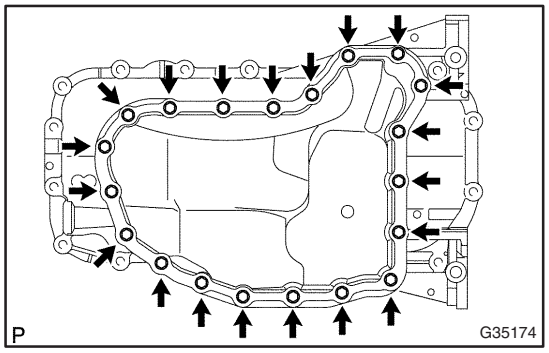
1420H–01

REPLACEMENT

1. **REMOVE ENGINE ASSEMBLY (SEE PAGE 14–19)**
2. **REMOVE DRIVE PLATE & RING GEAR SUB–ASSY (AUTOMATIC TRANSMISSION) (SEE PAGE 14–19)**
   SST 09213–54015 (91651–60855), 09330–00021
3. **REMOVE CLUTCH COVER ASSY (MANUAL TRANSMISSION) (SEE PAGE 42–5)**
4. **REMOVE CLUTCH DISC ASSY (MANUAL TRANSMISSION) (SEE PAGE 42–5)**
5. **REMOVE FLYWHEEL SUB–ASSY (MANUAL TRANSMISSION) (SEE PAGE 14–19)**
   SST 09213–54015 (91651–60855), 09330–00021
6. **REMOVE REAR END PLATE (SEE PAGE 14–19)**
7. **REMOVE ENGINE WIRE**
8. **INSTALL ENGINE STAND**
9. **REMOVE FLUID COUPLING ASSY**

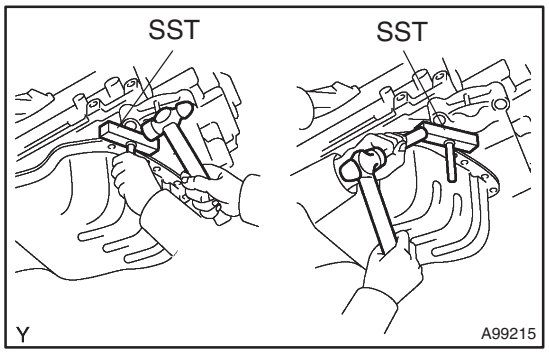
(a) Remove the 4 nuts with the coupling from the water pump pulley.

10. **REMOVE FAN PULLEY**



11. **REMOVE OIL PAN SUB–ASSY NO.2**

(a) Remove the 18 bolts and 2 nuts.

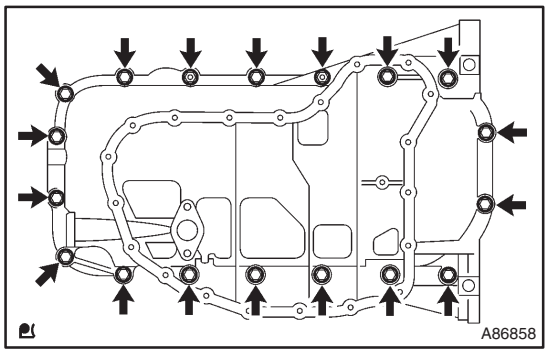


(b) Insert the blade of SST between the pans. Cut through the applied sealer and remove the oil pan.
SST 09032–00100

NOTICE:
Be careful not to damage the contact surfaces of the oil pans.

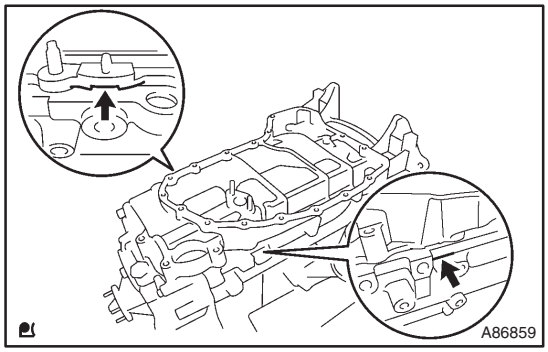
12. **REMOVE OIL STRAINER SUB–ASSY**

(a) Remove the 2 bolts, 2 nuts, oil strainer and gasket.



13. REMOVE OIL PAN SUB–ASSY

(a) Remove the 16 bolts and 2 nuts.



(b) Remove the oil pan by prying between the oil pan and cylinder block with a screwdriver.

HINT:

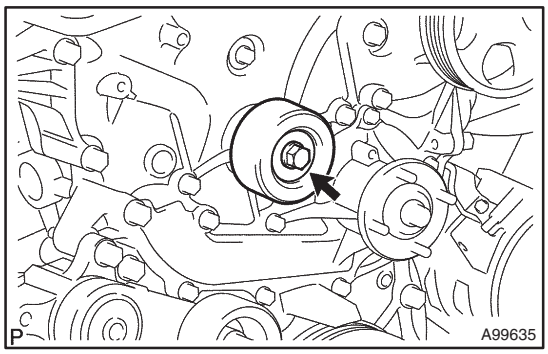
Tape the screwdriver tip before use.

NOTICE:

Be careful not to damage the contact surfaces of the cylinder block and oil pan.

