EM159–01

INSTALLATION

1. ASSEMBLE IDLER GEAR

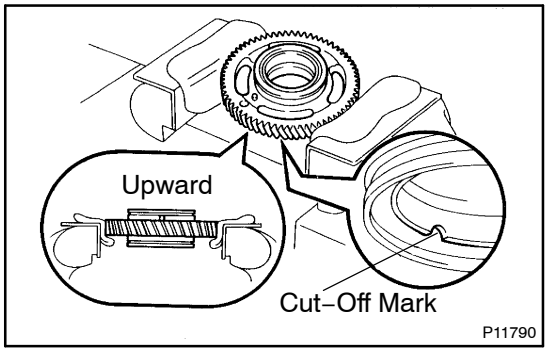
(a) Mount the idler gear in a vise.

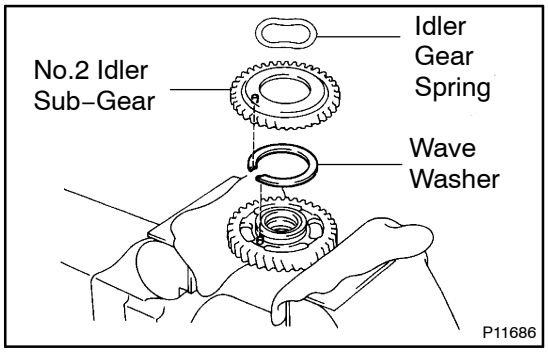
HINT:

Install the idler gear with the cut–off mark facing downward.

NOTICE:

Be careful not to damage the gear.





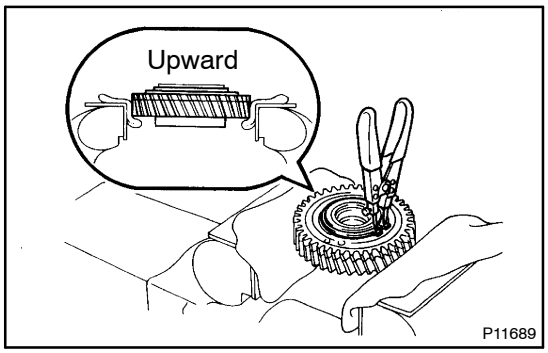
(b) Install the idler gear spring.

(c) Install the No.2 idler sub–gear.

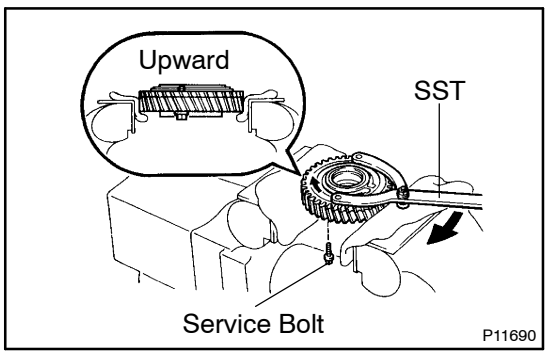
(d) Install the wave washer.

HINT:

Align the pins on the gears with the spring ends.



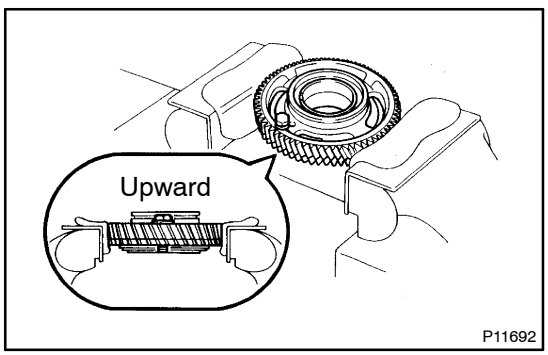
(e) Using snap ring pliers, install the snap ring.



(f) Using SST, align the holes of the idler gear and No.2 idler sub–gear by turning the No.2 idler sub–gear clockwise, and install a service bolt.

