

REMOVAL

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

CAUTION:

Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.

2. REMOVE RADIATOR SUPPORT OPENING COVER

3. REMOVE FRONT WHEEL RH

4. REMOVE NO. 1 ENGINE UNDER COVER

5. REMOVE FRONT FENDER APRON RH

6. REMOVE NO. 1 ENGINE COVER

(a) Remove the 2 nuts and cover.

7. DRAIN ENGINE OIL (See page [LU-4](#))

8. REMOVE FRONT EXHAUST PIPE (See page [EX-3](#))

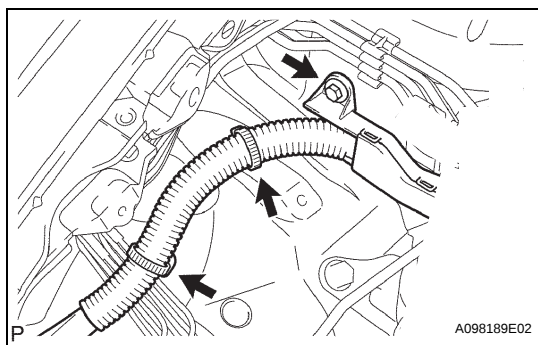
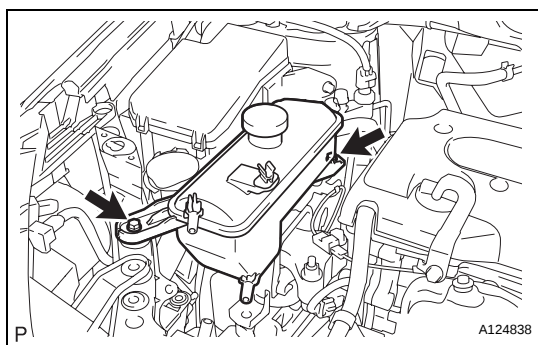
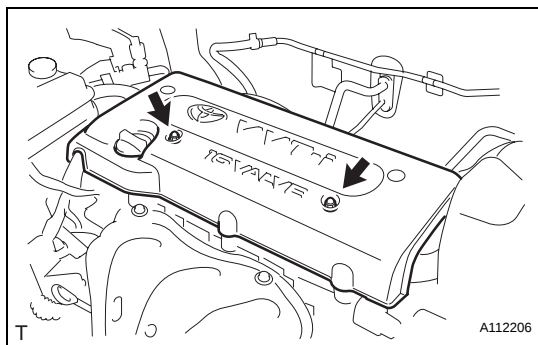
9. REMOVE FRONT SUSPENSION MEMBER REINFORCEMENT RH (See page [EM-6](#))

10. REMOVE FAN AND GENERATOR V BELT (See page [EM-6](#))

11. REMOVE GENERATOR ASSEMBLY (See page [CH-9](#))

12. REMOVE RADIATOR RESERVOIR

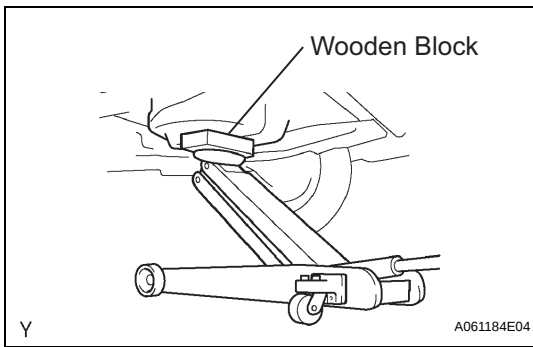
(a) Remove the 2 bolts and radiator reservoir.



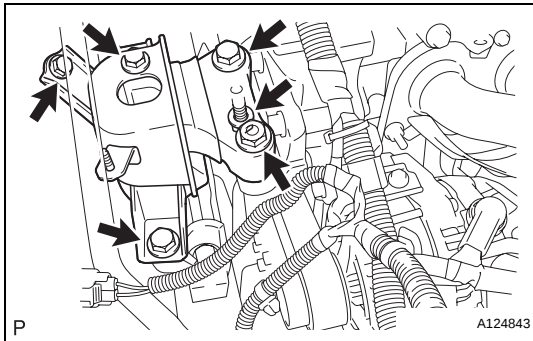
13. REMOVE ENGINE MOUNTING INSULATOR RH

(a) Remove the bolt of the wire harness protector.

(b) Disconnect the 2 clamps of the engine wire.



- (c) Place a transmission jack underneath the engine, then put a wooden block on the jack.



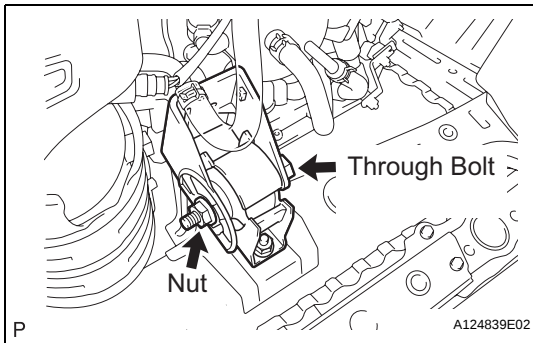
- (d) Remove the 4 bolts, 2 nuts and engine mounting insulator RH.

