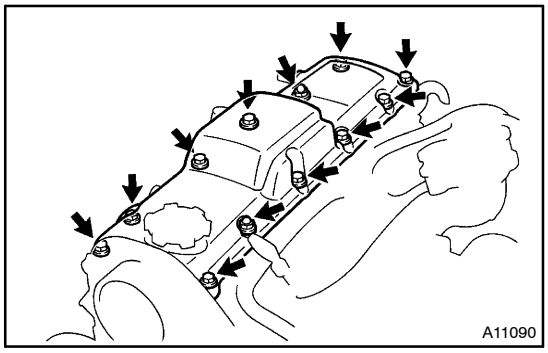
1410H–01

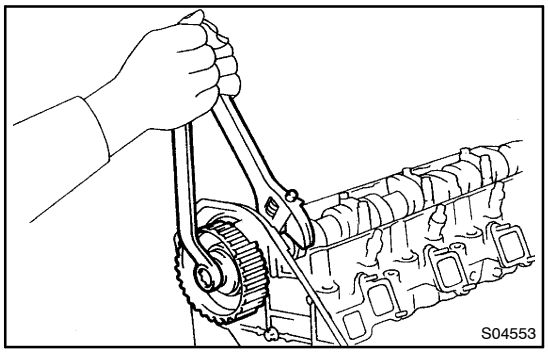
OVERHAUL

1. REMOVE OIL FILLER CAP SUB–ASSY



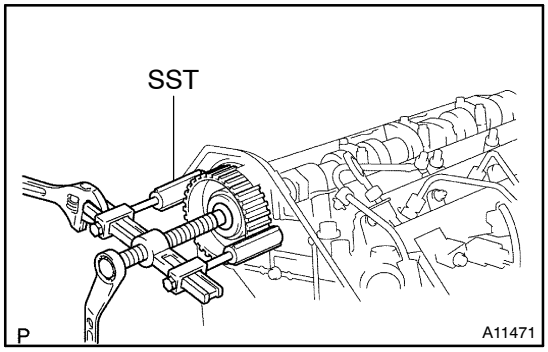
2. REMOVE CYLINDER HEAD COVER SUB–ASSY

(a) Remove the 10 bolts, 2 nuts, cylinder head cover and gasket.



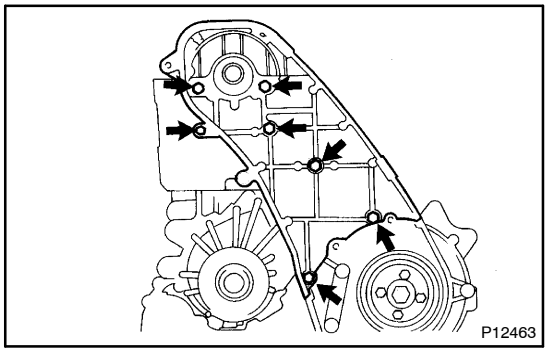
3. REMOVE CAMSHAFT TIMING PULLEY

(a) Hold the hexagon wrench head portion of the camshaft with a wrench, and remove the No. 1 camshaft timing pulley bolt.



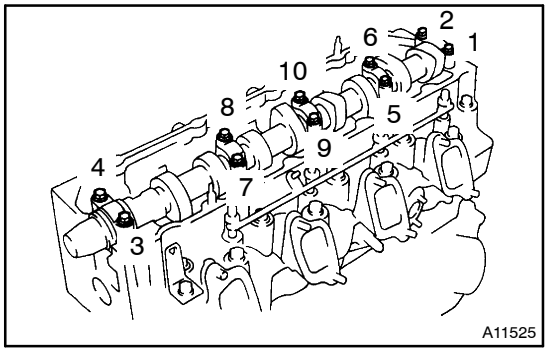
(b) Using SST, remove the No. 1 camshaft timing pulley.
SST 09950–40011 (09951–04010, 09952–04010, 09953–04020, 09954–04010, 09955–04061)

(c) Remove the set key.



4. REMOVE CAMSHAFT OIL SEAL RETAINER

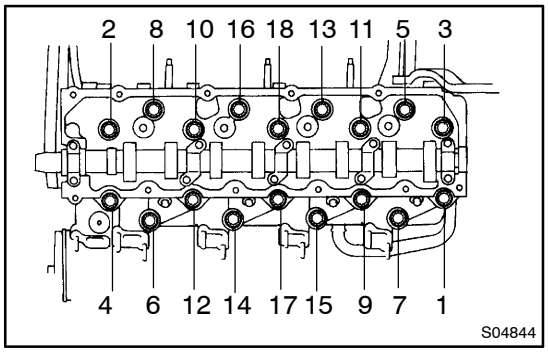
(a) Remove the 7 bolts and camshaft oil seal retainer.



5. REMOVE CAMSHAFT

(a) Uniformly loosen and remove the 10 bearing cap bolts in several passes in the sequence shown.

(b) Remove the 5 bearing caps and camshaft.

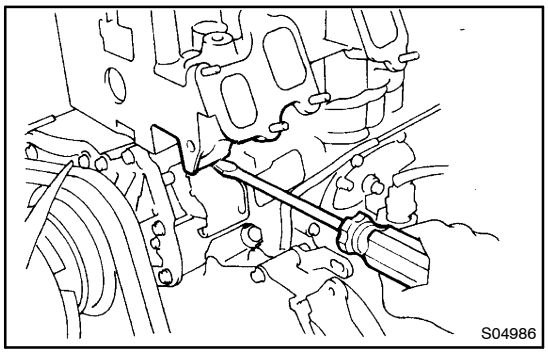


6. REMOVE CYLINDER HEAD SUB–ASSY

(a) Uniformly loosen and remove the 18 cylinder head bolts, in several passes, in the sequence shown.

NOTICE:

Head warpage or cracking could result from removing bolts in incorrect order.



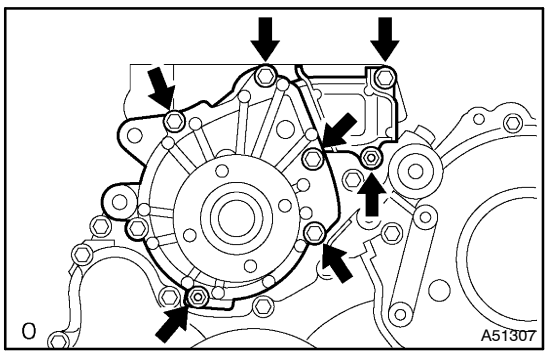
(b) Lift the cylinder head from the dowels on the cylinder block, and place the cylinder head on wooden blocks on a bench.

HINT:

If the cylinder head is difficult to lift off, pry with a screwdriver between the cylinder head and block.

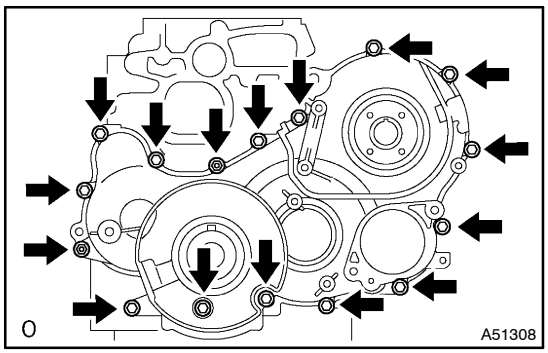
NOTICE:

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



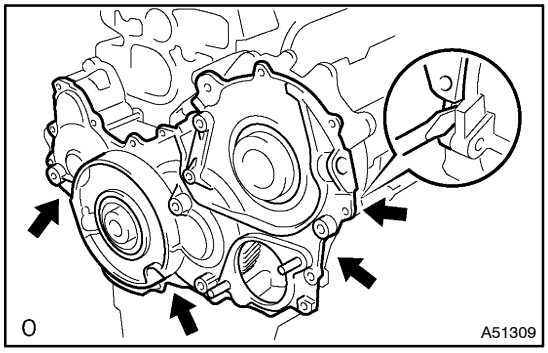
7. REMOVE WATER PUMP ASSY

(a) Remove the 5 bolts, 2 nuts, water pump and gasket.

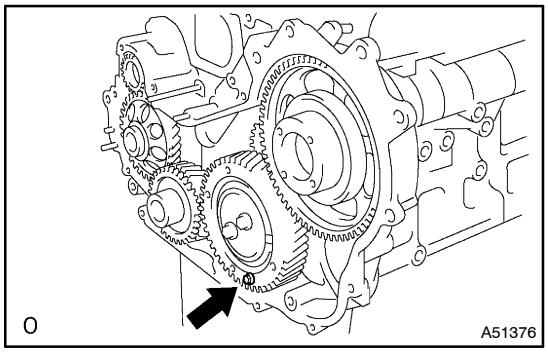


8. REMOVE TIMING GEAR CASE

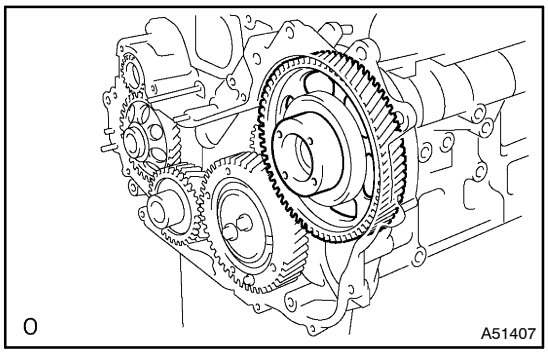
(a) Remove the 14 bolts and 2 nuts.



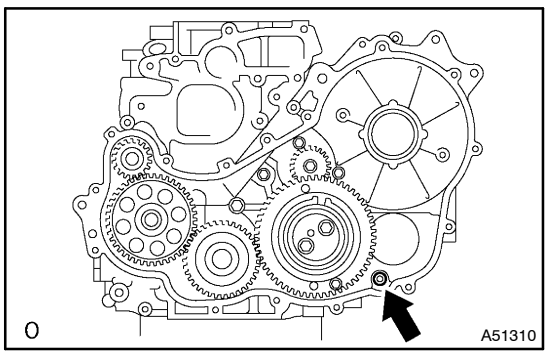
(b) Using a screwdriver, pry out the timing chain or belt cover.



