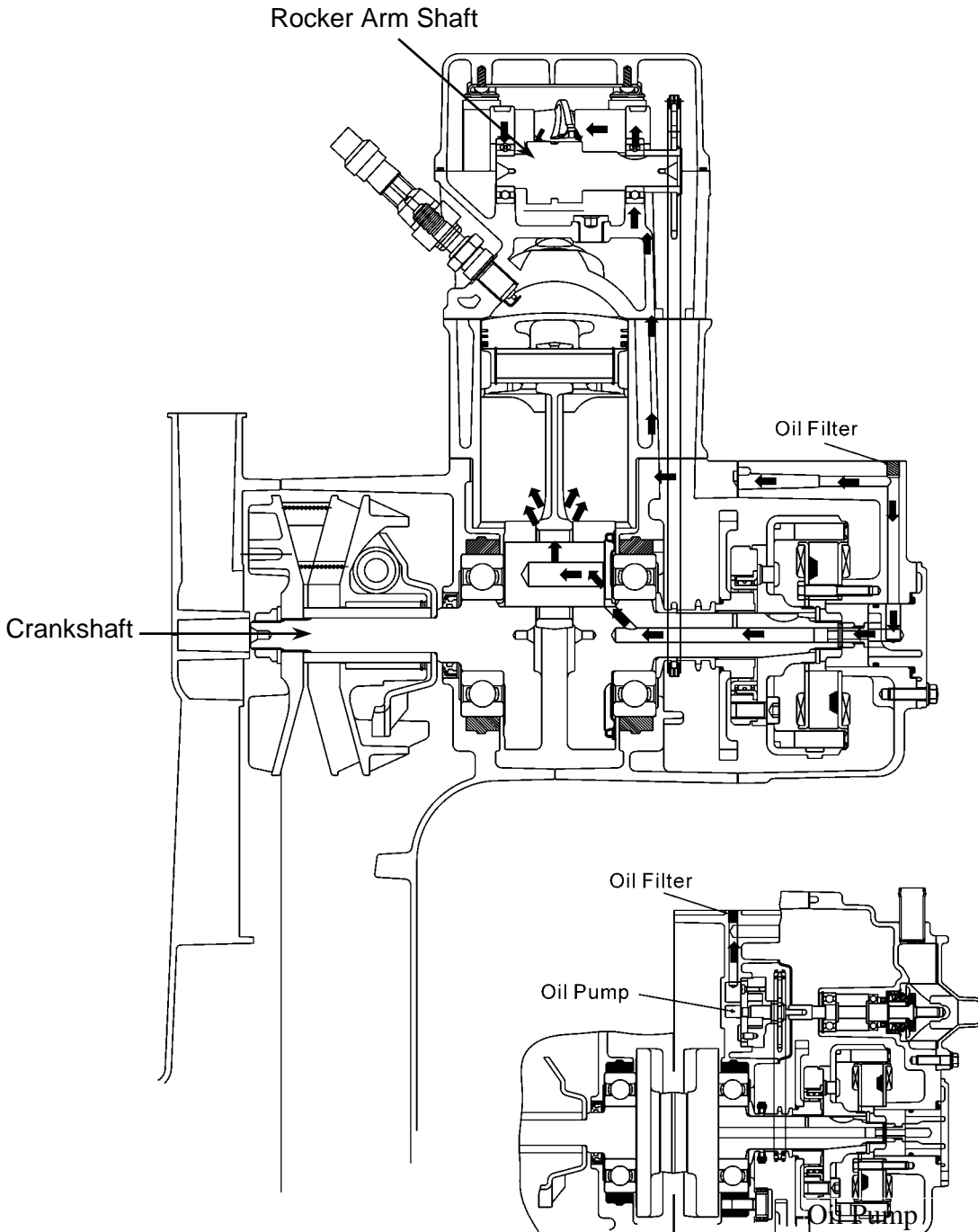




# 4. LUBRICATION SYSTEM

## LUBRICATION SYSTEM



## 4. LUBRICATION SYSTEM

### SERVICE INFORMATION

#### GENERAL INSTRUCTIONS

- The maintenance of lubrication system can be performed with the engine installed in the frame.
- Drain the coolant before starting any operations.
- Use care when removing and installing the oil pump not to allow dust and foreign matters to enter the engine and oil line.
- Do not attempt to disassemble the oil pump. The oil pump must be replaced as a set when it reaches its service limit.
- After the oil pump is installed, check each part for oil leaks.