NOTICE:

Do not apply excessive force to the return tube when removing the engine mounting insulator RH.

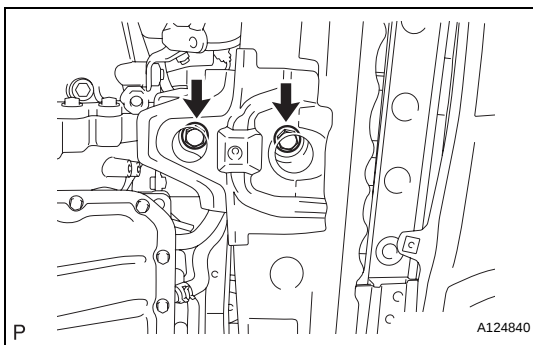
HINT:

Keep clearance by lowering the engine using the transmission jack when removing the engine mounting insulator FR.



14. REMOVE ENGINE MOUNTING INSULATOR FR

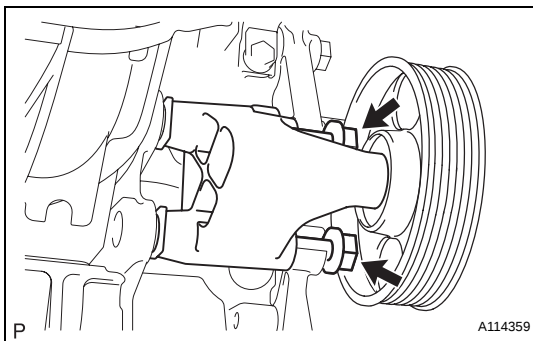
- (a) Remove the through bolt and nut.



- (b) Remove the 2 bolts and engine mounting insulator FR.

HINT:

Keep clearance by lowering the engine using the transmission jack when removing the engine mounting insulator FR.

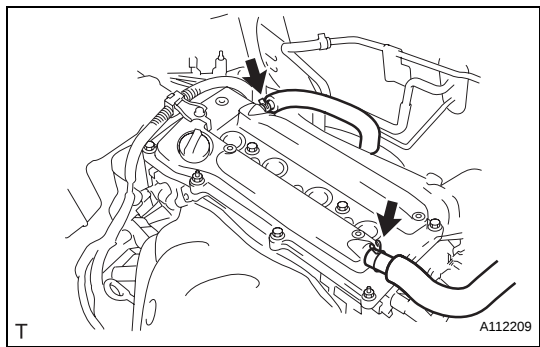


15. REMOVE IDLER PULLEY

- (a) Loosen the 2 bolts and remove the idler pulley with the 2 bolts.

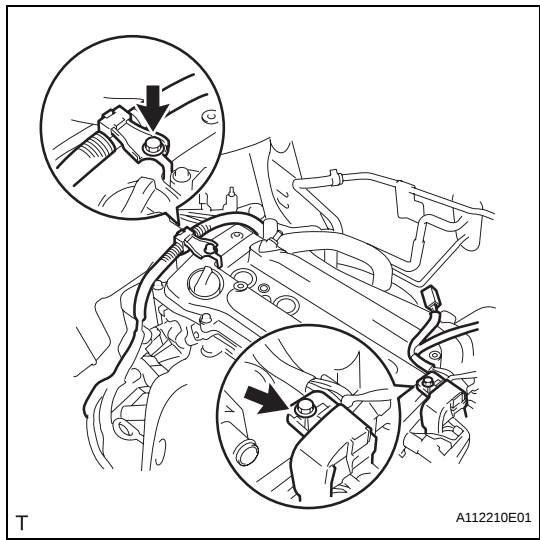
16. REMOVE IGNITION COIL ASSEMBLY (See page [IG-9](#))