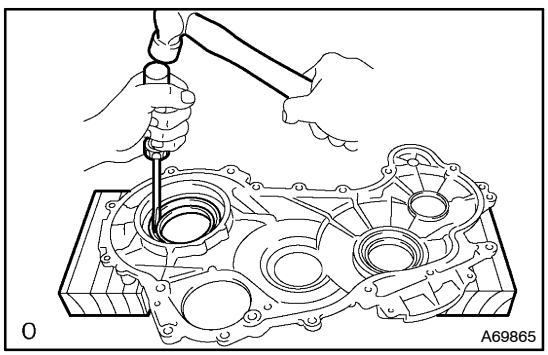
(c) Secure the idler sub–gears to the idler gear with a service bolt.



(d) Remove the injection gear.

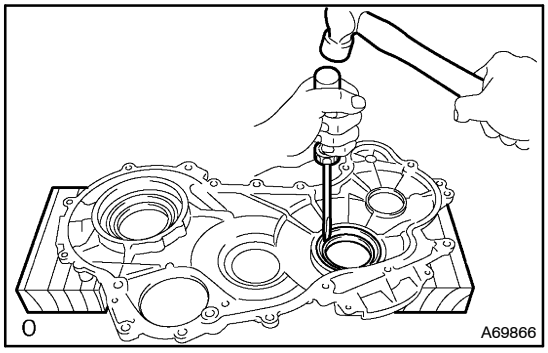


(e) Remove the O–ring.



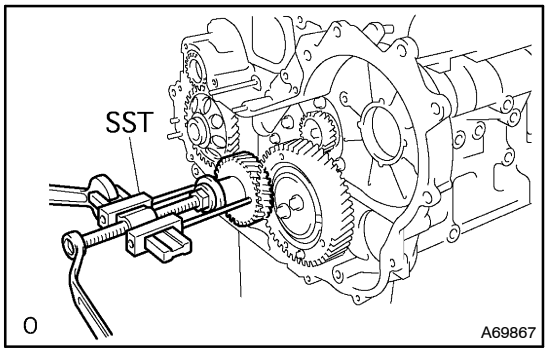
9. REMOVE TIMING GEAR CASE OR TIMING CHAIN CASE OIL SEAL

(a) Using a screwdriver and hammer, tap out the oil seal.



10. REMOVE TIMING GEAR COVER OIL SEAL

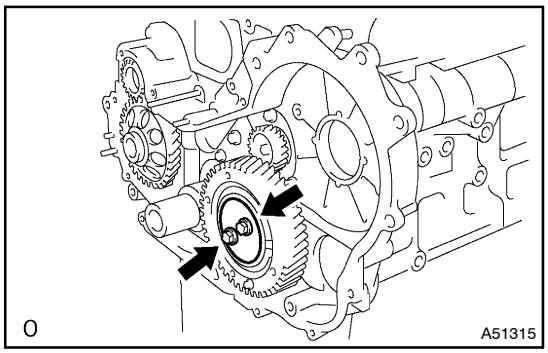
(a) Using a screwdriver and hammer, tap out the oil seal.



11. REMOVE CRANKSHAFT TIMING GEAR OR SPROCKET

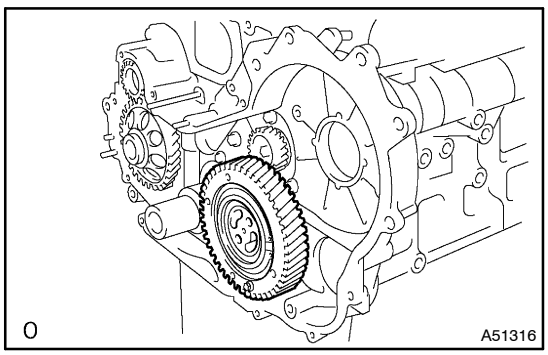
(a) Using SST, remove the crankshaft timing gear.

SST 09950–50013 (09951–05010, 09952–05010, 09953–05020, 09954–05010)

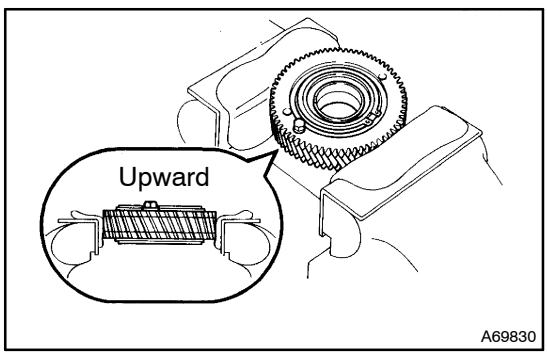


12. REMOVE IDLE GEAR THRUST PLATE

(a) Remove the 2 bolts, idler gear thrust plate.



13. REMOVE IDLE GEAR NO.1

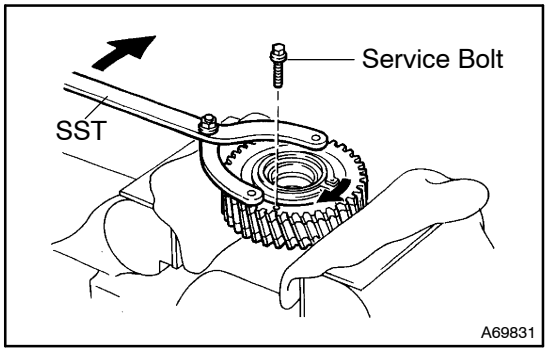


14. REMOVE IDLE SUB GEAR NO.1

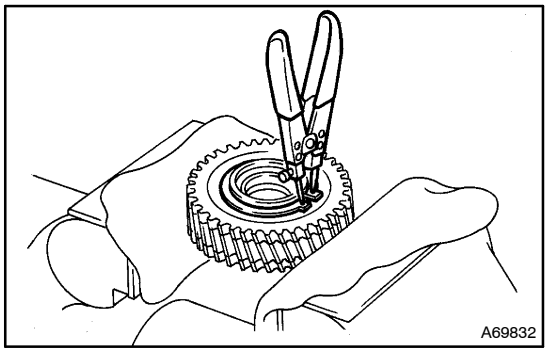
(a) Mount the idle gear No.1 and idle sub gear No.2 in a vise.

NOTICE:

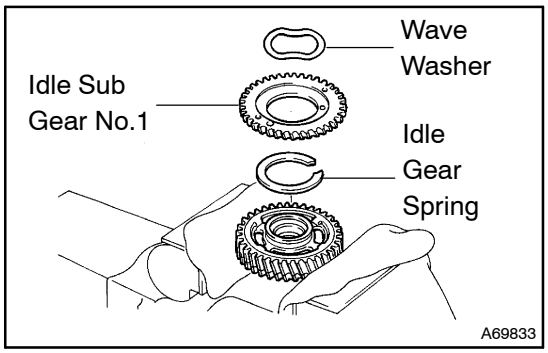
Be careful not to damage the gears.



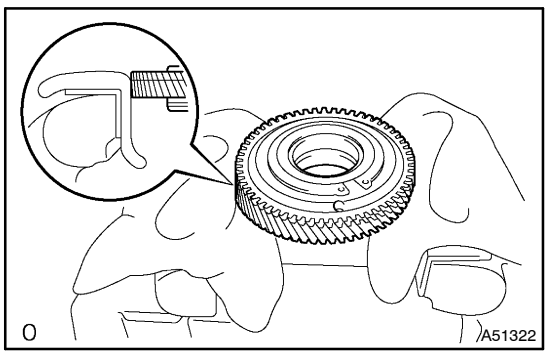
(b) Using SST, turn the idle sub gear No.1 clockwise and remove the service bolt.
SST 09960–10010 (09962–01000, 09963–00600)



(c) Using snap ring pliers, remove the shaft snap ring.



(d) Remove the wave washer.
(e) Remove the idle sub gear No.1.
(f) Remove the idle gear spring.
(g) Remove the idle gear No.1 from the vice and turn it upside down.

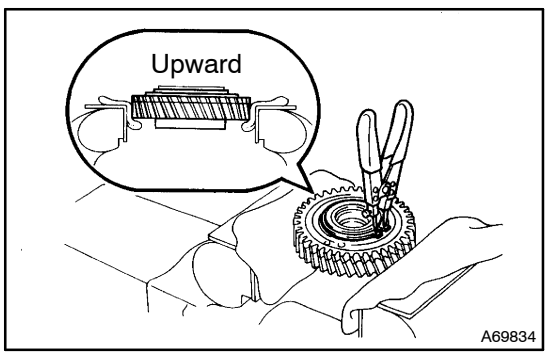


15. REMOVE IDLE SUB GEAR NO.2

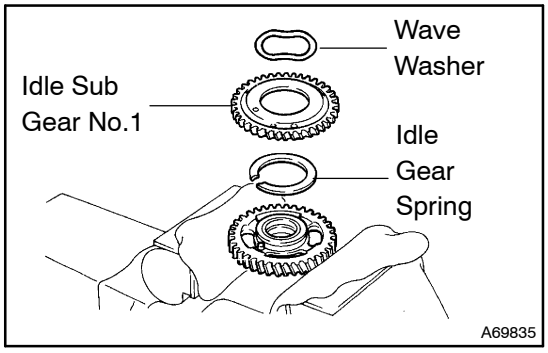
(a) Mount the idle gear No.1 in a vise.

NOTICE:

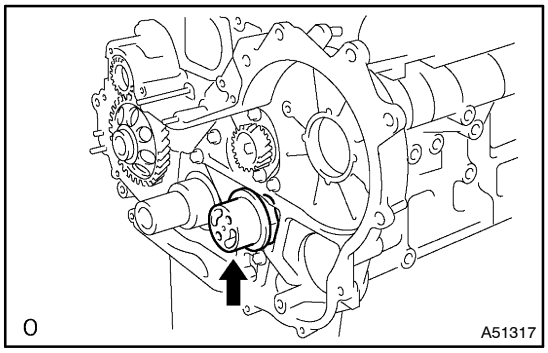
Be careful not a damage the gear.