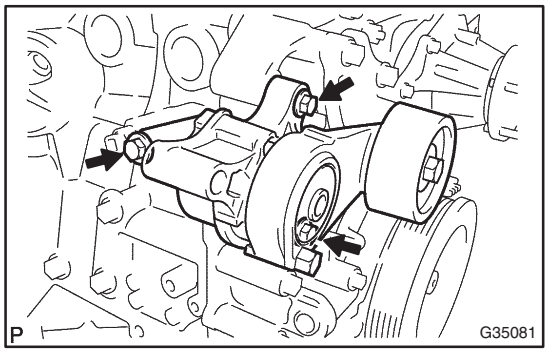
(c) Remove the O–ring.

14. REMOVE GENERATOR ASSY (SEE PAGE 19–8)



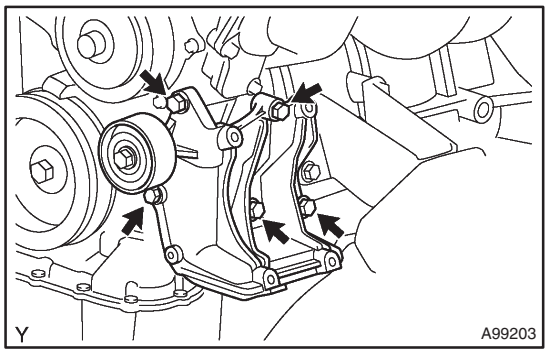
15. REMOVE IDLER PULLEY SUB–ASSY NO.1

(a) Remove the bolt, idler pulley sub–assy No.1, spacer and pulley plate.



16. REMOVE V–RIBBED BELT TENSIONER ASSY

(a) Remove the 3 bolts and belt tensioner.



17. REMOVE COMPRESSOR MOUNTING BRACKET NO.1 (W/ AIR CONDITIONING)

(a) Remove the 5 bolts and mounting bracket.

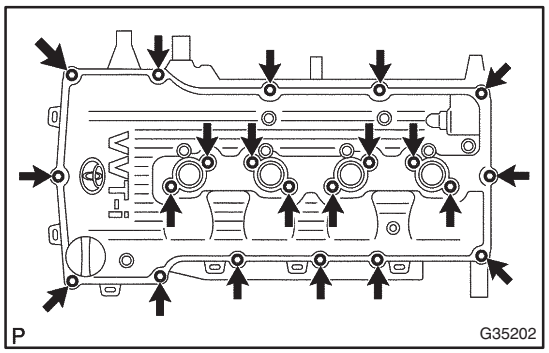
18. REMOVE INTAKE MANIFOLD (SEE PAGE 14–19)

19. REMOVE WATER BY–PASS PIPE NO.1

(a) Remove the bolt and 2 nuts, water by–pass pipe and gasket.

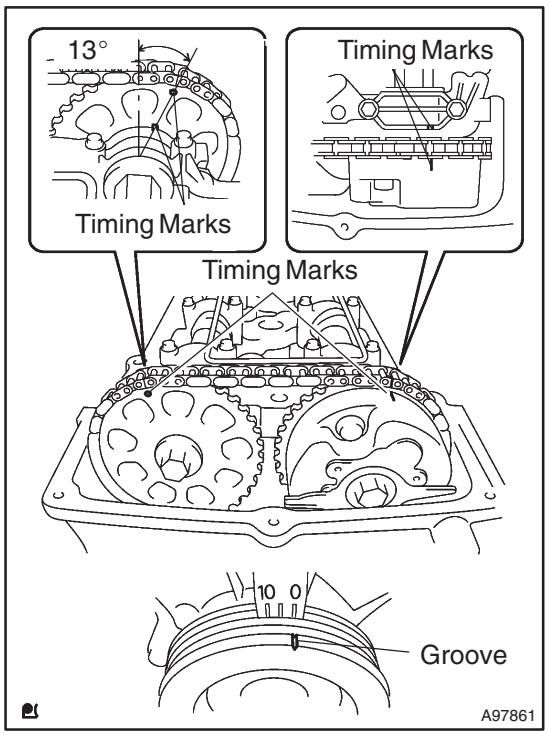
20. REMOVE IGNITION COIL ASSY

(a) Remove the bolt and ignition coil.



21. REMOVE CYLINDER HEAD COVER SUB–ASSY

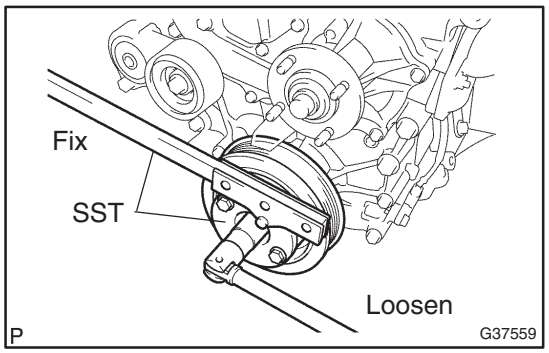
(a) Remove the 19 bolts, 2 nuts, head cover and 2 gaskets.