#### SPECIFICATIONS

##### OIL PUMP

	Standard (mm)	Service Limit (mm)
Inner rotor-to-outer rotor clearance	0.15	0.20
Outer rotor-to-pump body clearance	0.15~0.20	0.25
Rotor end-to-pump body clearance	0.04~0.09	0.12

##### ENGINE OIL

Engine Oil Capacity	At disassembly: 1.1 liter	At change: 0.9 liter
Recommended Oil	SAE15W40# API: SJ	

#### TROUBLESHOOTING

##### Oil level too low

- Natural oil consumption
- Oil leaks
- Worn piston rings
- Worn valve guide
- Worn valve guide seal

##### Poor lubrication pressure

- Oil level too low
- Clogged oil filter or oil passage
- Faulty oil pump

##### Oil contamination

- Oil not changed often enough
- Faulty cylinder head gasket
- Loose cylinder head bolts

## 4. LUBRICATION SYSTEM

### ENGINE OIL/OIL FILTER

- \* Place the scooter upright on level ground for engine oil level check.
- Run the engine for 2~3 minutes and check the oil level after the engine is stopped for 2~3 minutes.

Remove the oil dipstick and check the oil level with the oil dipstick.  
If the level is near the lower level, fill to the upper level with the recommended engine oil.



### OIL CHANGE

- \* The engine oil will drain more easily while the engine is warm.

Remove the oil drain bolt located at the left side of the engine to drain the engine oil.  
After the oil has been completely drained, install the aluminum washer and tighten the oil drain bolt.

**Torque:** 14.7N-m

Pour the recommended oil through the oil filler hole.



Oil Drain Bolt

### OIL FILTER SCREEN

Drain the engine oil.  
Remove the oil filter screen cap.  
Remove the oil filter screen and spring.  
Check the oil filter screen for clogging or damage and replace if necessary. Check the filter screen O-ring for damage and replace if necessary.  
Install the oil filter screen, spring, O-ring and filter screen cap.

**Torque:** 12.7N-m

Recommended Oil: SAE15W40# API: SJ

Oil Capacity:

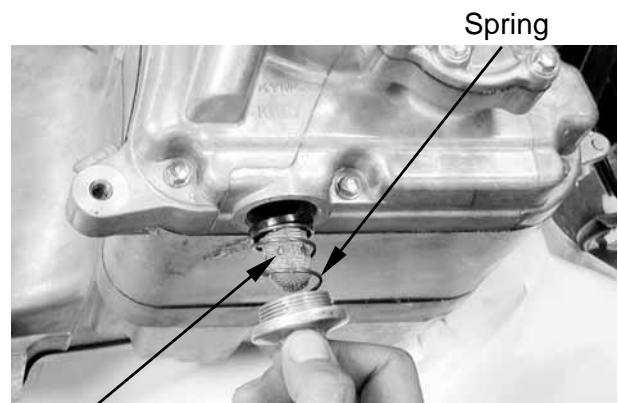
At disassembly: 1.1 liter

At change: 0.9 liter

Start the engine and check for oil leaks.  
Start the engine and let it idle for few minutes, then recheck the oil level.



Oil Filter Screen Cap

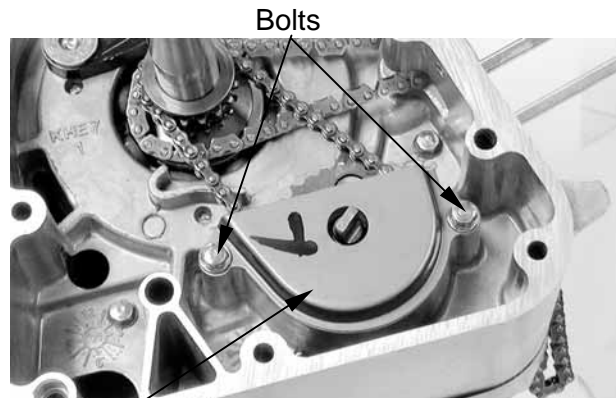


Oil Filter Screen

## 4. LUBRICATION SYSTEM

### OIL PUMP REMOVAL

First drain the coolant.  
Remove the right crankcase cover. (⇒10-3)  
Remove the A.C. generator starter driven gear. (⇒10-3)  
Remove the attaching bolt and oil separator cover.



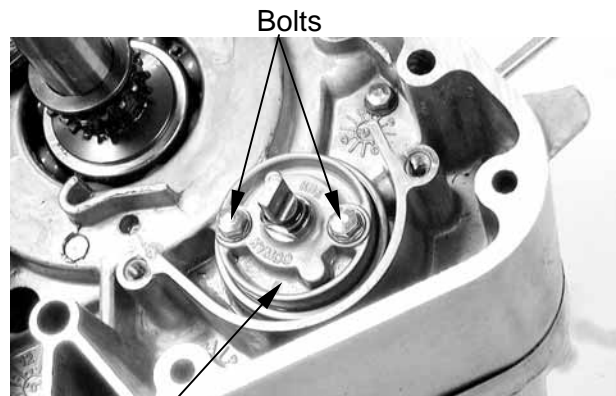
Oil Separator Cover

Pry the circlip off and remove the oil pump driven gear, then remove the oil pump drive chain.