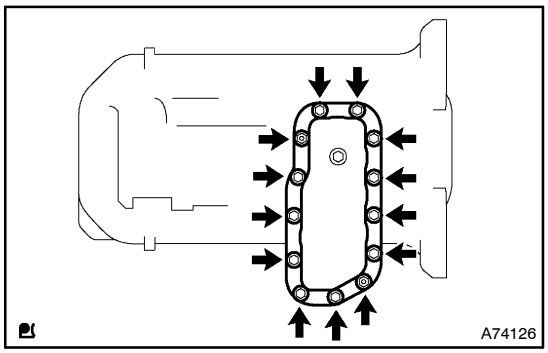
(b) Using snap ring pliers, remove the shaft snap ring.



(c) Remove the wave washer.
(d) Remove the idle sub gear No.2.
(e) Remove the idle gear spring.

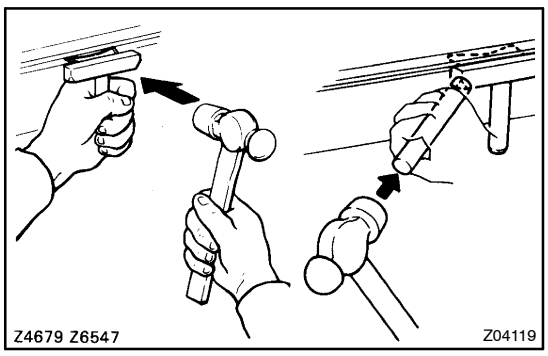


16. REMOVE IDLE GEAR SHAFT NO.1



17. REMOVE OIL PAN SUB–ASSY NO.2

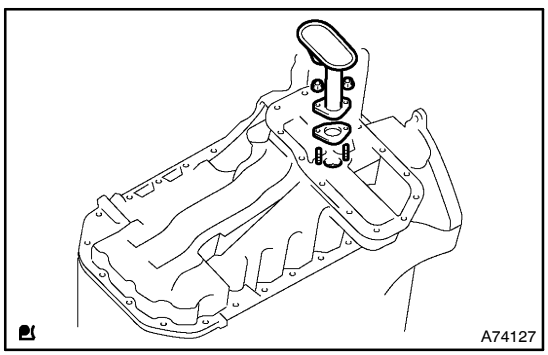
(a) Remove the 11 bolts and 2 nuts.



(b) Insert the blade of SST between the cylinder block and oil pan, and cut off applied sealer and remove the oil pan.
SST 09032–00100

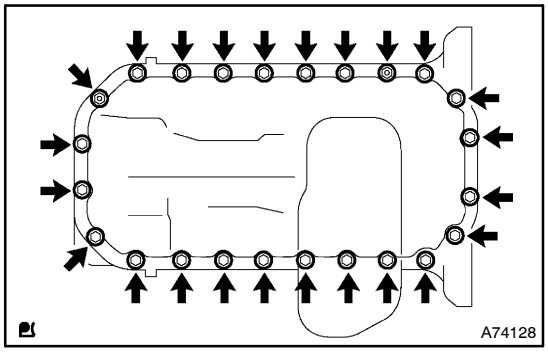
NOTICE:

- **Do not use SST for the timing gear case side and rear oil seal retainer.**
- **Be careful not to damage the oil pan flange.**



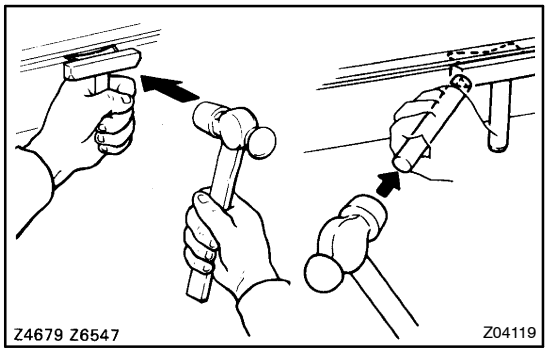
18. REMOVE OIL STRAINER SUB–ASSY

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



19. REMOVE OIL PAN SUB–ASSY

(a) Remove the 22 bolts and 2 nuts.



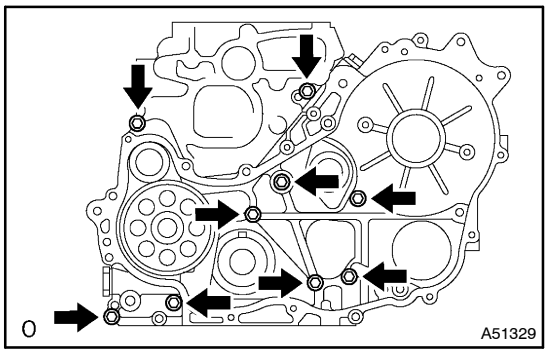
(b) Insert the blade of SST between the cylinder block and oil pan, and cut off applied sealer and remove the oil pan.
SST 09032–00100

NOTICE:

- **Do not use SST for the timing gear case side and rear oil seal retainer.**
- **Be careful not to damage the oil pan flange.**

(c) Remove the gasket.

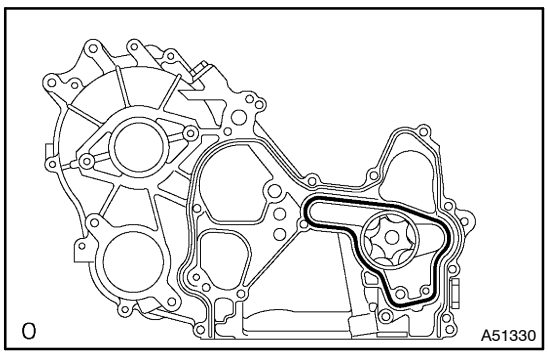
20. REMOVE OIL PAN DRAIN PLUG



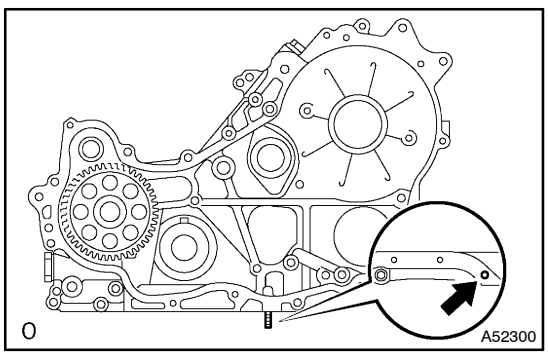
21. REMOVE TIMING GEAR CASE ASSY

(a) Remove the 8 bolts and union bolt.

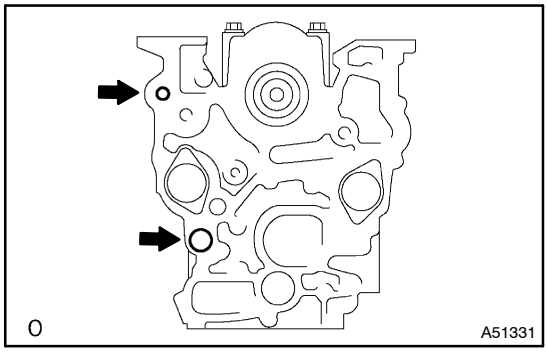
(b) Using a plastic–faced hammer, lightly tap out the timing gear case.



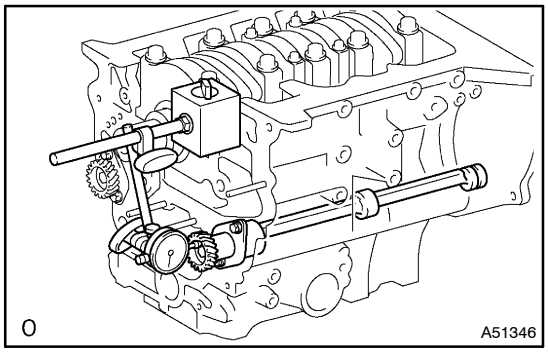
(c) Remove the oil pump gasket.



(d) Remove the stud bolt.



(e) Remove the 2 O–rings.



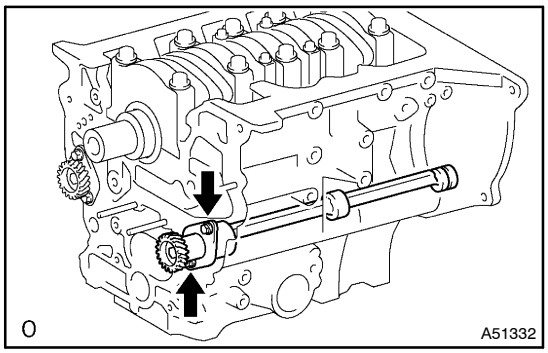
22. INSPECT NO.1 BALANCESHAFT SUB–ASSY

(a) Using a dial indicator, measure the thrust clearance while moving the balance shaft back and forth.

Standard thrust clearance:
0.065 – 0.140 mm (0.0026 – 0.0055 in.)
Maximum thrust clearance: 0.25 mm (0.0098 in.)

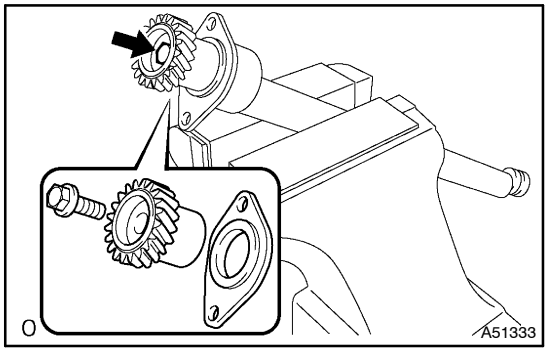
If the thrust clearance is greater than maximum, replace the balance shaft thrust washer.

If necessary, replace the balance shaft.



23. REMOVE NO.1 BALANCESHAFT SUB–ASSY

(a) Remove the 2 bolts, balance shaft No.1.