22. SET NO. 1 CYLINDER TO TDC/COMPRESSION

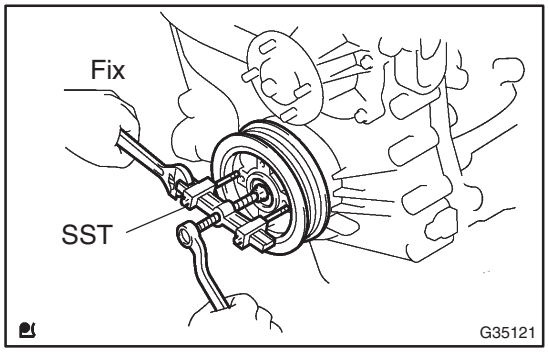
(a) Turn the crankshaft pulley, and align its groove with timing mark 0 of the timing chain cover.

(b) Check that the timing marks of the camshaft timing gear and sprocket are aligned with the timing marks of bearing cap No.1, as shown in the illustration.



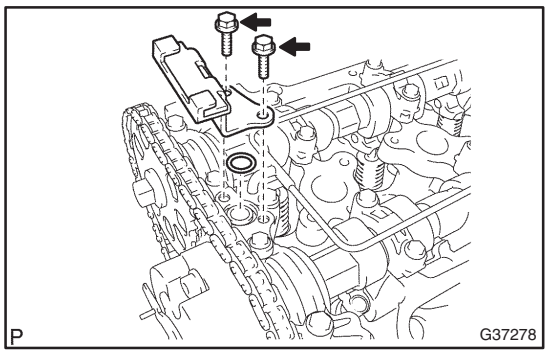
23. REMOVE CRANKSHAFT PULLEY

(a) Using SST, loosen the pulley bolt.
SST 09213–54015 (91651–60855)



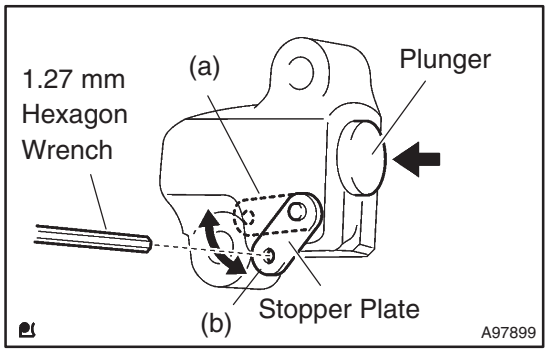
(b) Using SST, remove the pulley bolt and pulley.
SST 09330–00021, 09950–50013 (09951–05010, 09952–05010, 09953–05010, 09954–05021)

24. REMOVE TIMING CHAIN COVER (SEE PAGE 17–12)



25. REMOVE TIMING CHAIN GUIDE

(a) Remove the 2 bolts, timing chain guide and O–ring.



26. REMOVE CHAIN TENSIONER ASSY NO.1

NOTICE:

- **When the chain tensioner is removed, do not rotate the crankshaft.**
- **When the chain is removed and the camshaft needs to be rotated, rotate the crankshaft 90° to the right.**

(a) Move the stopper plate upward to release the lock, and push the plunger deep into the tensioner.

(b) Move the stopper plate downward to set the lock, and insert a hexagon wrench into the stopper plate's hole.

(c) Remove the bolt, nut, chain tensioner and gasket.

27. REMOVE CHAIN TENSIONER SLIPPER

(a) Remove the bolt and tensioner slipper.

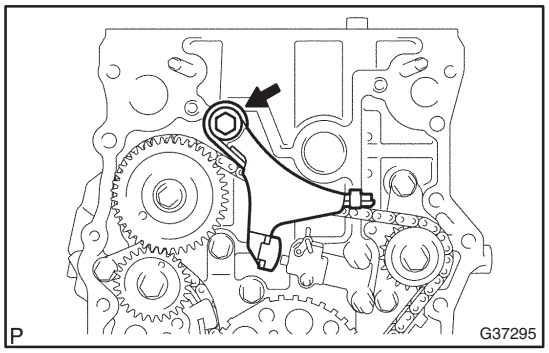
28. REMOVE CHAIN VIBRATION DAMPER NO.1

(a) Remove the bolt, nut, and vibration damper.

29. REMOVE CHAIN SUB–ASSY

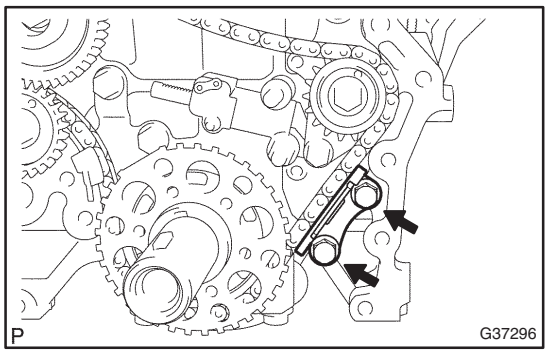
30. REMOVE CRANKSHAFT TIMING GEAR OR SPROCKET

(a) Remove the crankshaft timing gear from the crankshaft.



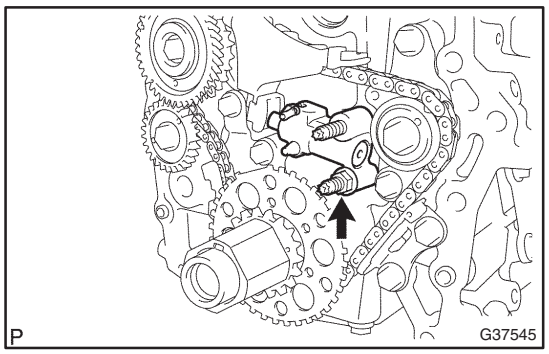
31. REMOVE CHAIN VIBRATION DAMPER NO.2

(a) Remove the 2 bolts and chain vibration damper No.2.



