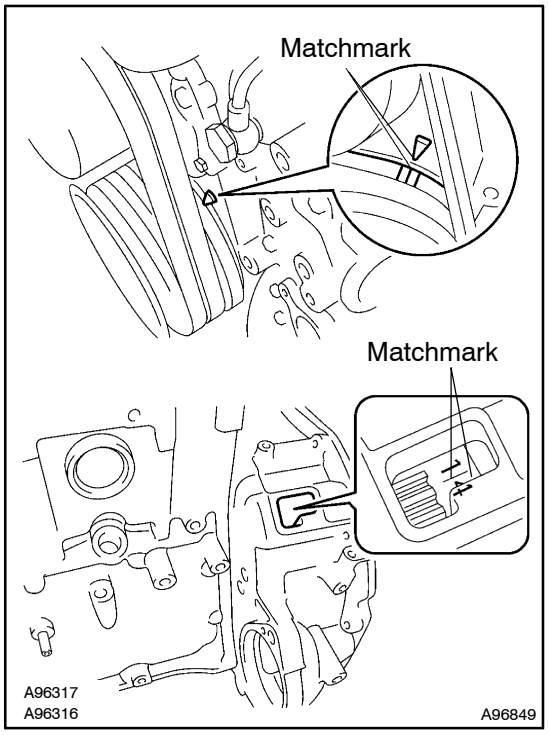
1114I–01

REPLACEMENT

1. DISCONNECT BATTERY NEGATIVE TERMINAL

2. DRAIN FUEL



3. SET NO. 1 CYLINDER TO TDC/COMPRESSION

(a) Turn the crankshaft pulley clockwise, and align the matchmarks as shown in the illustration.

(b) Check that the matchmarks of the flywheel housing and flywheel are aligned as shown in the illustration.

If not, turn the crankshaft 1 revolution (360°) and align the matchmarks as above.

4. REMOVE ENGINE SIDE COVER SUB–ASSY LH

(a) Remove the bolt and engine side cover.

5. DISCONNECT INTAKE AIR CONNECTOR PIPE

(a) Disconnect the IAT and pressure sensor connectors.

(b) Remove the 2 bolts.

(c) Loosen the 2 hose clamps.

(d) Disconnect the connector pipe.

6. REMOVE OIL SEPARATOR ASSY

(a) Disconnect the 3 pipes.

(b) Remove the 2 bolts and oil separator.

7. REMOVE FUEL PIPE NO. 4

(a) Remove the 2 union bolts, 5 gaskets and fuel pipe.

8. REMOVE FUEL PIPE SUB–ASSY

(a) Remove the 2 bolt, nut and 3 clamps.

(b) Remove the union bolt, 2 gaskets and fuel pipe.

9. REMOVE FUEL FILTER TO INJECTION PUMP FUEL PIPE

(a) Remove the nut and injection pipe clamp.

(b) Using SST, loosen the fuel pipe union on the common rail side.
SST 09023–12900

(c) Using SST, loosen the fuel pipe union on the pump side.
SST 09023–12900

(d) Remove the fuel pipe.

10. REMOVE FUEL RETURN PIPE SUB–ASSY

(a) Remove the nut and injection pipe clamp.

(b) Remove the union bolt, 2 gaskets and fuel return pipe.

11. REMOVE CRANKSHAFT POSITION SENSOR

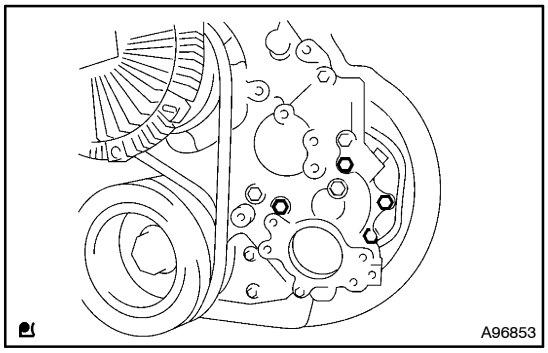
(a) Remove the bolt and sensor.

(b) Remove the O–ring from the sensor.

12. REMOVE SUPPLY PUMP ASSY

(a) Disconnect the fuel temperature sensor connector.

(b) Remove the bolt and holder clip.



(c) Remove the 4 bolts and supply pump.

(d) Remove the O–ring from the timer cover.

13. REMOVE SUPPLY PUMP DRIVE GEAR

(a) Use a vise to clamp the injection pump drive gear between 2 wooden blocks.

(b) Remove the nut, injection pump drive gear and crankshaft angle sensor plate.

(c) Remove the 2 bolts and timer cover.