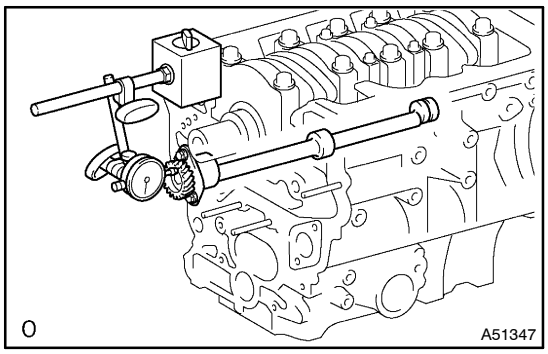
24. REMOVE BALANCESHAFT DRIVEN GEAR NO.1

(a) Mount the weight of the balance shaft in a vise.

NOTICE:

Be careful not to damage the balanceshaft.

(b) Remove the bolt, balanceshaft driven gear No.1 and balanceshaft thrust washer.



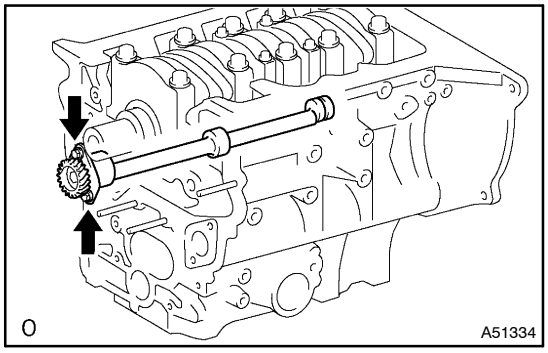
25. INSPECT NO.2 BALANCESHAFT SUB–ASSY

(a) Using a dial indicator, measure the thrust clearance while moving the balance shaft back and forth.

Standard thrust clearance:
0.065 – 0.140 mm (0.0026 – 0.0055 in.)
Maximum thrust clearance: 0.25 mm (0.0098 in.)

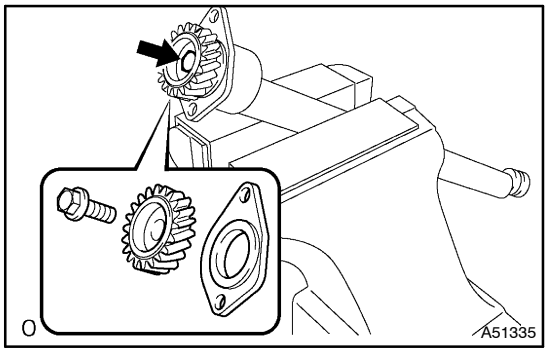
If the thrust clearance is greater than maximum, replace the balance shaft thrust washer.

If necessary, replace the balance shaft.



26. REMOVE NO.2 BALANCESHAFT SUB–ASSY

(a) Remove the 2 bolts, balanceshaft No.2.



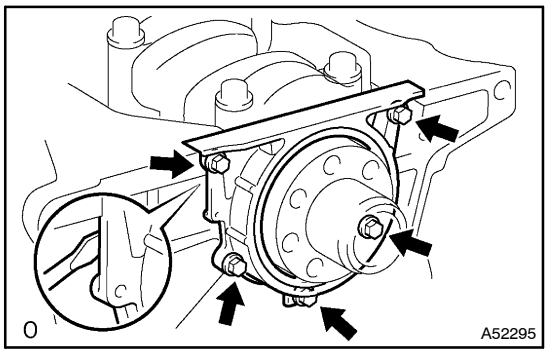
27. REMOVE BALANCESHAFT DRIVEN GEAR NO.2

(a) Mount the weight of the balance shaft in a vise.

NOTICE:

Be careful not to damage the balanceshaft.

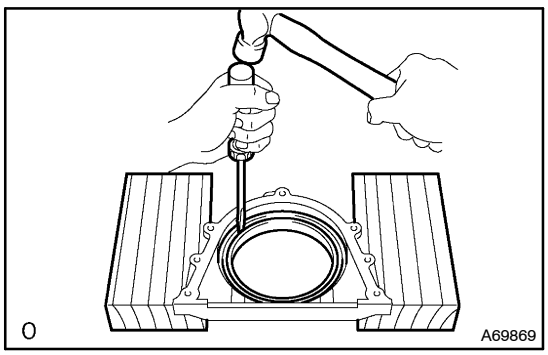
(b) Remove the bolt, balanceshaft driven gear No.2 and balanceshaft thrust washer.



28. REMOVE ENGINE REAR OIL SEAL RETAINER

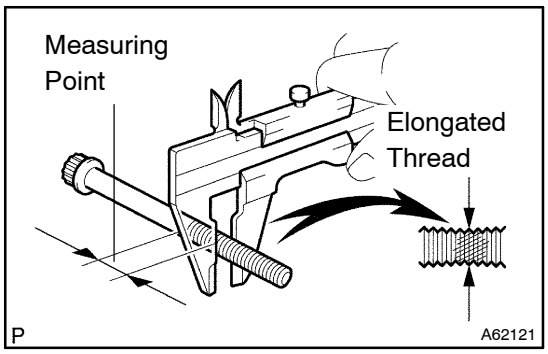
(a) Remove the 5 bolts.

(b) Using a screwdriver, remove the engine rear oil seal retainer by prying the portions between the engine rear oil seal retainer and cylinder block.



29. REMOVE ENGINE REAR OIL SEAL

(a) Using a screwdriver and a hammer, tap out the oil seal.



30. INSPECT CYLINDER HEAD SET BOLT

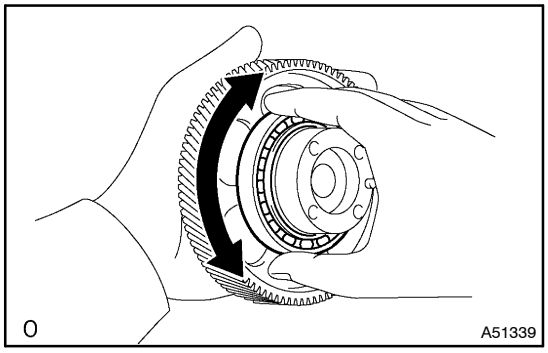
(a) Using vernier calipers, measure the minimum outer diameter of the compressed thread at the measuring point.

Standard outer diameter:

13.500 – 14.000 mm (0.5315 – 0.5512 in.)

Minimum outer diameter: 12.60 mm (0.4961 in.)

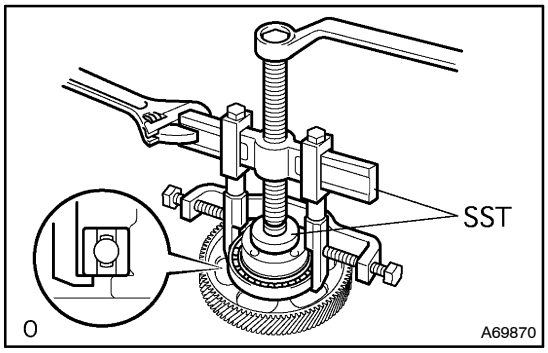
If the outer diameter is less than minimum, replace the bolt.



31. INSPECT INJECTION GEAR

(a) Check that bearing is not rough or worn.

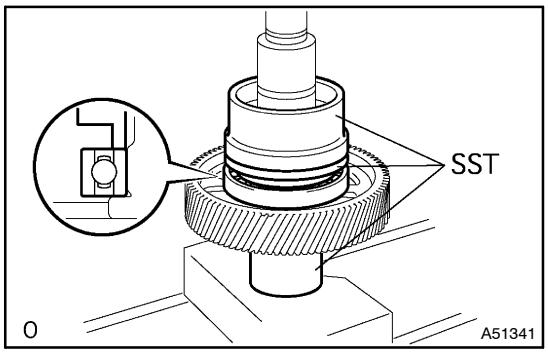
If necessary, replace the bearing.



32. REPLACE INJECTION GEAR BEARING

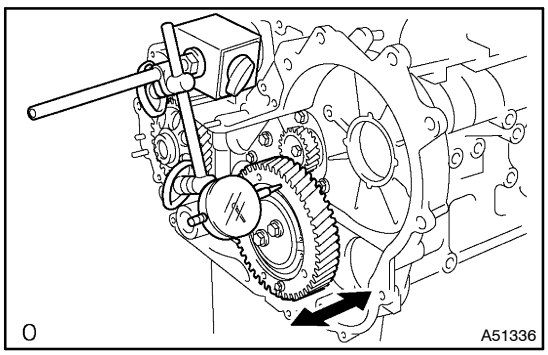
(a) Using SST, remove the bearing.

SST 09950–40011 (09951–04020, 09952–04010, 09953–04030, 09954–04010, 09955–04061, 09957–04010, 09958–04011), 09950–60010 (09951–00480)



(b) Using SST and press, press in a new bearing.

SST 09223–00010, 09223–15020, 09502–12010

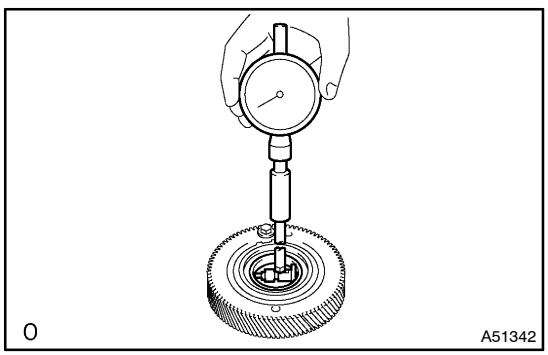


33. INSPECT IDLE GEAR NO.1

(a) Using a dial indicator, measure the thrust clearance.

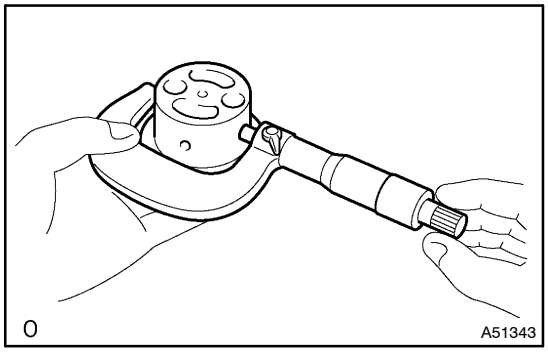
Standard thrust clearance:
0.06 – 0.11 mm (0.0024 – 0.0043 in.)
Maximum thrust clearance: 0.30 mm (0.0118 in.)