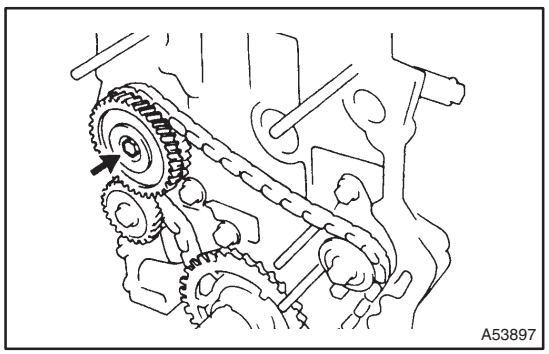
32. REMOVE CHAIN VIBRATION DAMPER NO.3

(a) Remove the 2 bolts and chain vibration damper No.3.



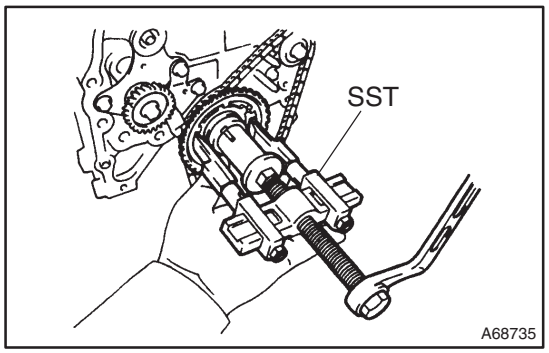
33. REMOVE CHAIN TENSIONER ASSY NO.2

(a) Remove the nut and chain tensioner assy No.2.

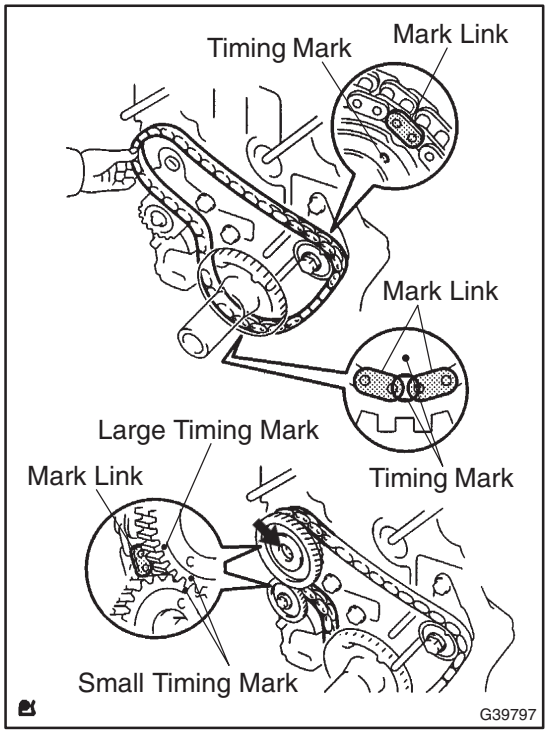


34. REMOVE NO.2 CHAIN SUB–ASSY

(a) Remove the bolt, balanceshaft drive gear shaft and balanceshaft drive gear.



(b) Using SST and crankshaft pulley bolt, remove the crankshaft timing gear and chain.
SST 09950–40011 (09951–04010, 09952–04010, 09953–04020, 09954–04010, 09955–04061)



35. INSTALL NO.2 CHAIN SUB–ASSY

NOTICE:

Check that the No.1 cylinder is at TDC and that the weights of the balanceshaft No.1 and No.2 are at the bottom side.

(a) Install the chain by matching its mark links with the timing marks on the crankshaft timing sprocket and balanceshaft timing sprocket.

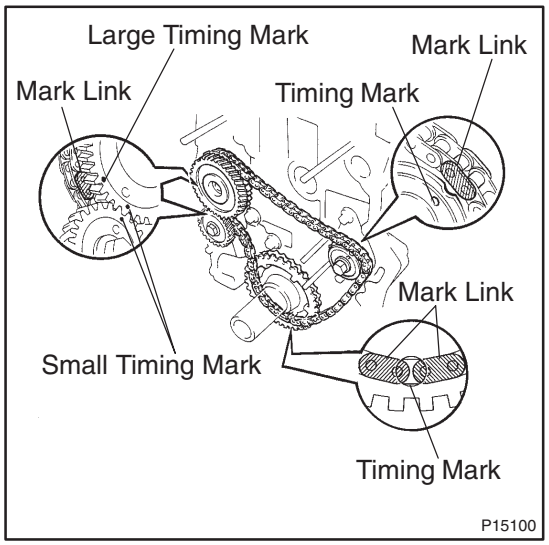
(b) Fit the other mark link of the crankshaft timing sprocket to the back of the large timing mark of the balanceshaft drive gear.

(c) Insert the balanceshaft drive gear shaft through the balanceshaft drive gear so that it fits into the thrust plate hole.