17. REMOVE SPARK PLUG (See page [EM-8](#))

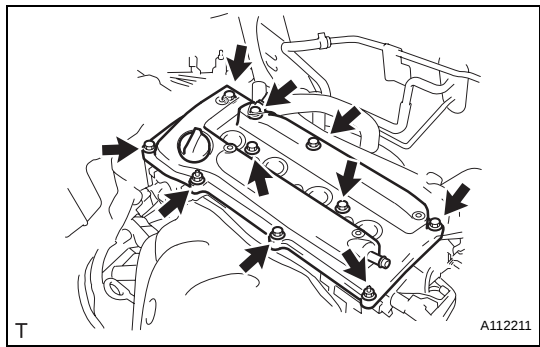


18. REMOVE CYLINDER HEAD COVER SUB-ASSEMBLY

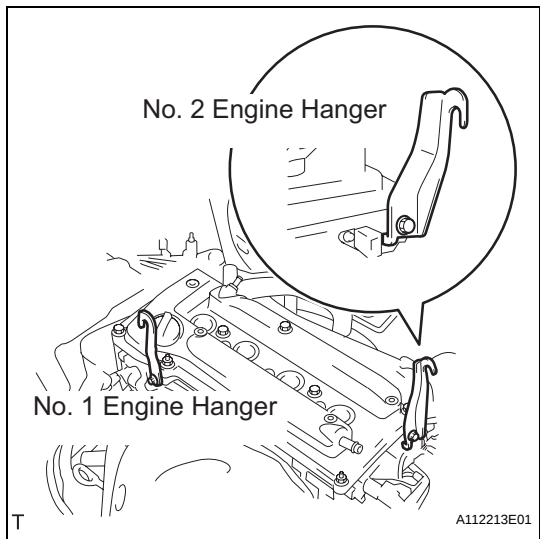
- (a) Disconnect the 2 ventilation hoses form the cylinder head cover.



- (b) Remove the 2 bolts and disconnect the 2 engine wires.



- (c) Remove the 8 bolts, 2 nuts and cylinder head cover.



19. REMOVE OIL PAN SUB-ASSEMBLY

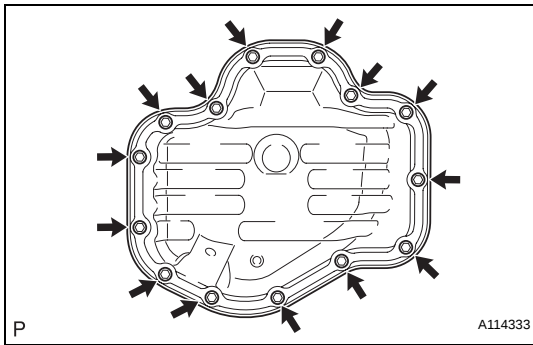
- (a) Install the No. 1 and No. 2 engine hangers with the bolts.

Torque: 38 N*m (387 kgf*cm, 28 ft.*lbf)

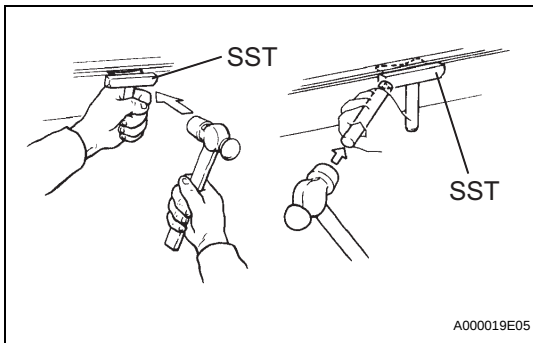
Part No.

Item	Part No.
No. 1 engine hanger	12281-28010
No. 2 engine hanger	12282-28010
Bolt	91512-61020

- (b) Attach the sling device to the engine hangers and chain block.



- (c) Remove the 12 bolts and 2 nuts.

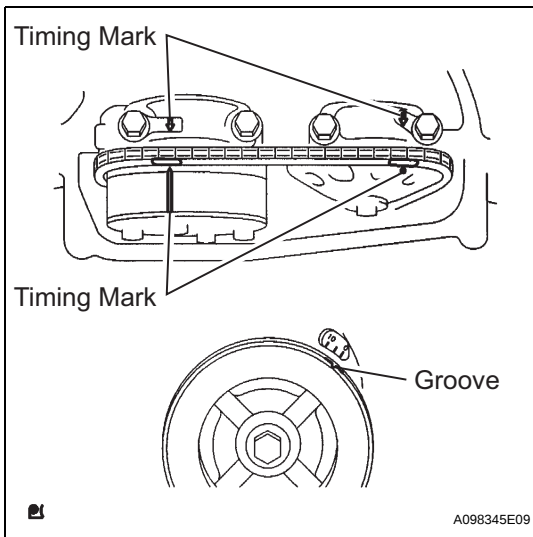


- (d) Insert the blade of SST between the crankcase, chain cover and oil pan, then cut off the applied sealer and remove the oil pan.

SST 09032-00100

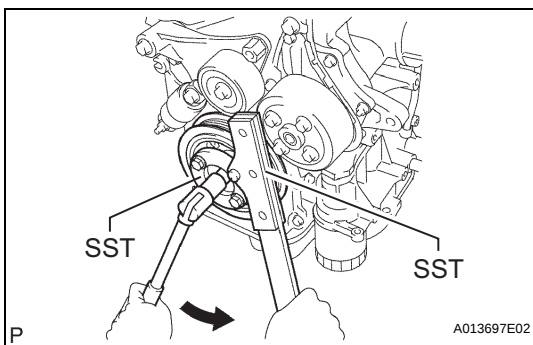
NOTICE:

Be careful not to damage the contact surface of the crankcase, chain cover and oil pan.