SST 09960–10010 (09962–01000, 09963–00600)

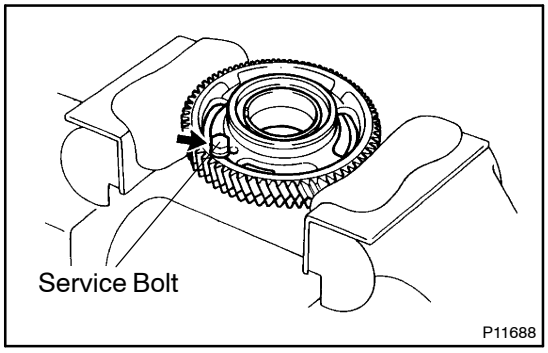
(g) Remove the idler gear assembly from the vice and turn it upside down.



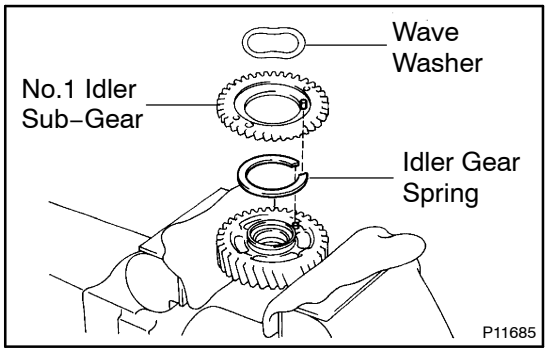
(h) Mount the idler gear and No.2 idler sub–gear in a vise.

NOTICE:

Be careful not to damage the gears.

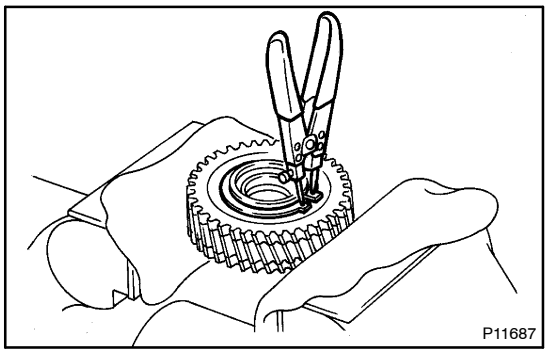


(i) Remove the service bolt.

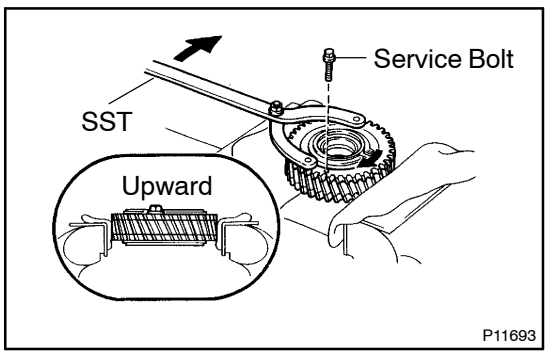


(j) Install the idler gear spring.
(k) Install the No.1 idler sub–gear.
(l) Install the wave washer.

HINT:
Align the pins on the gears with the spring ends.



(m) Using snap ring pliers, install the snap ring.

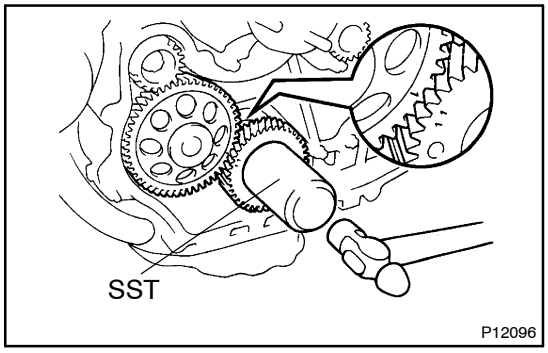


(n) Using SST, align the holes of the idler gear and No.1 idler sub–gear by turning the No.1 idler sub–gear clockwise, and install a service bolt.
SST 09960–10010 (09962–01000, 09963–00600)