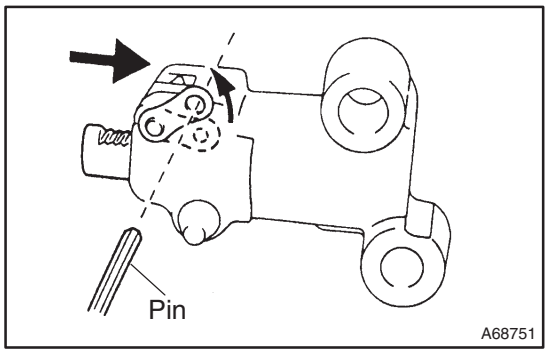
(d) Align the small timing mark of the balanceshaft drive gear with the timing mark of the balanceshaft timing gear.

(e) Install the bolt to the balanceshaft drive gear and tighten it.

Torque: 25 N·m (250 kgf·cm, 18 ft·lbf)



(f) Check that each timing mark is matched with the corresponding mark link.

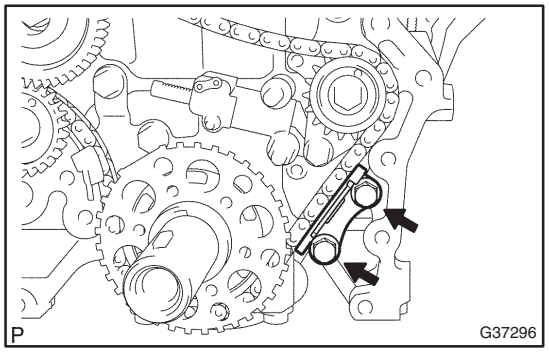


36. INSTALL CHAIN TENSIONER ASSY NO.2

NOTICE:

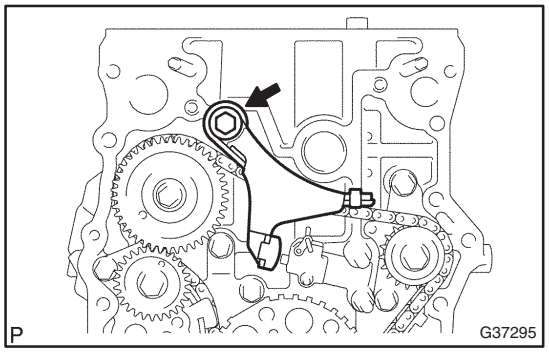
Assemble the chain tensioner with the pin installed, then remove the pin after assembly. When doing this, avoid pushing the vibration damper against the chain.

(a) Install the chain tensioner assy No.2 with the nut.
Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)



37. INSTALL CHAIN VIBRATION DAMPER NO.3

(a) Install the chain vibration damper No.3 with the 2 bolts.
Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)



38. INSTALL CHAIN VIBRATION DAMPER NO.2

(a) Install the chain vibration damper No.2 with the bolt.
Torque: 27 N·m (270 kgf·cm, 20 ft·lbf)

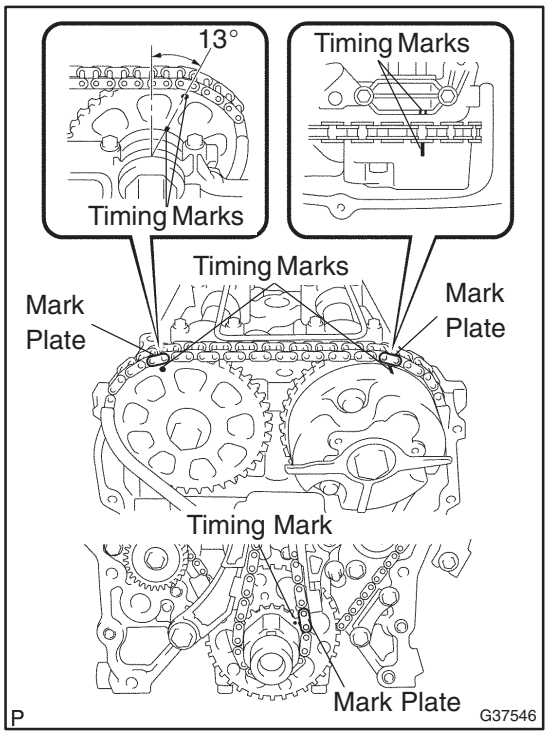
(b) Remove a pin from the chain tensioner and release the plunger.

39. INSTALL CRANKSHAFT TIMING GEAR OR SPROCKET

(a) Install the crankshaft timing gear to the crankshaft.

40. INSTALL CHAIN VIBRATION DAMPER NO.1

(a) Install the vibration damper with the 2 bolts.
Torque: 21 N·m (214 kgf·cm, 15 ft·lbf)

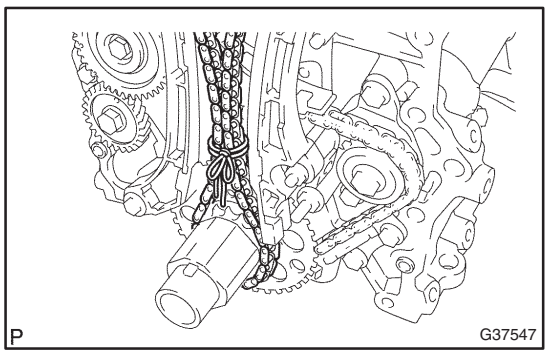


41. INSTALL CHAIN SUB–ASSY

(a) As shown in the illustration, install the chain on the sprocket and gear with the painted marks aligned with the timing marks on the sprocket and gear.