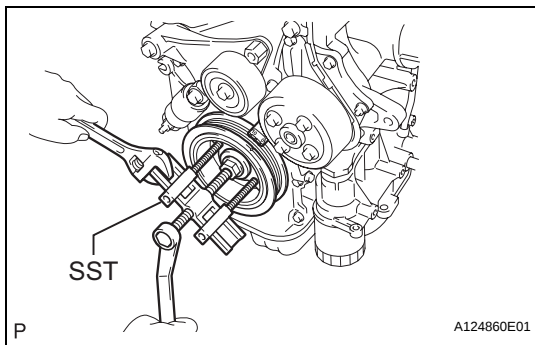
20. SET NO. 1 CYLINDER TO TDC/COMPRESSION

- (a) Turn the crankshaft pulley until its groove and the timing mark "0" of the timing chain cover are aligned.
- (b) Check that each timing mark of the camshaft timing gear and sprocket is aligned with each timing mark located on the No. 1 and No. 2 bearing caps as shown in the illustration.
If not, turn the crankshaft by 1 revolution (360°) to align the timing marks as above.



21. REMOVE CRANKSHAFT PULLEY

- (a) Using SST, fix the pulley in place and loosen the pulley bolt.
SST 09213-54015 (91651-60855), 09330-00021

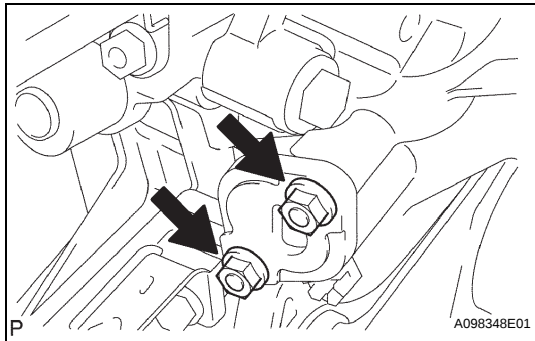


- (b) Remove the crankshaft pulley.

HINT:

If necessary, remove the pulley and pulley bolt using SST.

SST 09950-50013 (09951-05010, 09952-05010, 09953-05020, 09954-05021), 09950-40011 (09957-04010)

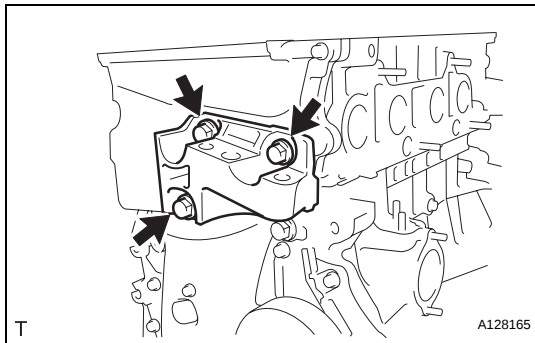


22. REMOVE NO. 1 CHAIN TENSIONER ASSEMBLY

- (a) Remove the 2 nuts, chain tensioner and gasket.

NOTICE:

Do not turn the crankshaft without the chain tensioner.



23. REMOVE ENGINE MOUNTING BRACKET RH

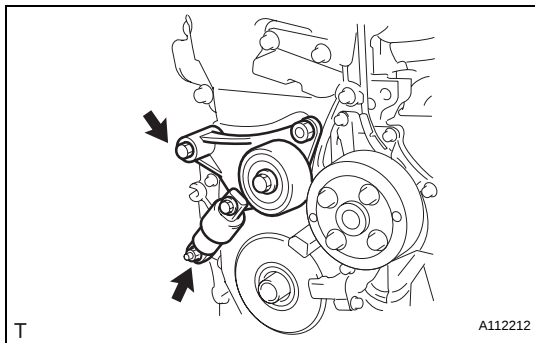
- (a) Remove the 3 bolts and engine mounting bracket RH.

24. REMOVE V-RIBBED BELT TENSIONER ASSEMBLY

- (a) Lift the engine upward using the transmission jack.

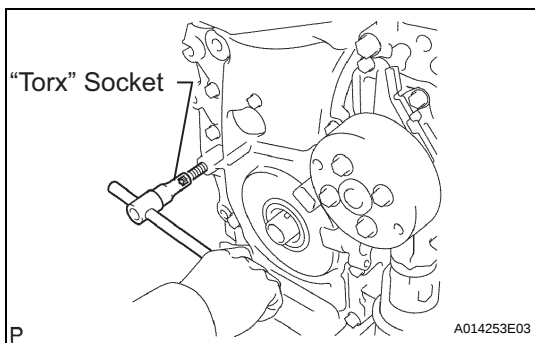
NOTICE:

Do not lift the engine more than necessary.



- (b) Remove the bolt, nut and V-ribbed belt tensioner.