Oil Pump Drive chain

Remove the two oil pump bolts to remove the oil pump.



Oil Pump

### OIL PUMP DISASSEMBLY

Remove the screw and disassemble the oil pump as shown.

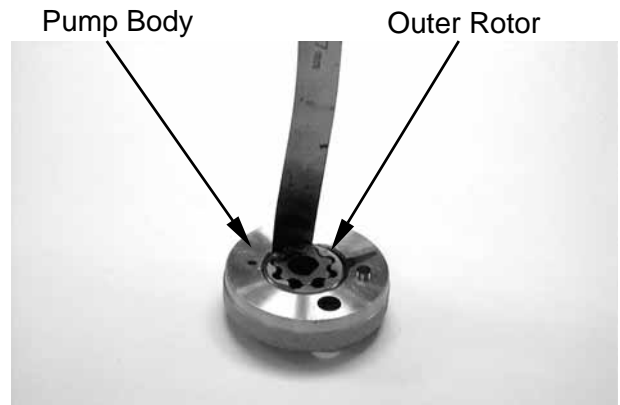


## 4. LUBRICATION SYSTEM

### OIL PUMP INSPECTION

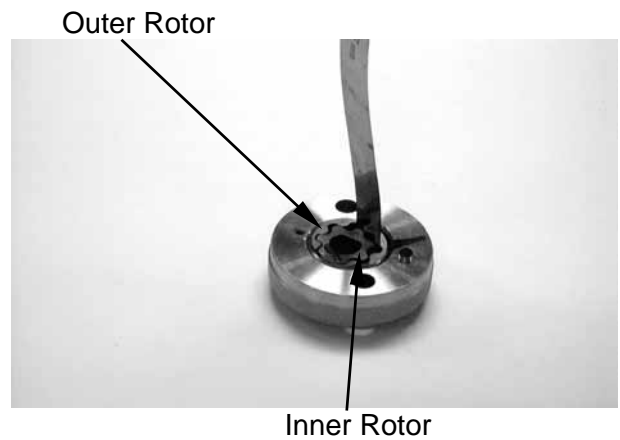
Measure the pump body-to-outer rotor clearance.

**Service Limit:** 0.25mm replace if over



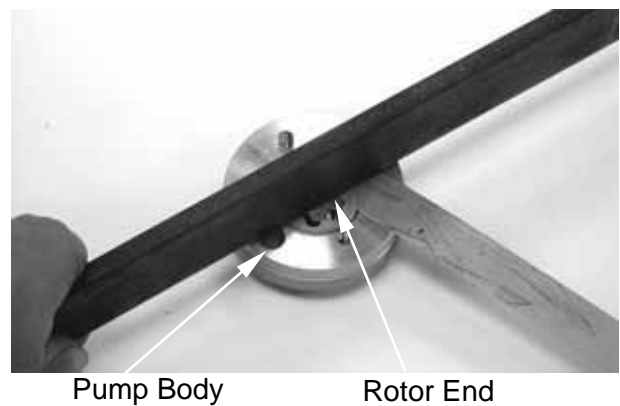
Measure the inner rotor-to-outer rotor clearance.

**Service Limit:** 0.20mm replace if over



Measure the rotor end-to-pump body clearance.

**Service Limit:** 0.12mm replace if over



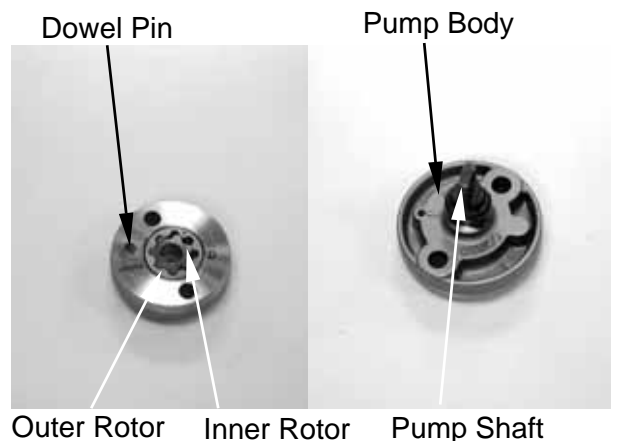
### OIL PUMP ASSEMBLY

Install the outer rotor, inner rotor and pump shaft into the pump body.