HINT:

- The camshaft mark plate is orange.
- The crankshaft mark plate is yellow.



(b) Use a rope to tie the chain of the crankshaft timing sprocket. Tie the rope near the gear.

NOTICE:

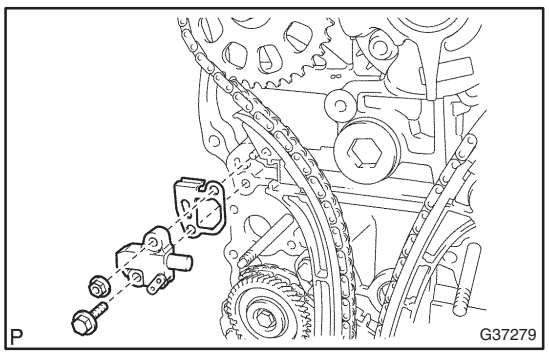
After the chain tensioner has been installed, the rope must be removed.

HINT:

The rope is tied so that the chain will not jump a tooth.

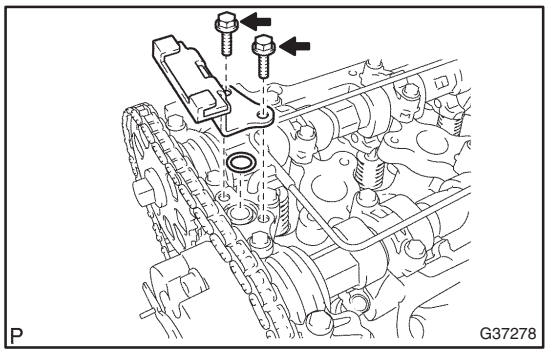
42. INSTALL CHAIN TENSIONER SLIPPER

(a) Install the tensioner slipper with the bolt.
Torque: 21 N·m (214 kgf·cm, 15 ft·lbf)



43. INSTALL CHAIN TENSIONER ASSY NO.1

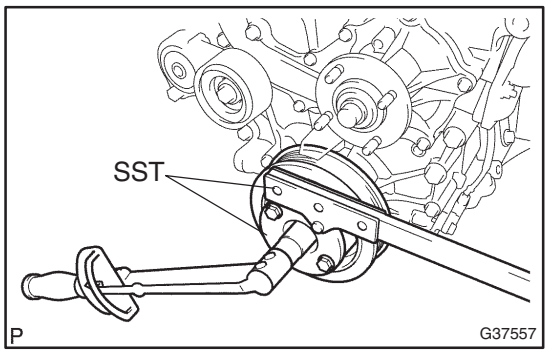
(a) Install a new gasket and the chain tensioner No.1 with the bolt and nut.
Torque: 10 N·m (102 kgf·cm, 7 ft·lbf)



44. INSTALL TIMING CHAIN GUIDE

(a) Install a new O–ring and the chain guide with the 2 bolts.
Torque: 10 N·m (102 kgf·cm, 7 ft·lbf)

45. INSTALL TIMING CHAIN COVER (SEE PAGE 17–12)



46. INSTALL CRANKSHAFT PULLEY

(a) Align the pulley set key with the key groove of the pulley, and slide on the pulley.

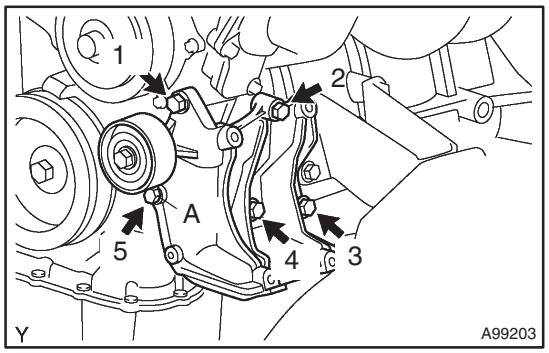
(b) Using SST, install a new crankshaft pulley bolt.
SST 09213–54015 (91651–60855), 09330–00021
Torque: 260 N·m (2,651 kgf·cm, 192 ft·lbf)

NOTICE:
Do not reuse the pulley bolt.

47. INSTALL WATER BY–PASS PIPE NO.1

(a) Install a new gasket and the water by–pass pipe with the bolt and 2 nuts.
Torque: 18 N·m (179 kgf·cm, 13 ft·lbf)

48. INSTALL INTAKE MANIFOLD (SEE PAGE 14–19)



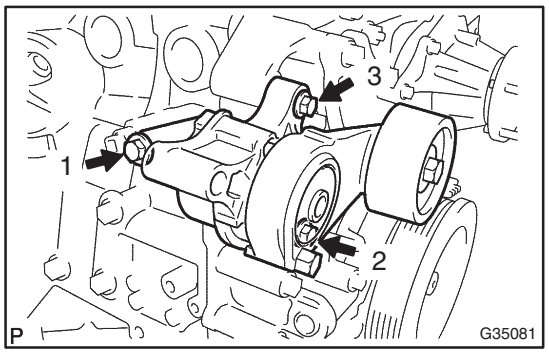
49. INSTALL COMPRESSOR MOUNTING BRACKET NO.1 (W/ AIR CONDITIONING)

(a) Temporarily install the mounting bracket with the 5 bolts.

HINT:
Make sure the flanges of the bolts are contacting the bracket surface.