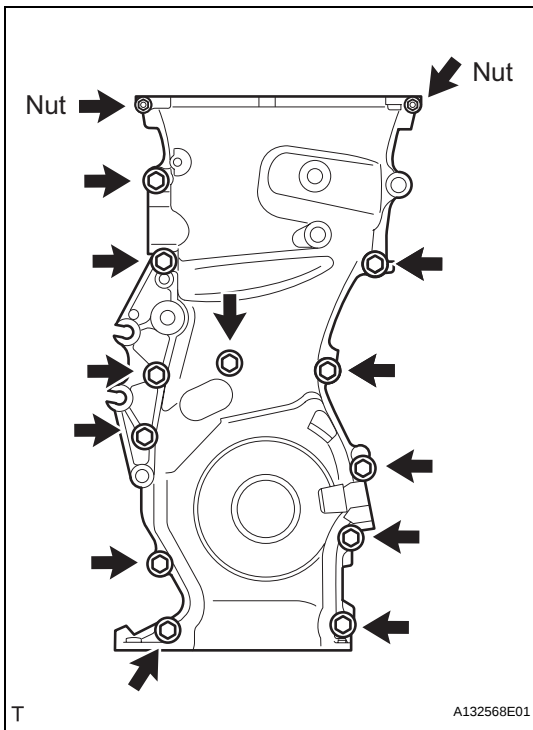
25. REMOVE CRANKSHAFT POSITION SENSOR (See page [ES-402](#))



26. REMOVE TIMING CHAIN COVER SUB-ASSEMBLY

- (a) Using an E10 "torx" socket, remove the stud bolt for the V-ribbed belt tensioner.

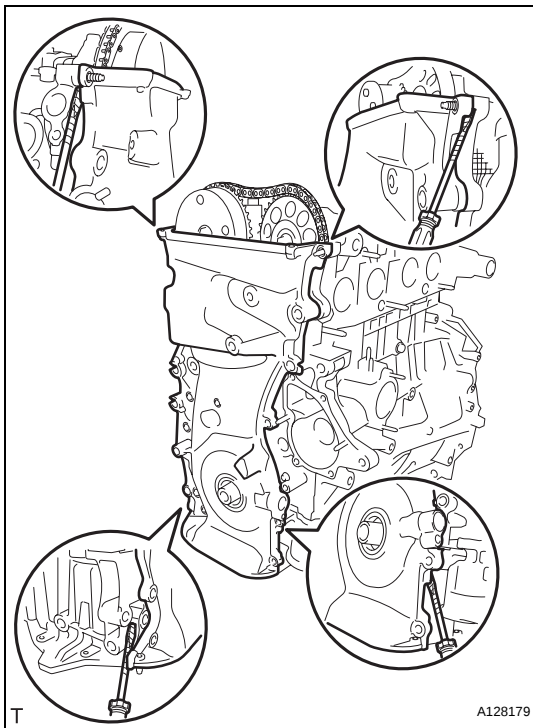
- (b) Remove the 12 bolts and 2 nuts.



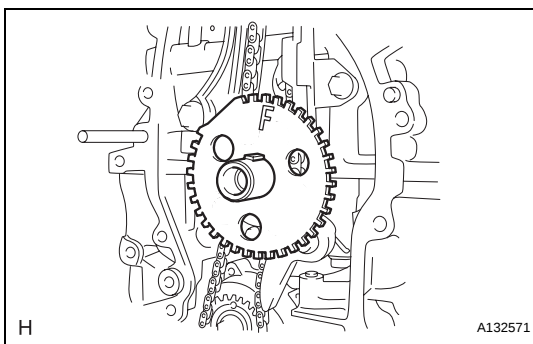
- (c) Remove the timing chain cover by prying the portions between the timing chain cover, cylinder head and cylinder block with a screwdriver.

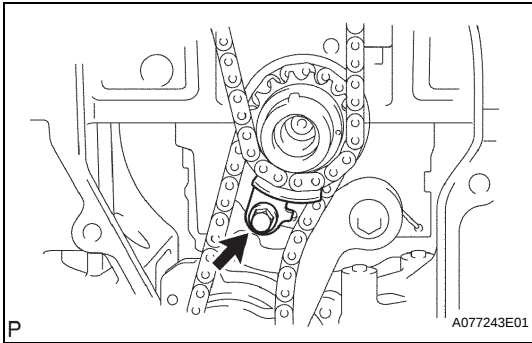
NOTICE:

Be careful not to damage the contact surfaces of the timing chain cover, cylinder head and cylinder block.