\* Insert the pump shaft by aligning the flat on the shaft with the flat in the inner rotor. Install the dowel pin.

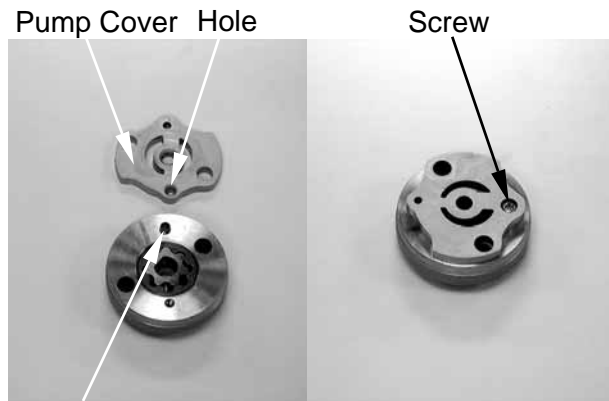
There is one mark on the surface of the inner rotor and outer rotor.

The mark is upside.



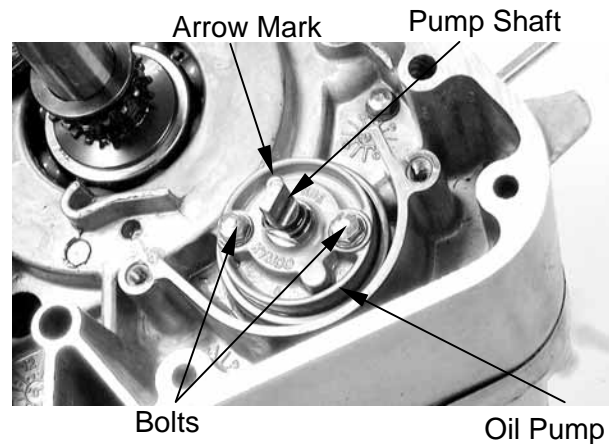
## 4. LUBRICATION SYSTEM

Install the pump cover by aligning the hole in the cover with the dowel pin.  
Tighten the screw to secure the pump cover.  
Make sure that the pump shaft rotates freely without binding.

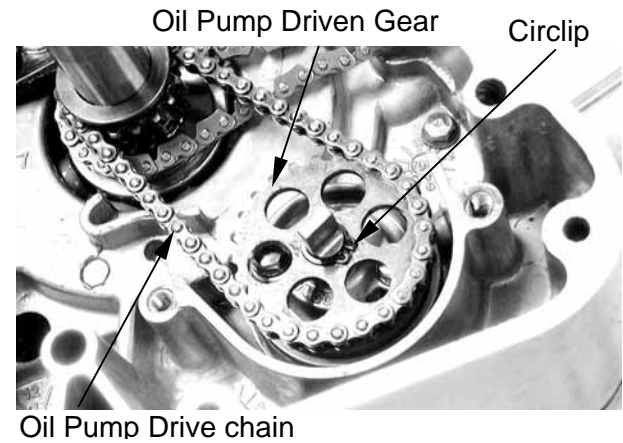


### OIL PUMP INSTALLATION

Install the oil pump and oil separator and tighten the two bolts.  
Make sure that the pump shaft rotates freely.  
The arrow of oil pump is upside.



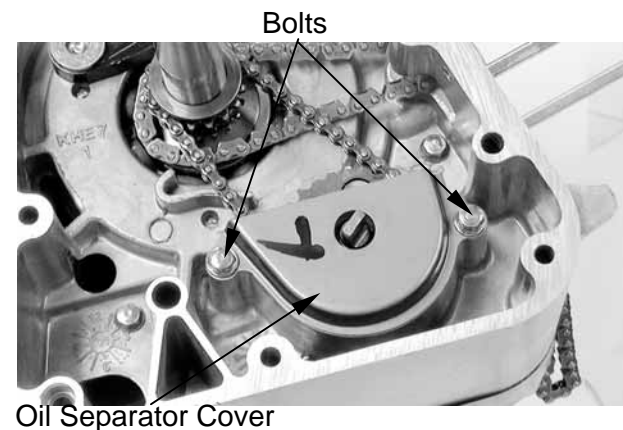
Install the pump drive chain and driven gear, then set the circlip securely on the pump shaft.



Install the oil separator cover properly.

\* Fit the tab of the separator cover into the slit in the separator.

Install the A.C. generator starter driven gear.  
(⇒10-8)



Oil Separator Cover