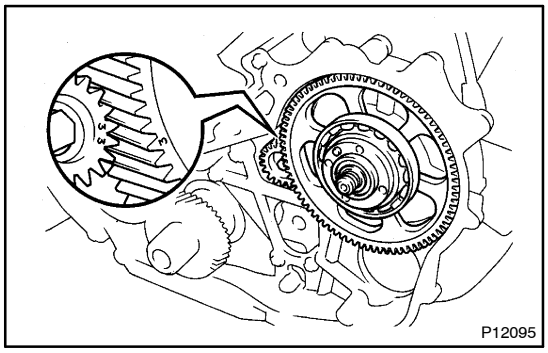
2. INSTALL TIMING GEAR

NOTICE:

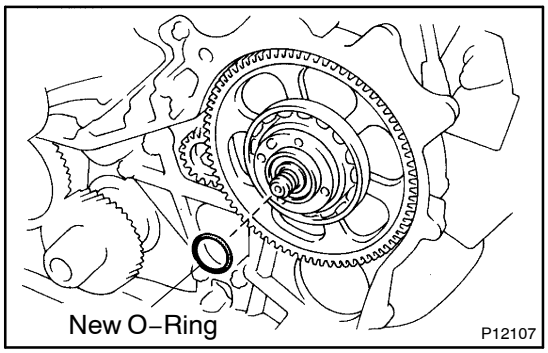
- **The matchmark on each gear faces the front of the engine.**
- **Take care not to damage the gear teeth when removing and installing the gears. Do not use parts that are scratched or damaged, they cause noise.**



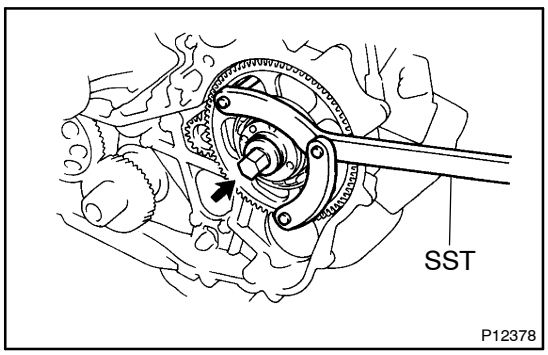
(a) Install the crankshaft timing gear.
(1) With the crankshaft key groove facing upward, install the crankshaft timing gear into the crankshaft.
(2) When doing this, the matchmarks of the oil pump drive shaft gear and crankshaft timing gear should be matched at ”1”.
(3) Using SST and a hammer, tap in the timing gear.
SST 09223–00010



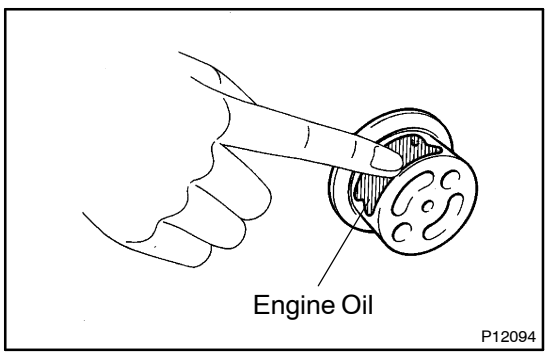
(b) Install the injection pump drive gear.
(1) Install the set key to the groove of the injection pump drive shaft.
(2) The matchmarks on the No.2 balance shaft driven gear should be aligned with ”3” marks.



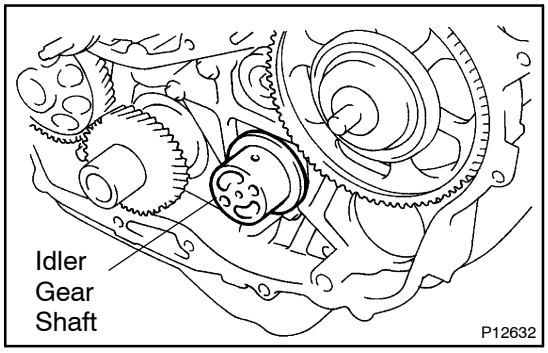
(3) Install a new O–ring to the injection pump drive gear.