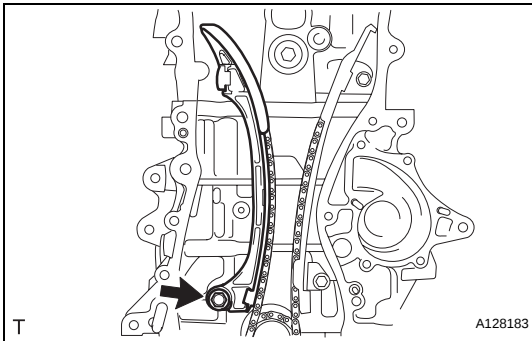


27. REMOVE NO. 1 CRANKSHAFT POSITION SENSOR PLATE

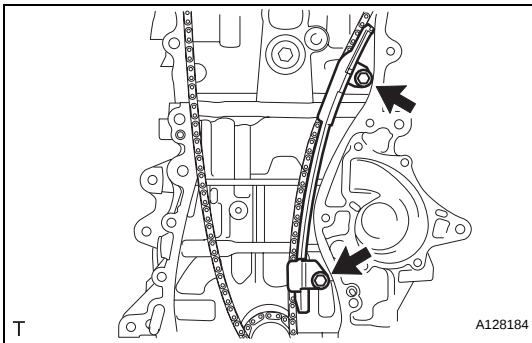


**28. REMOVE TIMING CHAIN GUIDE**

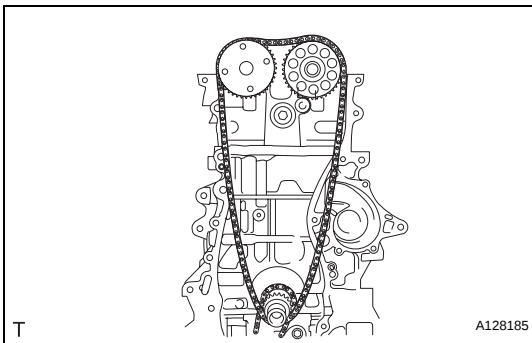
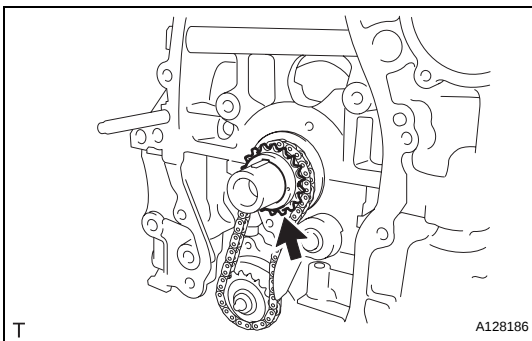
- (a) Remove the bolt and timing chain guide.

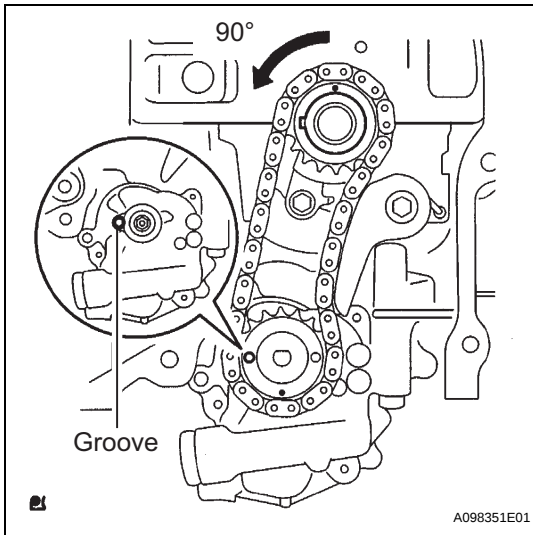
**29. REMOVE CHAIN TENSIONER SLIPPER**

- (a) Remove the bolt and chain tensioner slipper.

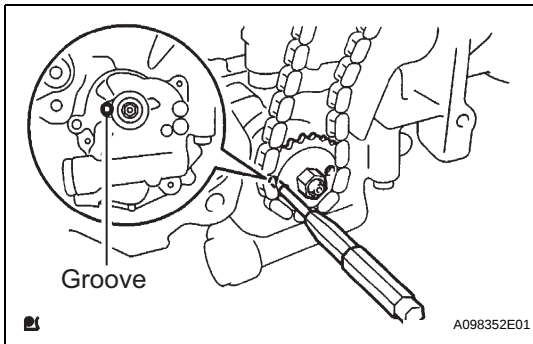
**30. REMOVE NO. 1 CHAIN VIBRATION DAMPER**

- (a) Remove the 2 bolts and chain vibration damper.

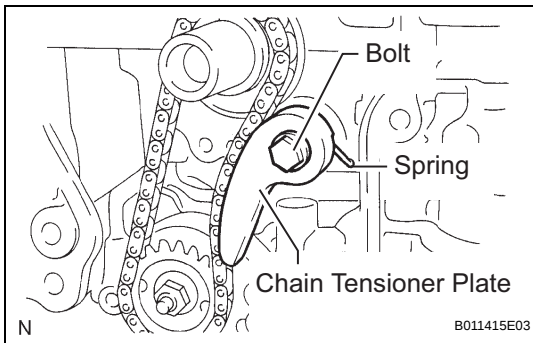
**31. REMOVE CHAIN SUB-ASSEMBLY****32. REMOVE CRANKSHAFT TIMING SPROCKET**

**33. REMOVE NO. 2 CHAIN SUB-ASSEMBLY**

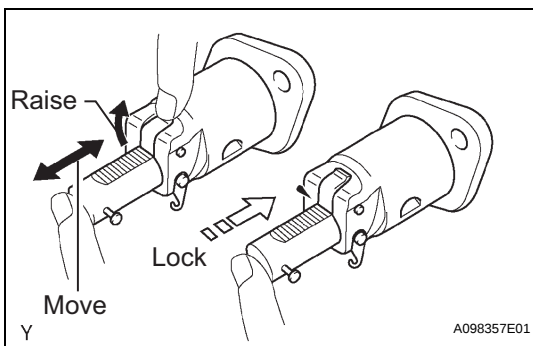
- (a) Turn the crankshaft by 90° counterclockwise to align the adjusting hole of the oil pump drive shaft sprocket with the groove of the oil pump.