If the thrust clearance is greater than maximum, replace the thrust plate. If necessary, replace the idler gear and/or idler gear shaft.



(b) Using a cylinder gauge, measure the inside diameter of the idler gear.

Idler gear inside diameter:
44.000 – 44.025 mm (1.7323 – 1.7333 in.)



(c) Using a micrometer, measure the diameter of the idler gear shaft.
Idler gear shaft diameter:
43.950 – 43.970 mm (1.7303 – 1.7311 in.)

(d) Subtract the idler gear shaft diameter measurement from the idler inside diameter measurement.
Standard oil clearance:
0.010 – 0.070 mm (0.0004 – 0.0028 in.)
Maximum oil clearance: 0.20 mm (0.0079 in.)

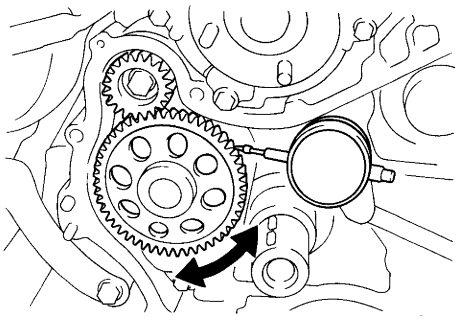
If the clearance is greater than maximum, replace the gear and shaft.

34. INSPECT BACKLASH

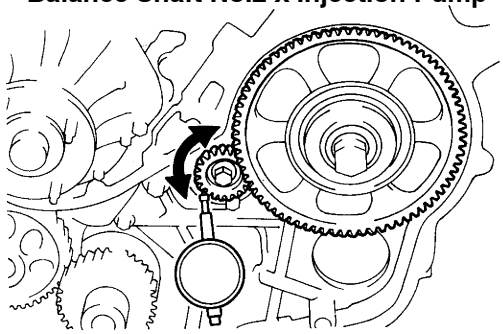
(a) Using a dial indicator, measure the backlash.
Standard gear backlash:
0.02 – 0.15 mm (0.0008 – 0.0060 in.)
Maximum gear backlash: 0.20 mm (0.0079 in.)

If the gear backlash is greater than maximum, replace the gears as a set.

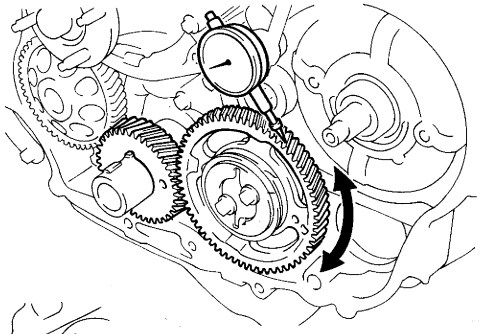
Balance Shaft No.1 x Oil Pump



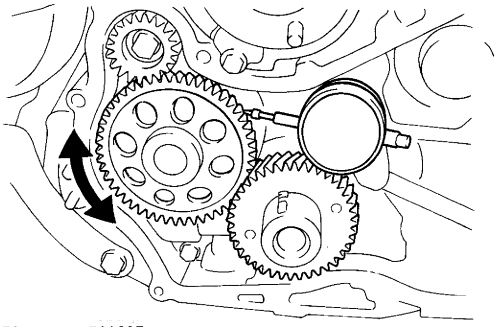
Balance Shaft No.2 x Injection Pump



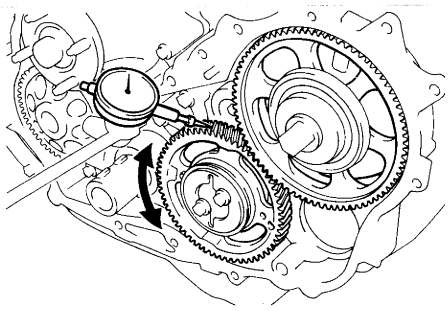
Crankshaft x Idler



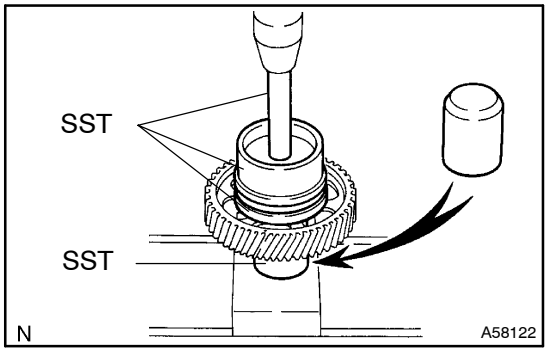
Oil Pump x Crankshaft



Injection Pump x Idler

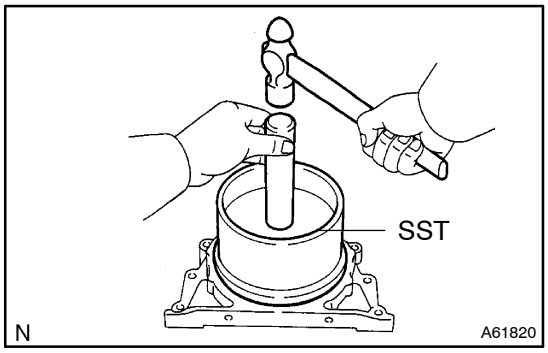


P11653 P11695
P11652 P11671 P11670
A69837



35. INSTALL INJECTION GEAR BEARING

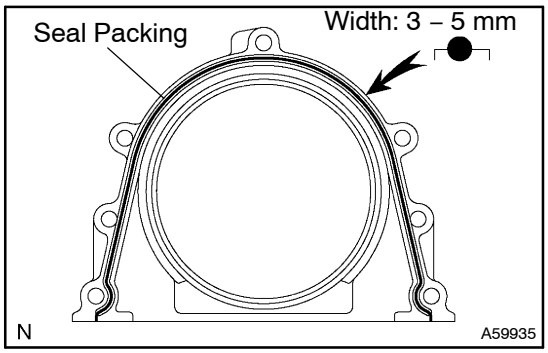
(a) Using SST and a press, press in a new bearing.
SST 09223–00010, 09223–15020, 09502–12010, 09950–70010 (09951–07100)



36. INSTALL ENGINE REAR OIL SEAL

(a) Using SST and a hammer, tap in a new oil seal until its surface is flush with the rear oil seal retainer edge.
SST 09223–15030, 09950–70010 (09951–07100)

(b) Apply MP grease to the oil seal lip.

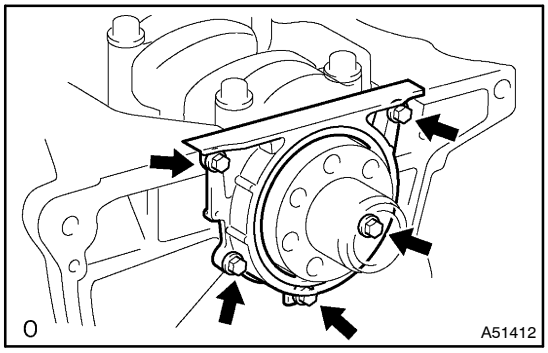


37. INSTALL ENGINE REAR OIL SEAL RETAINER

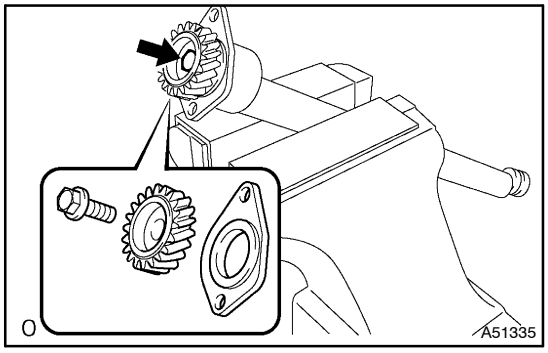
(a) Apply seal packing to the rear oil seal retainer as shown in the illustration.
Seal packing: Part No. 08826–00080 or equivalent

NOTICE:

- **Avoid applying an excessive amount to the surface.**
- **Install a nozzle that has been cut to a 2 – 3 mm (0.08 – 0.12 in.) opening.**
- **Parts must be assembled within 15 minutes of application. Otherwise the material must be removed and reapplied.**
- **Immediately remove nozzle from the tube and reinstall the cap.**



(b) Install the retainer with the 5 bolts.
Torque: 13 N·m (133 kgf·cm, 10 ft·lbf)



38. INSTALL BALANCESHAFT DRIVEN GEAR NO.2

(a) Mount the weight of the balance shaft in a vise.

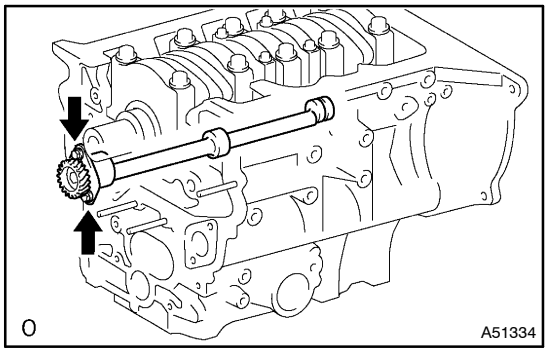
NOTICE:

Be careful not to damage the balance shafts.

(b) Align the balanceshaft knock pin with the knock pin hole of the balance shaft driven gear No.2, install the balanceshaft thrust washer and balanceshaft driven gear No.2.

(c) Install and torque the bolt.

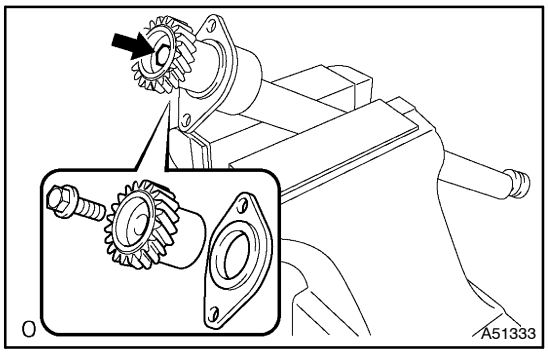
Torque: 36 N·m (367 kgf·cm, 27 ft·lbf)



39. INSTALL NO.2 BALANCESHAFT SUB–ASSY

(a) Install the balanceshaft No.2 with the 2 bolts.