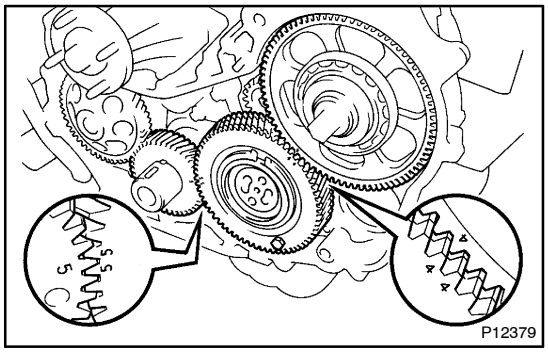
(4) Install the injection pump drive gear set nut.
(5) Using SST, torque the nut.
SST 09960–10010 (09962–01000, 09963–00600)
Torque: 64 N·m (650 kgf·cm, 47 ft·lbf)



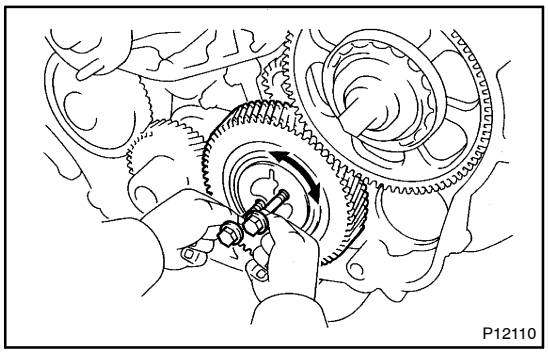
(c) Install the idler gear.
(1) Coat the idler gear shaft with engine oil as shown in the illustration.



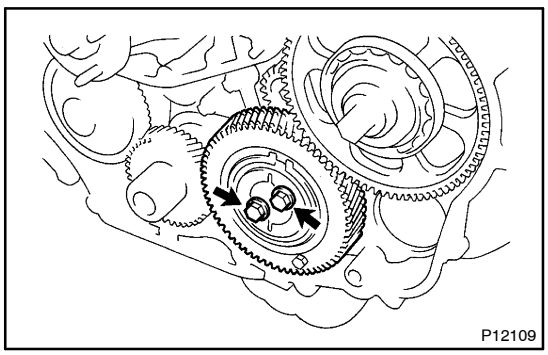
(2) Install the idler gear shaft to the cylinder block.



(3) Align the idler gear assembly timing marks ”5” and ”4” with the crankshaft timing gear mark ”5” and injection pump drive gear timing mark ”4” respectively, and mesh the gears.

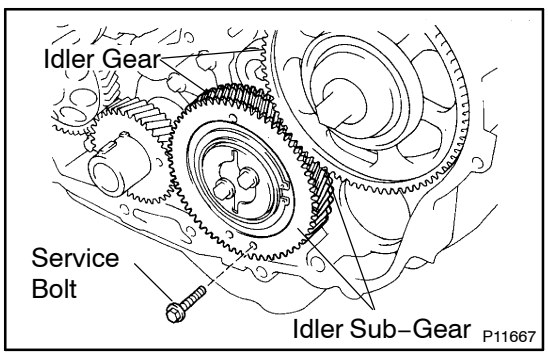


(4) Align the thrust plate set bolt holes.

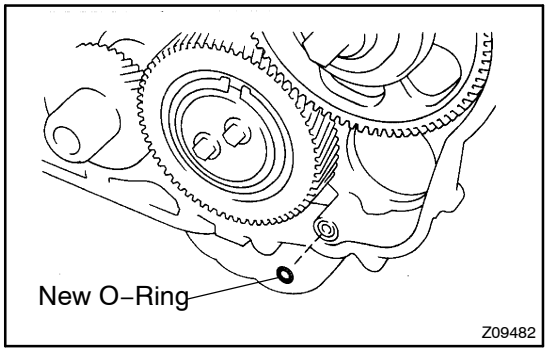


(5) Install the thrust plate with the 2 bolts. Torque the bolts.