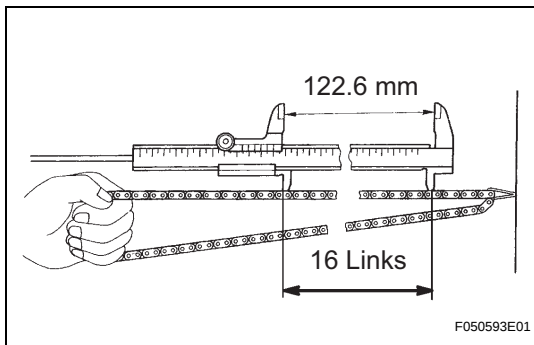
- (b) Insert a 4 mm diameter bar into the adjusting hole of the oil pump drive shaft sprocket to lock the gear in position, and then remove the nut.



- (c) Remove the bolt, chain tensioner plate and spring.
- (d) Remove the oil pump drive sprocket, oil pump drive shaft sprocket and No. 2 chain.

**INSPECTION****1. INSPECT NO. 1 CHAIN TENSIONER**

- (a) Check that the plunger moves smoothly when the ratchet pawl is raised with your finger.
- (b) Release the ratchet pawl, then check that the plunger is locked in place by the ratchet pawl and does not move when pushed with your finger.



2. INSPECT CHAIN SUB-ASSEMBLY

- (a) Using a vernier caliper, measure the length of the 16 links with the chain fully stretched.

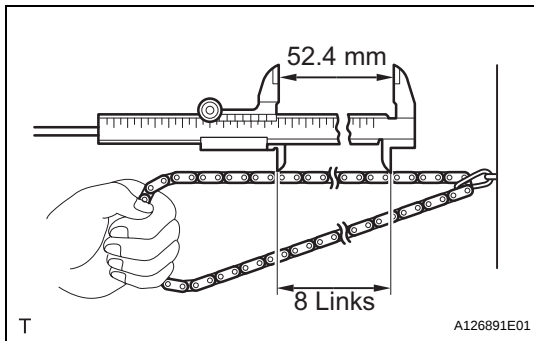
Maximum chain elongation:

122.6 mm (4.827 in.)

If the chain elongation is greater than the maximum, replace the chain sub-assembly.

HINT:

Take the measurements at 3 or more places selected at random.



3. INSPECT NO. 2 CHAIN SUB-ASSEMBLY

- (a) Using a vernier caliper, measure the length of the 8 links with the chain fully stretched.

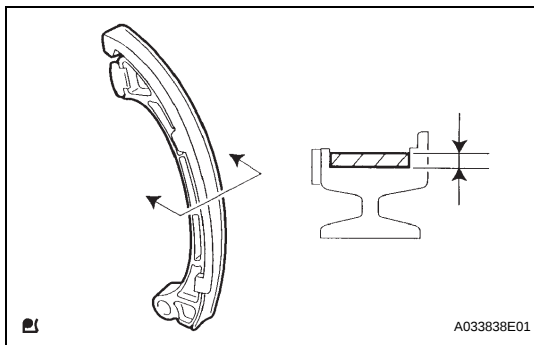
Maximum chain elongation:

52.4 mm (2.063 in.)

If the chain elongation is greater than the maximum, replace the No. 2 chain sub-assembly.

HINT:

Take the measurements at 3 or more places selected at random.



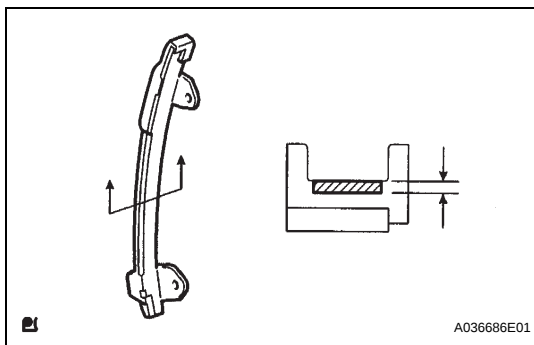
4. INSPECT CHAIN TENSIONER SLIPPER

- (a) Using a vernier caliper, measure the tensioner slipper wear.

Maximum wear:

1.0 mm (0.039 in.)

If the wear is greater than the maximum, replace the chain tensioner slipper.



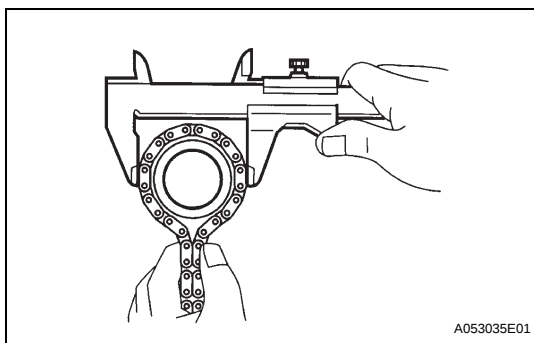
5. INSPECT NO. 1 CHAIN VIBRATION DAMPER

- (a) Using a vernier caliper, measure the vibration damper wear.