Torque: 8 N·m (85 kgf·cm, 74 in·lbf)



40. INSTALL BALANCESHAFT DRIVEN GEAR NO.1

(a) Mount the weight of the balance shaft in a vise.

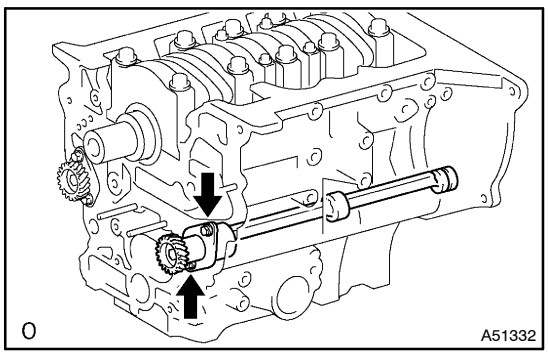
NOTICE:

Be careful not to damage the balance shafts.

(b) Align the balanceshaft knock pin with the knock pin hole of the balance shaft driven gear No.1, install the balanceshaft thrust washer and balanceshaft driven gear No.1.

(c) Install and torque the bolt.

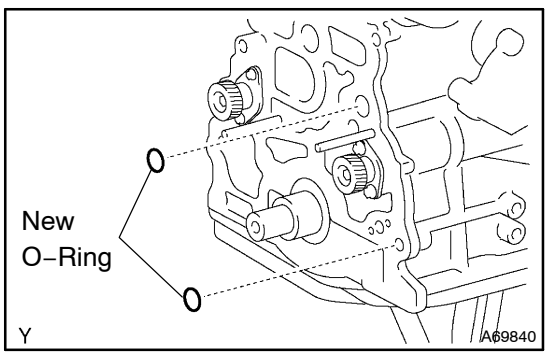
Torque: 36 N·m (367 kgf·cm, 27 ft·lbf)



41. INSTALL NO.1 BALANCESHAFT SUB–ASSY

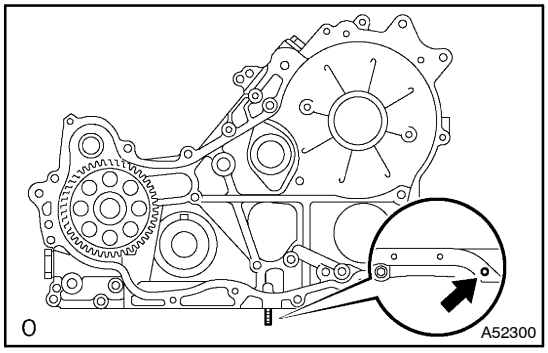
(a) Install the balanceshaft No.1 with the 2 bolts.

Torque: 8 N·m (85 kgf·cm, 74 in·lbf)

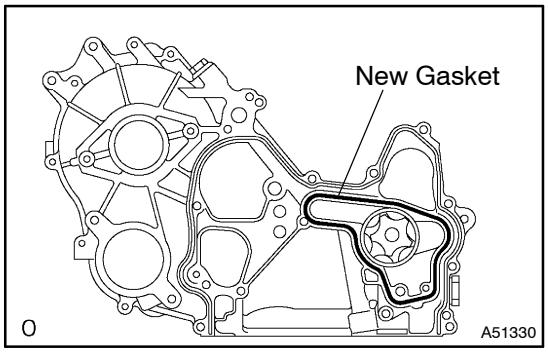


42. INSTALL TIMING GEAR CASE ASSY

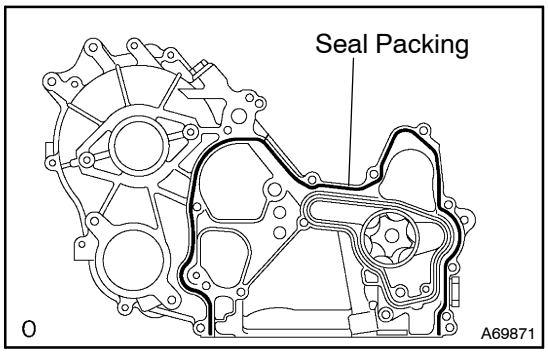
(a) Install 2 new O–rings to the cylinder block.



(b) Install the stud bolt.
Torque: 8.0 N·m (82 kgf·cm, 71 in.·lbf)



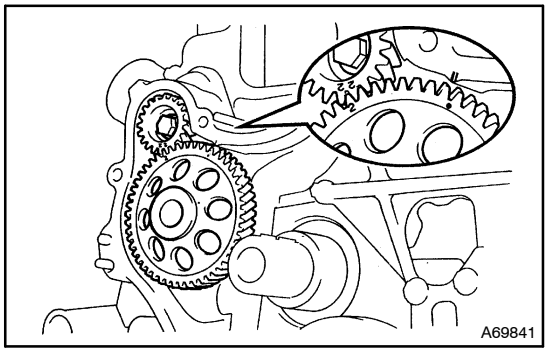
(c) Place a new gasket into the groove of the timing gear case as shown in the illustration.



(d) Apply seal packing to the timing gear case as shown in the illustration.
Seal packing: part No. 08826 – 00080 or equivalent

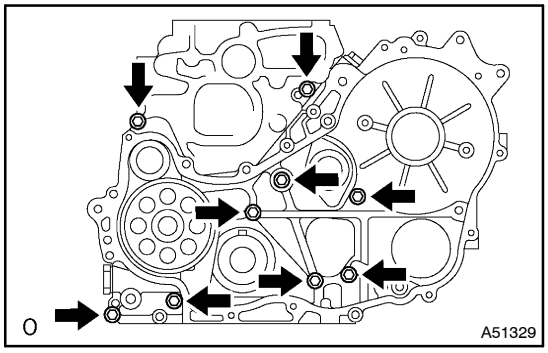
NOTICE:

- **Avoid applying an excessive amount to the surface.**
- **Install a nozzle that has been cut to a 5 mm (0.20 in.) opening.**
- **Parts must be assembled within 15 minutes of application. Otherwise the material must be removed and reapplied.**
- **Immediately remove nozzle from the tube and reinstall the cap.**

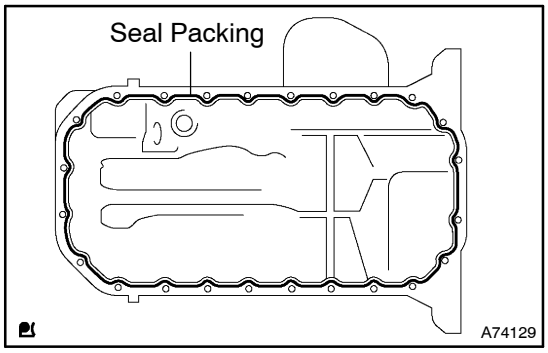


(e) The matchmark on the balanceshaft driven gear No.1 should be aligned with the ”2” mark.

(f) Align the mark on the oil pump drive gear with the mark on the timing gear case.



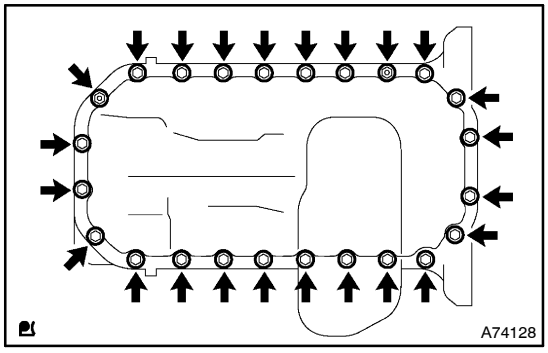
(g) Install the 8 bolts and union bolt.
Torque:
13 N·m (130 kgf·cm, 9 ft·lbf) for Bolt
16 N·m (160 kgf·cm, 12 ft·lbf) for Union bolt



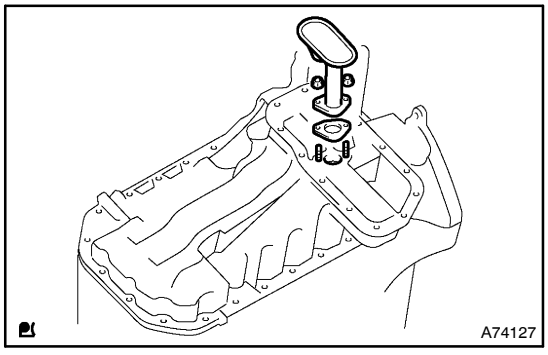
43. INSTALL OIL PAN SUB–ASSY

(a) Apply seal packing to the oil pan as shown in the illustration.
Seal packing: Part No. 08826–00080 or equivalent

NOTICE:
- **Avoid applying an excessive amount to the surface.**
- **Install a nozzle that has been cut to a 5 mm (0.20 in.) opening.**
- **Parts must be assembled within 15 minutes of application. Otherwise the material must be removed and reapplied.**
- **Immediately remove nozzle from the tube and reinstall the cap.**



(b) Install the oil pan and new gasket with the 22 bolts and 2 nut.
Torque: 14.5 N·m (148 kgf·cm, 11 ft·lbf)

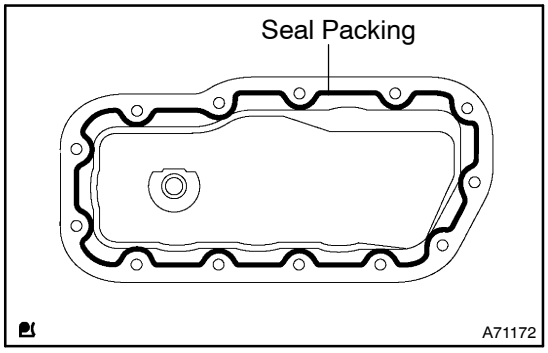


44. INSTALL OIL STRAINER SUB–ASSY

(a) Install a new gasket and the oil strainer with the 2 nuts.
Torque: 8.0 N·m (82 kgf·cm, 71 in.·lbf)

45. INSTALL OIL PAN DRAIN PLUG

(a) Install the plug with a new gasket.
Torque: 34 N·m (347 kgf·cm, 25 ft·lbf)



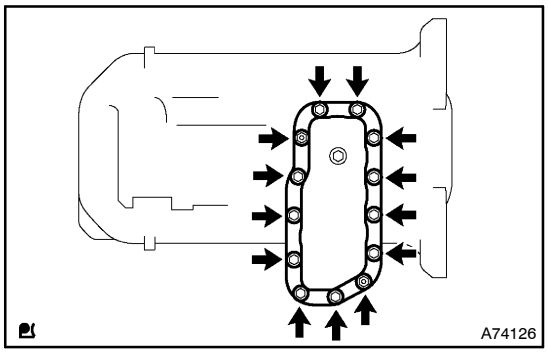
46. INSTALL OIL PAN SUB–ASSY NO.2

(a) Apply seal packing to the oil pan as shown in the illustration.