(b) Install the mounting bracket by tightening the 5 bolts in the order shown in the illustration.
Torque:
25 N·m (250 kgf·cm, 18 ft·lbf) for bolt A
45 N·m (459 kgf·cm, 33 ft·lbf) for bolts except bolt A

NOTICE:
In order to prevent misalignment, which causes belt rattle, tightening of the bolts must be performed in the order shown.



50. INSTALL V–RIBBED BELT TENSIONER ASSY

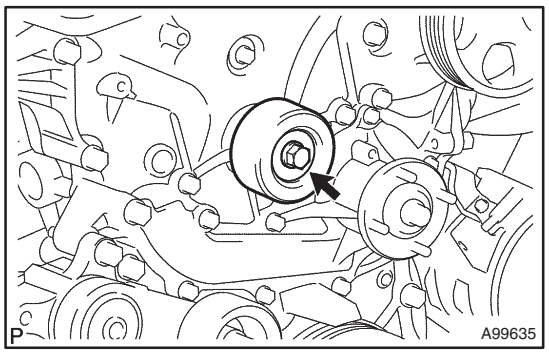
(a) Temporarily install the belt tensioner with the bolt 1 and bolt 2.

HINT:

Make sure the flanges of the bolts are contacting the tensioner surface.

(b) Install the tensioner by tightening the 3 bolts in the order shown in the illustration.

Torque:
40 N·m (408 kgf·cm, 30 ft·lbf) for bolt 1
21 N·m (214 kgf·cm, 15 ft·lbf) for bolt 2
43 N·m (438 kgf·cm, 32 ft·lbf) for bolt 3

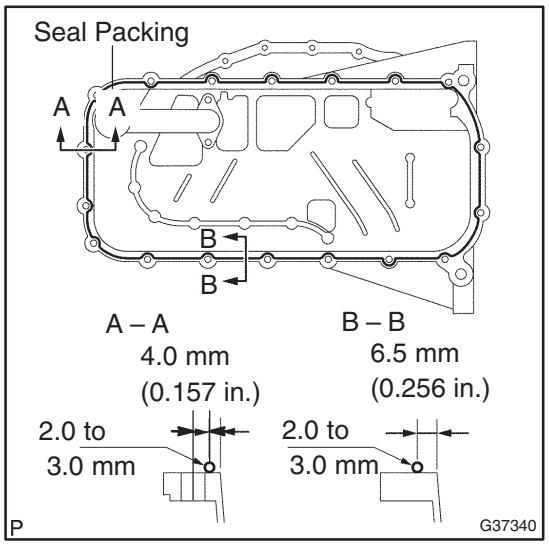


51. INSTALL IDLER PULLEY SUB–ASSY NO.1

(a) Install the idler pulley sub–assy No.1, spacer and pulley plate with the bolt.

Torque: 43 N·m (438 kgf·cm, 32 ft·lbf)

52. INSTALL GENERATOR ASSY (SEE PAGE 19–8)



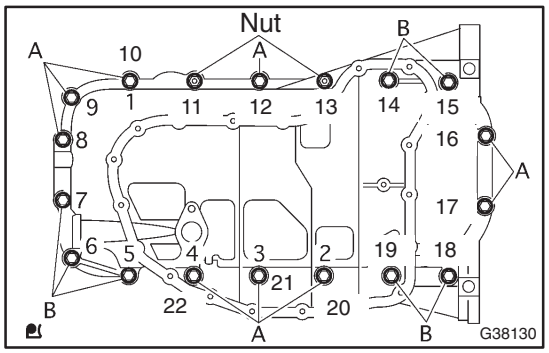
53. INSTALL OIL PAN SUB–ASSY

(a) Apply seal packing in a continuous bead as shown in the illustration.

Seal packing: Part No. 08826–00080 or equivalent
Seal width: 2.0 to 3.0 mm (0.079 to 0.118 in.)

NOTICE:

- **Remove any oil from the contact surface.**
- **Put on the oil pan sub–assy within 3 minutes after applying seal packing, and tighten the bolts and nuts within 15 minutes.**
- **Do not start the engine for at least 2 hours after installing.**



(b) Temporarily install the oil pan with the 16 bolts and 2 nuts.

HINT:

Bolt length:

20 mm (0.79 in.) for bolt A

40 mm (1.57 in.) for bolt B

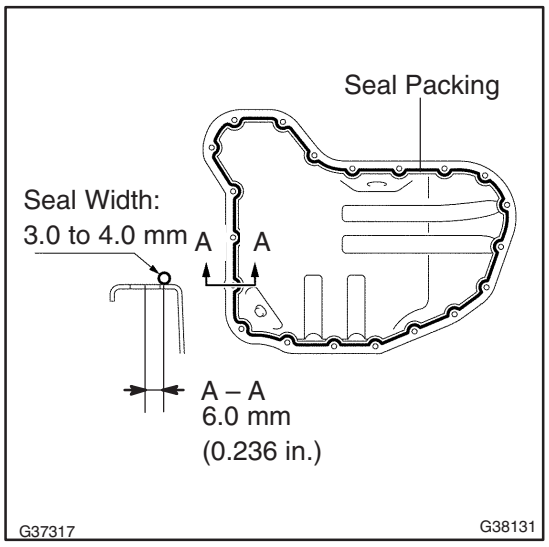
(c) Uniformly tighten the 16 bolts and 2 nuts in the sequence shown in the illustration.