Torque: 50 N·m (500 kgf·cm, 36 ft·lbf)



(6) Remove the service bolt.

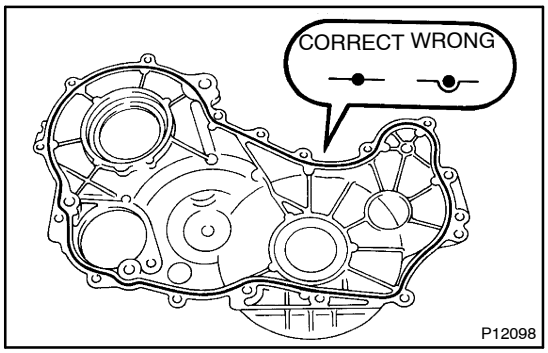


3. INSTALL TIMING GEAR COVER

(a) Install a new O–ring to the timing gear case.

(b) Remove any old packing (FIPG) material and be careful not to drop any oil on the contact surfaces of the timing gear cover and cylinder block.

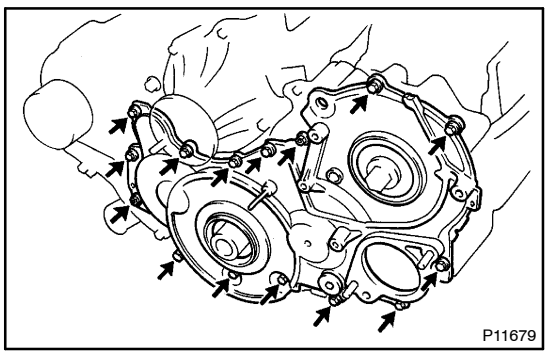
- Using a razor blade and gasket scraper, remove all the old packing (FIPG) material from the gasket surfaces and sealing groove.
- Thoroughly clean all components to remove all the loose material.
- Using a non–residue solvent, clean both sealing surfaces.



(c) Apply seal packing to the timing gear cover as shown in the illustration.

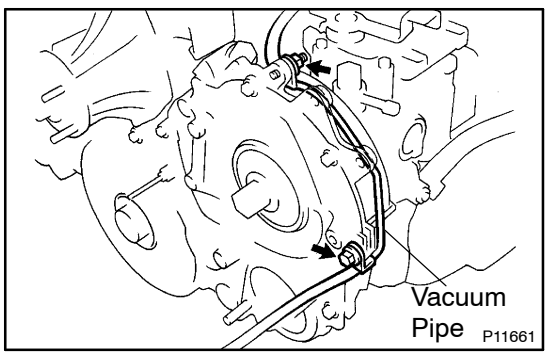
Seal packing: Part No. 08826–00080 or equivalent

- Install a nozzle that has been cut to a 2 – 3 mm (0.08 – 0.12 in.) opening.
- Parts must be assembled within 5 minutes of application. Otherwise the material must be removed and reapplied.
- Immediately remove nozzle from the tube and reinstall cap.



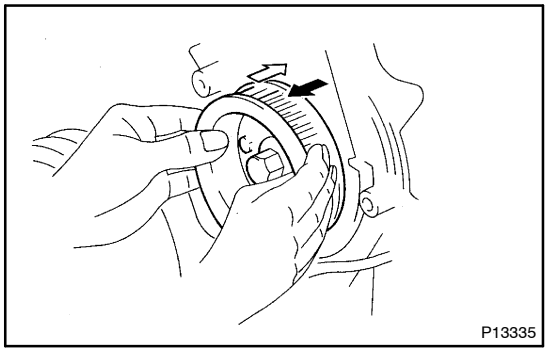
(d) Install the timing gear cover with the 13 bolts and 2 nuts.

Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)



(e) Connect the vacuum pipe with the bolt, nut and washer.

Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)



4. CHECK INJECTION PUMP DRIVE SHAFT THRUST CLEARANCE

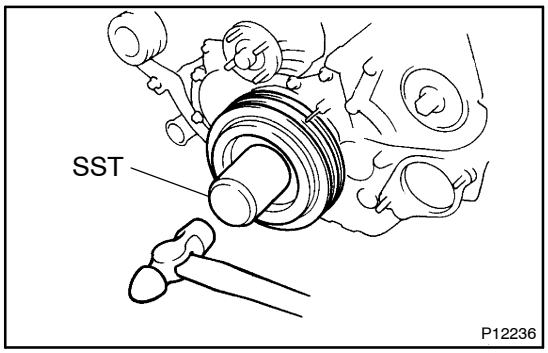
(a) Temporarily install the No.2 camshaft timing pulley and flange with the 4 bolts.

(b) Move the No.2 camshaft timing pulley back and forth to check that the injection pump drive shaft has sufficient thrust clearance.

Reference: 0.15 – 0.55 mm (0.0059 – 0.0217 in.)

If the thrust clearance is not sufficient, loosen the 2 injection pump nuts and 3 pump stay bolts, then retighten them.

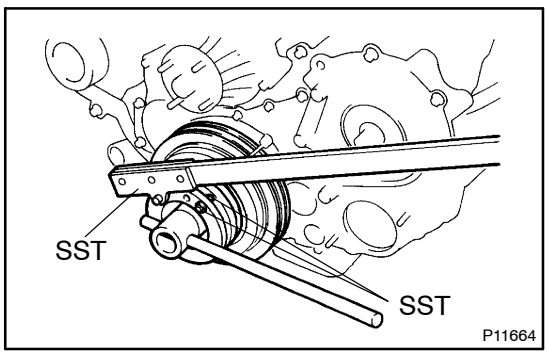
If the thrust clearance is still not sufficient, remove the timing gear cover and then reinstall it.



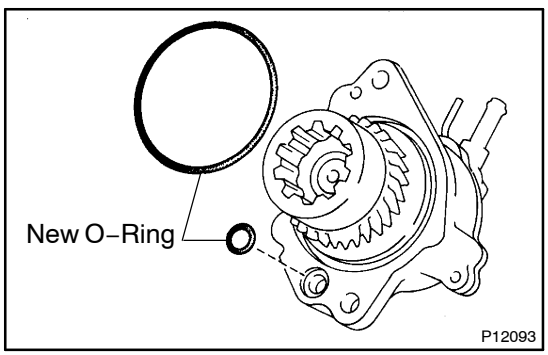
5. INSTALL CRANKSHAFT PULLEY

(a) Align the pulley set key with the key groove of the pulley.

(b) Using SST and a hammer, tap in the pulley.
SST 09214–60010

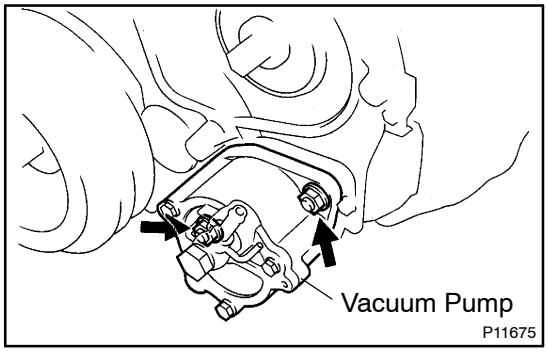


(c) Using SST, install and torque the plate bolt.
SST 09213–58012 x 2, 09330–00021



6. INSTALL VACUUM PUMP

(a) Install 2 new O–rings to the vacuum pump.



(b) Install the vacuum pump with the 2 nuts.
Torque: 21 N·m (210 kgf·cm, 15 ft·lbf)

7. INSTALL CAMSHAFT OIL SEAL RETAINER
(See page EM–64)

8. INSTALL TIMING BELT AND PULLEYS
(See page EM–18)

9. INSTALL WATER PUMP PULLEY, FAN AND DRIVE BELT (See page CO–8)