Seal packing: Part No. 08826–00080 or equivalent

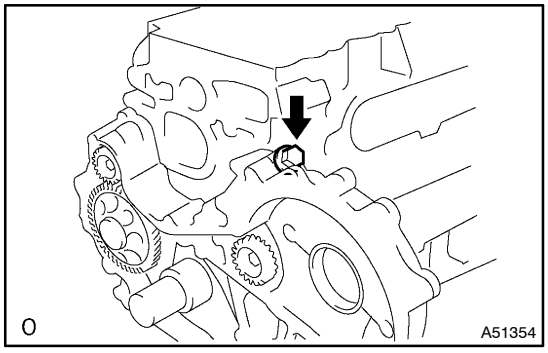
NOTICE:

- **Avoid applying an excessive amount to the surface.**
- **Install a nozzle that has been cut to a 5 mm (0.20 in.) opening.**
- **Parts must be assembled within 15 minutes of application. Otherwise the material must be removed and reapplied.**
- **Immediately remove nozzle from the tube and reinstall the cap.**

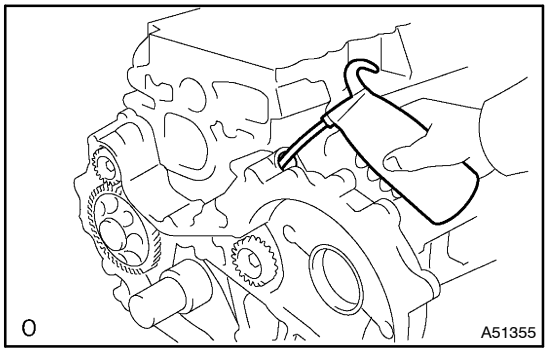


(b) Install the oil pan with the 11 bolts and 2 nut.

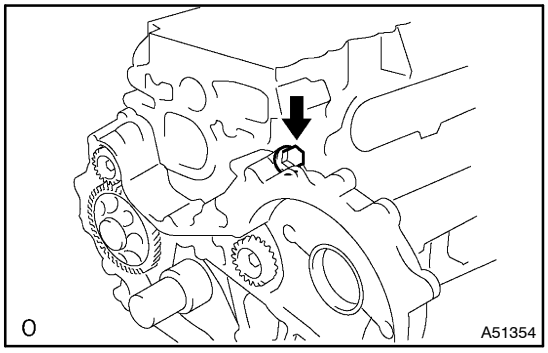
Torque: 9 N·m (92 kgf·cm, 80 in.·lbf)



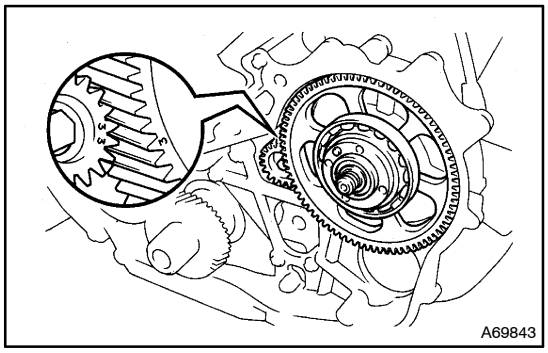
(c) Remove the plug and gasket.



(d) Pour in approx. 1.3 litters (1.4 US qts, 1.1 Imp. qts) of engine oil into the oil pump.

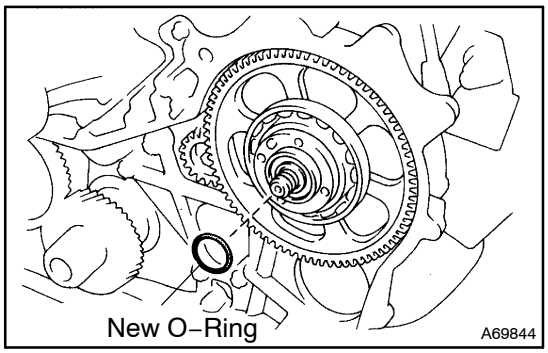


(e) Install the plug with a new gasket.
Torque: 44 N·m (449 kgf·cm, 33 ft·lbf)

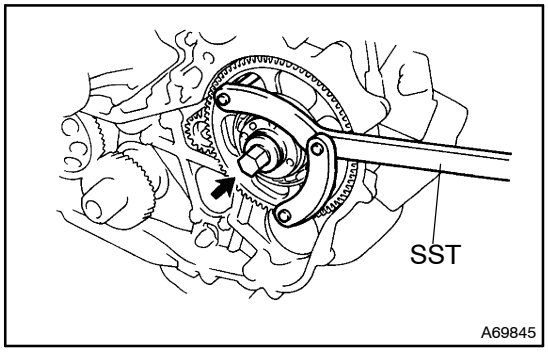


47. INSTALL INJECTION GEAR

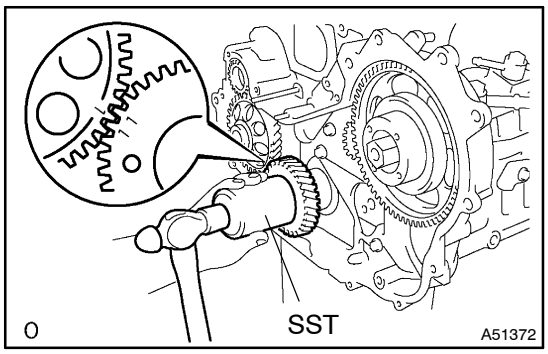
(a) The match marks on the balanceshaft driven gear No.2 should be aligned with ”3” marks.



(b) Install a new O–ring to the injection gear.

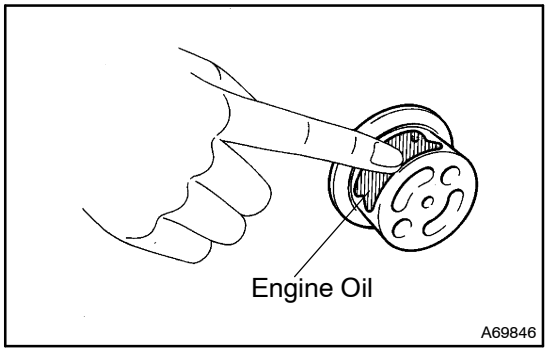


(c) Install the injection gear set nut.
(d) Using SST, torque the nut.
SST 09960–10010 (09962–01000, 09963–01000)
Torque: 64 N·m (650 kgf·cm, 47 ft·lbf)



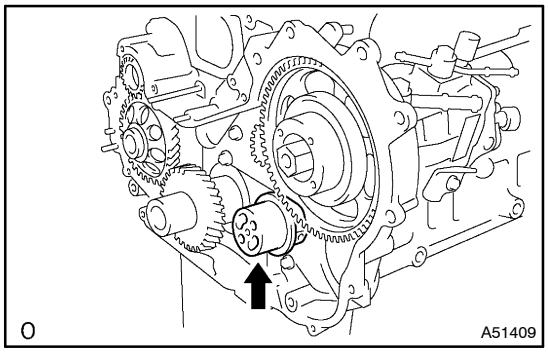
48. INSTALL CRANKSHAFT TIMING GEAR OR SPROCKET

(a) The matchmarks on the oil pump drive gear should be aligned with ”1” marks.
(b) Using SST and a hammer, tap in the timing gear.
SST 09223–00010

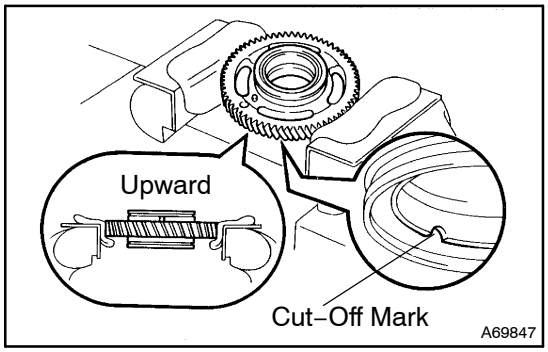


49. INSTALL IDLE GEAR SHAFT NO.1

(a) Coat the idler gear shaft No.1 with engine oil as shown in the illustration.



(b) Install the idler gear shaft No.1 to the cylinder block.



50. INSTALL IDLE SUB GEAR NO.2

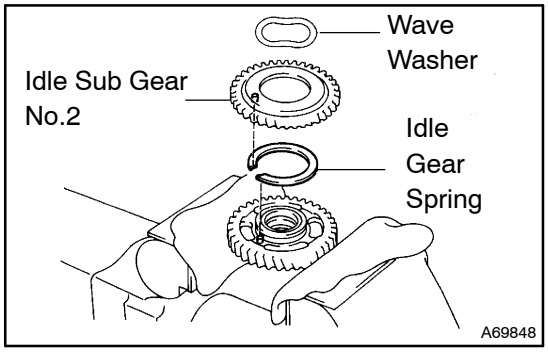
(a) Mount the idle gear No.1 in a vise.

HINT:

Install the idle gear No.1 with the cut–off mark facing downward.

NOTICE:

Be careful not to damage the gear.