Torque: 26 N·m (265 kgf·cm, 19 ft·lbf)

54. INSTALL OIL STRAINER SUB–ASSY

(a) Install a new gasket and the oil strainer with the 2 bolts and 2 nuts.

Torque: 26 N·m (265 kgf·cm, 19 ft·lbf)



55. INSTALL OIL PAN SUB–ASSY NO.2

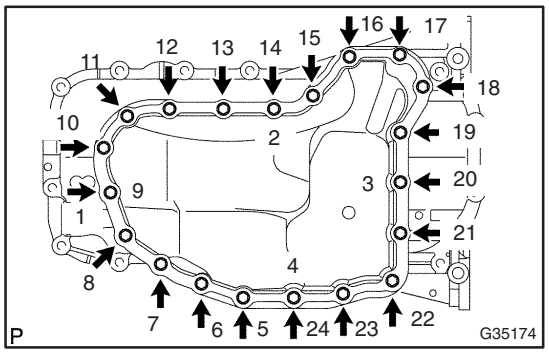
(a) Apply seal packing in a continuous bead as shown in the illustration.

Seal packing: Part No. 08826–00080 or equivalent

Seal width: 3.0 to 4.0 mm (0.118 to 0.157 in.)

NOTICE:

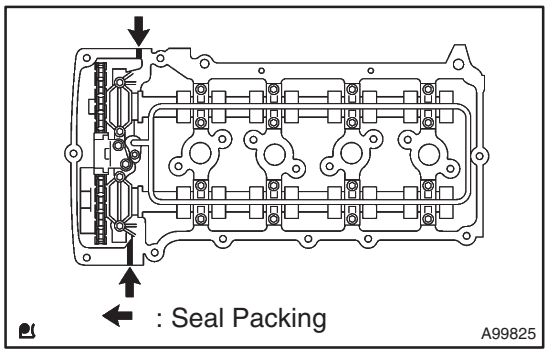
- **Remove any oil from the contact surface.**
- **Put on the oil pan sub–assy within 3 minutes after applying seal packing, and tighten the bolts and nuts within 15 minutes.**
- **Do not start the engine for at least 2 hours after installing.**



(b) Temporarily install the oil pan with the 18 bolts and 2 nuts.

(c) Uniformly tighten the 18 bolts and 2 nuts in the sequence shown in the illustration.

Torque: 9.0 N·m (92 kgf·cm, 80 in.·lbf)



56. INSTALL CYLINDER HEAD COVER SUB–ASSY

(a) Remove any old packing (FIPG) material.

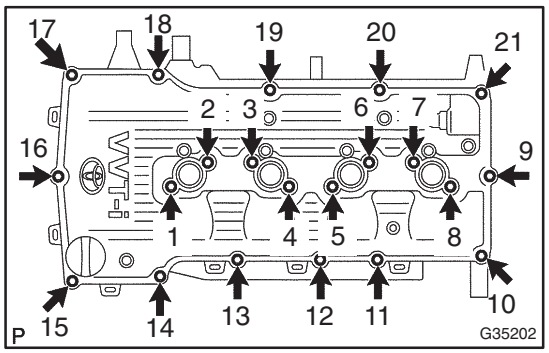
(b) Apply seal packing as shown in the illustration.

(c) Install the cylinder head cover gasket and cylinder head gasket No.2 to the cylinder head cover.

Seal packing: Part No. 08826–00080 or equivalent

NOTICE:

- **Remove any oil from the contact surface.**
- **Install the cylinder head cover sub–assy within 3 minutes after applying seal packing.**
- **Do not start the engine for at least 2 hours after installing.**



(d) Temporarily install the head cover with the 19 bolts and 2 nuts.

(e) Uniformly tighten the 19 bolts and 2 nuts in the sequence shown in the illustration.

Torque: 9.0 N·m (92 kgf·cm, 80 in.·lbf)

(f) After tightening the 19 bolts and 2 nuts at the specified torque, retighten 1–8 bolts at the torque.

57. INSTALL IGNITION COIL ASSY

(a) Install the ignition coil with the bolt.

Torque: 9.0 N·m (92 kgf·cm, 80 in.·lbf)

58. INSTALL FAN PULLEY

59. INSTALL FLUID COUPLING ASSY

(a) Install the coupling to the water pump pulley with the 4 nuts.

Torque: 25 N·m (255 kgf·cm, 18 ft·lbf)

60. INSTALL ENGINE WIRE

61. REMOVE ENGINE STAND

62. INSTALL REAR END PLATE (SEE PAGE 14–19)

63. INSTALL DRIVE PLATE & RING GEAR SUB–ASSY (AUTOMATIC TRANSMISSION) (SEE PAGE 14–19)

SST 09213–54015 (91651–60855), 09330–00021

64. INSTALL FLYWHEEL SUB–ASSY (MANUAL TRANSMISSION) (SEE PAGE 14–19)

SST 09213–54015 (91651–60855), 09330–00021

65. INSTALL CLUTCH DISC ASSY (MANUAL TRANSMISSION) (SEE PAGE 42–5)

SST 09301–00110

66. INSTALL CLUTCH COVER ASSY (MANUAL TRANSMISSION) (SEE PAGE 42–5)

67. INSTALL ENGINE ASSEMBLY (SEE PAGE 14–19)