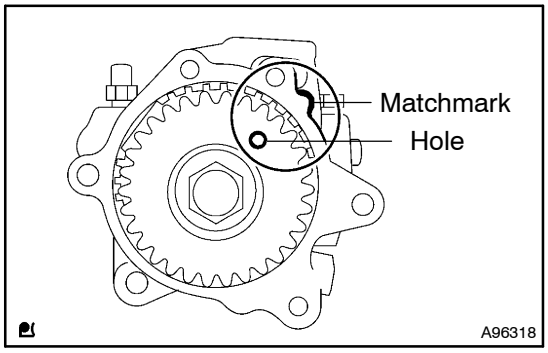
(d) Remove the O–ring from the timer cover.

14. INSTALL SUPPLY PUMP DRIVE GEAR

(a) Install a new O–ring to the timer cover.

(b) Install the timer cover to the supply pump with the 2 bolts.
Torque: 28.5 N·m (291 kgf·cm, 21 ft·lbf)

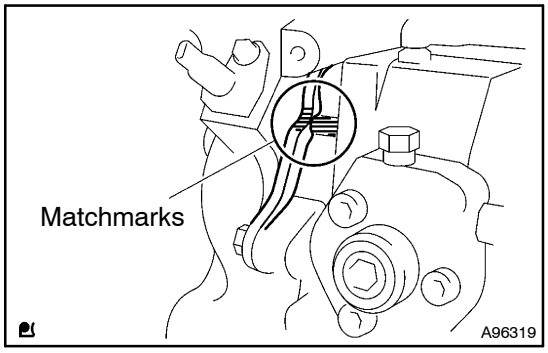
(c) Install the crankshaft angle sensor plate and drive gear with the nut.
Torque: 63.7 N·m (650 kgf·cm, 47 ft·lbf)



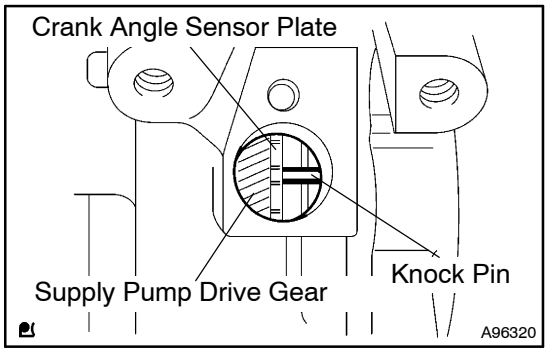
15. INSTALL SUPPLY PUMP ASSY

(a) Install the O–ring to the timer cover.

(b) Turn the supply pump drive gear and align the hole with the matchmark as shown in the illustration.

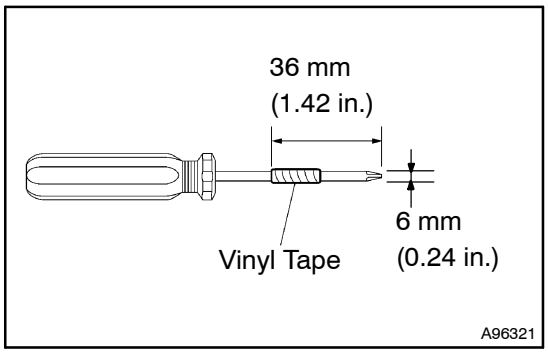


(c) Align the matchmarks of the timer cover and front end plate, then install the supply pump.

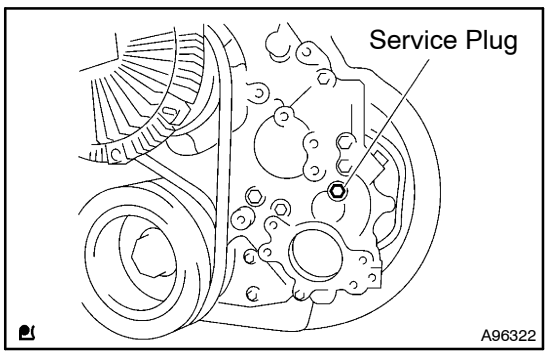


(d) When the crankshaft position sensor's installation hole can be seen directly:
(1) Check that the knock pin of the injection pump drive gear is at the center of the hole. Then, proceed to step (f).

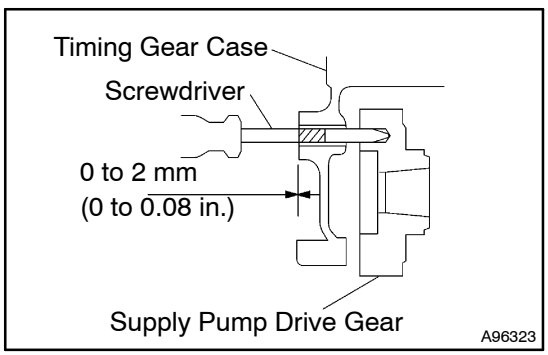
If not, perform steps (b) and (c) again.