Maximum wear:

1.0 mm (0.039 in.)

If the wear is greater than the maximum, replace the No. 1 chain vibration damper.



6. INSPECT CRANKSHAFT TIMING SPROCKET

- (a) Wrap the chain around the timing sprocket.
(b) Using a vernier caliper, measure the timing gear diameter with the chain.

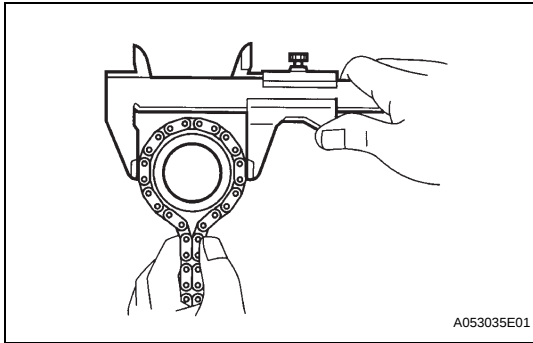
Minimum gear diameter (with chain):

51.6 mm (2.031 in.)

NOTICE:

The vernier caliper must be in contact with the chain rollers when measuring.

If the gear diameter is less than the minimum, replace the chain sub-assembly and crankshaft timing sprocket.



7. INSPECT OIL PUMP DRIVE SPROCKET

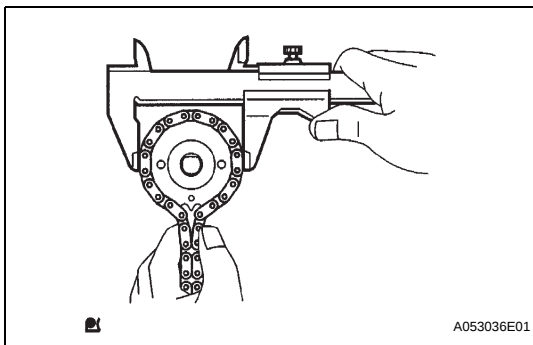
- Wrap the chain around the drive sprocket.
- Using a vernier caliper, measure the drive gear diameter with the chain.

Minimum gear diameter (with chain):
48.2 mm (1.898 in.)

NOTICE:

The vernier caliper must be in contact with the chain rollers when measuring.

If the gear diameter is less than the minimum, replace the No. 2 chain sub-assembly and oil pump drive sprocket.



8. INSPECT OIL PUMP DRIVE SHAFT SPROCKET

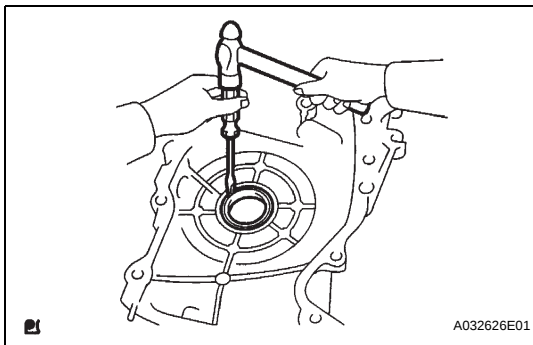
- Wrap the chain around the drive shaft sprocket.
- Using a vernier caliper, measure the drive shaft gear diameter with the chain.

Minimum gear diameter (with chain):
48.2 mm (1.898 in.)

NOTICE:

The vernier caliper must be in contact with the chain rollers when measuring.

If the gear diameter is less than the minimum, replace the No. 2 chain sub-assembly and oil pump drive shaft sprocket.



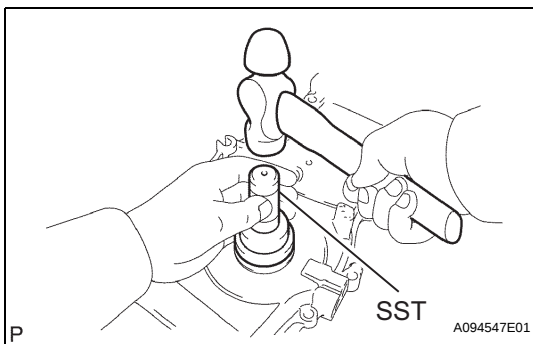
REPLACEMENT

1. REPLACE TIMING CHAIN COVER OIL SEAL

- Using a screwdriver and hammer, tap out the oil seal.
- Place the oil seal retainer on wooden blocks.
- Apply multi-purpose grease to the lip of a new oil seal.

NOTICE:

Keep the lip free of foreign objects.



- Using SST and a hammer, tap in a new oil seal until its surface is flush with the timing gear case edge.

SST 09223-22010

NOTICE:

Do not tap the oil seal at an angle.