(e) When the crankshaft position sensor's installation hole cannot be seen directly:
(1) Tape the screwdriver as shown in the illustration.



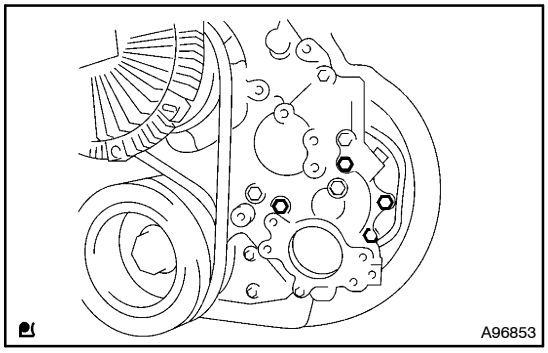
(2) Remove the service plug from the timing chain or belt cover sub–assy.



(3) Insert the screwdriver into the service plug hole.
(4) Check that the tape end and timing chain or belt cover sub–assy are aligned as shown in the illustration.

If not, perform steps (b) and (c) again.

(5) Install the service plug to the service plug hole.



(f) Install the 4 bolts.
Torque: 28.5 N·m (291 kgf·cm, 21 ft·lbf)
(g) Install the holder clip with the bolt.
Torque: 28.5 N·m (291 kgf·cm, 21 ft·lbf)
(h) Connect the fuel temperature sensor connector.

16. INSTALL CRANKSHAFT POSITION SENSOR
(a) Apply a light amount of engine oil to a new O–ring.
(b) Install a new O–ring to the crankshaft position sensor.
(c) Install the crankshaft position sensor with the bolt.
Torque: 12 N·m (120 kgf·cm, 9.0 ft·lbf)

NOTICE:
Be careful not to damage the O–ring.

17. INSTALL FUEL RETURN PIPE SUB–ASSY
(a) Install the fuel return pipe with 2 new gaskets and the union bolt.
Torque: 24.5 N·m (250 kgf·cm, 18 ft·lbf)
(b) Use the nut to install the clamp to the pipe. Tighten the nut until the clamp's edges make contact with the engine side clamp's edges.

18. INSTALL FUEL FILTER TO INJECTION PUMP FUEL PIPE
(a) Using SST, install the fuel pipe to the common rail and supply pump.
SST 09023–12900
Torque: 44 N·m (449 kgf·cm, 32 ft·lbf)
(b) Use the nut to install the clamp to the pipe. Tighten the nut until the clamp's edges make contact with the engine side clamp's edges.

19. INSTALL FUEL PIPE SUB–ASSY
(a) Install 2 new gaskets and the fuel pipe with the union bolt.
Torque: 24.5 N·m (250 kgf·cm, 18 ft·lbf)
(b) Use the 2 bolts and nut to install the 3 clamps to the pipe. Tighten the 2 bolts and nut until the clamp's edges make contact with the engine side clamp's edges.

20. INSTALL FUEL PIPE NO. 4
(a) Install the fuel pipe with 5 new gaskets and the 2 bolts.
Torque:
20 N·m (204 kgf·cm, 15 ft·lbf) for M10 bolt
24.5 N·m (250 kgf·cm, 18 ft·lbf) for M12 bolt

21. INSTALL OIL SEPARATOR ASSY
(a) Install the oil separator with the 2 bolts.
Torque: 28.5 N·m (291 kgf·cm, 21 ft·lbf)
(b) Connect the 3 pipes.

22. CONNECT INTAKE AIR CONNECTOR PIPE
(a) Connect the intake air connector pipe.
(b) Tighten the 2 hose clamps.
Torque: 5.0 N·m (51 kgf·cm, 44 in.·lbf)
(c) Install the 2 bolts.
Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)
(d) Connect the IAT and turbo pressure sensor connectors.

23. INSTALL ENGINE SIDE COVER SUB–ASSY LH

(a) Install the engine side cover with the bolt.
Torque: 11.5 N·m (117 kgf·cm, 8.0 ft·lbf)

24. ADD FUEL
25. BLEED AIR FROM FUEL SYSTEM (See page 11–5)
26. CONNECT BATTERY NEGATIVE TERMINAL
27. CHECK FOR EXHAUST GAS LEAKS (See page 15–2)
28. CHECK FOR FUEL LEAKS (See page 11–2)