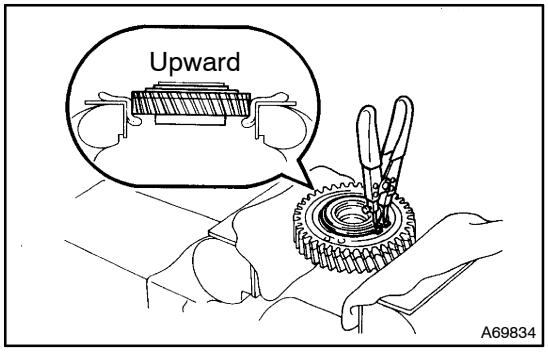
(b) Install the idle gear spring.

(c) Install the No.2 idle sub–gear.

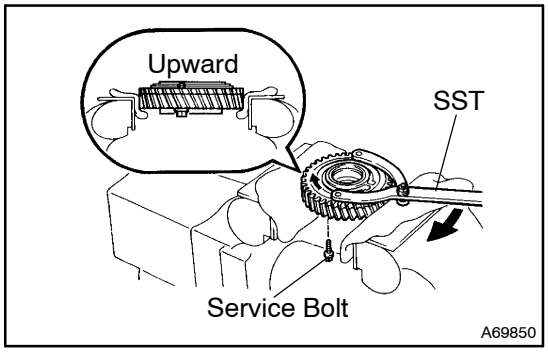
(d) Install the wave washer.

HINT:

Align the pins on the gears with the spring ends.

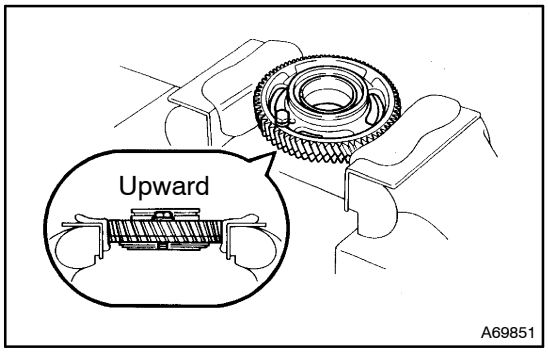


(e) Using snap ring pliers, install the snap ring.



(f) Using SST, align the holes of the idle gear No.1 and idle sub gear No.2 by turning the idle sub gear No.2 clockwise, and install a service bolt.
SST 09960–10010 (09962–01000, 09963–00600)

(g) Remove the idle gear No.1 from the vice and turn it upside down.

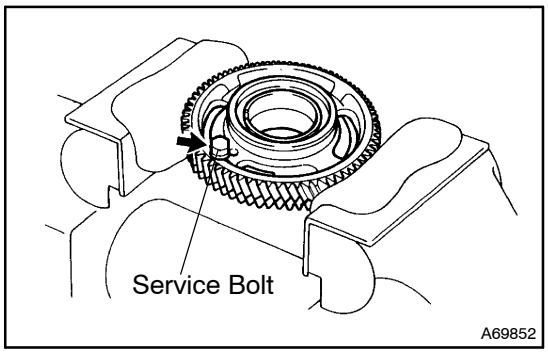


51. INSTALL IDLE SUB GEAR NO.1

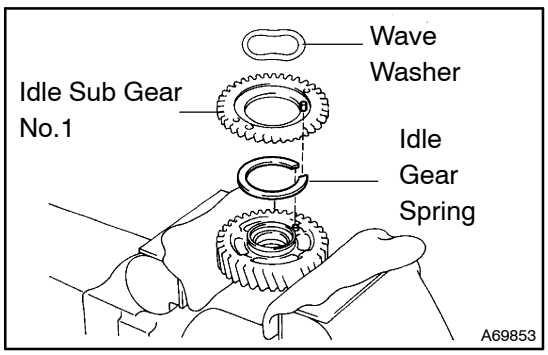
(a) Mount the idle gear No.1 and idle sub gear No.2 in a vise.

NOTICE:

Be careful not to damage the gears.



(b) Remove the service bolt.



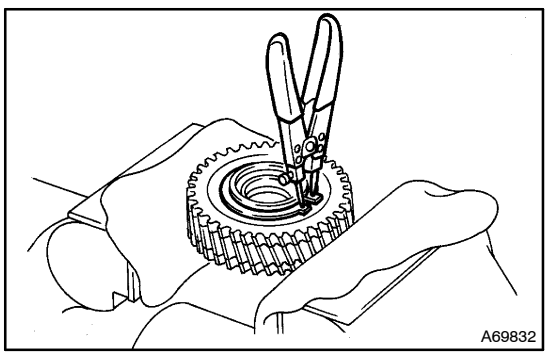
(c) Install the idle gear spring.

(d) Install the idle sub gear No.1.

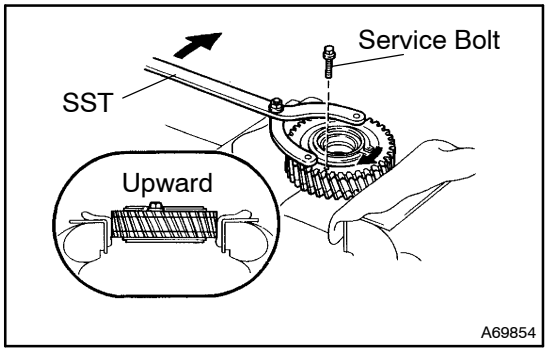
(e) Install the wave washer.

HINT:

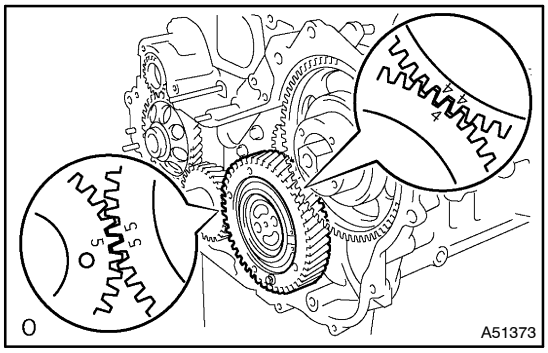
Align the pins on the gears with the spring ends.



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

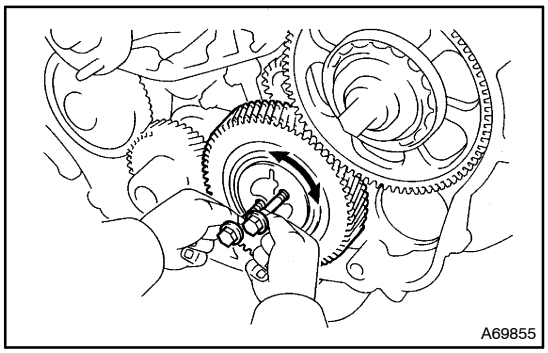


(g) Using SST, align the holes of the idler gear No.1 and idle sub gear No.1 by turning the idle sub gear No.1 clockwise, and install a service bolt.
SST 09960–10010 (09962–01000, 09963–00600)



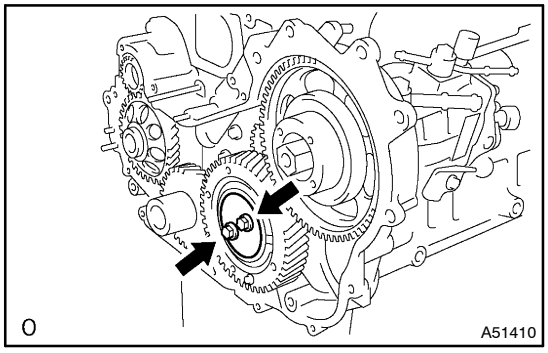
52. INSTALL IDLE GEAR NO.1

(a) Align the idler gear No.1 timing marks ”5” and ”4” with the crankshaft timing gear mark ”5” and injection gear timing mark ”4” respectively, and mesh the gears.

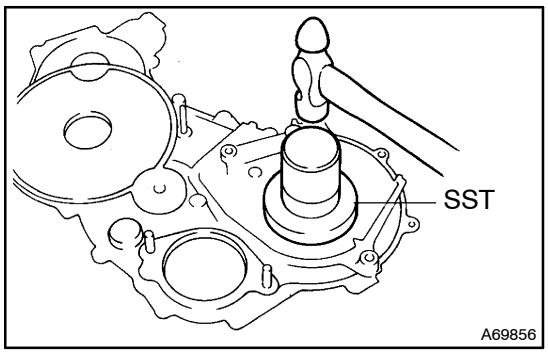


53. INSTALL IDLE GEAR THRUST PLATE

(a) Align the idle gear thrust plate set bolt holes.



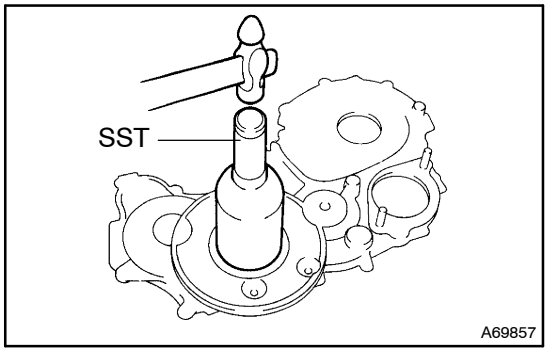
(b) Install the idle gear thrust plate with the 2 bolts. Torque the bolts.
Torque: 50 N·m (510 kgf·cm, 37 ft·lbf)



54. INSTALL TIMING GEAR COVER OIL SEAL

(a) Using SST and a hammer, tap in a new oil seal until its surface is flush with the timing gear case edge.
SST 09223–78010

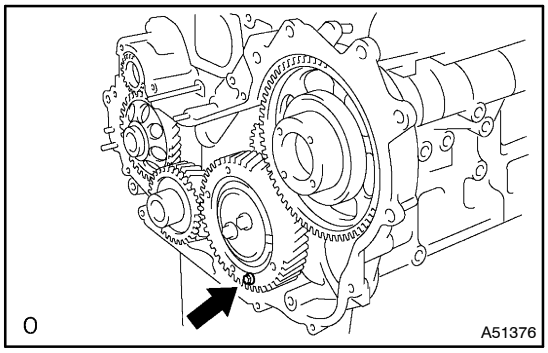
(b) Apply MP grease to the oil seal lip.



55. INSTALL TIMING GEAR CASE OR TIMING CHAIN CASE OIL SEAL

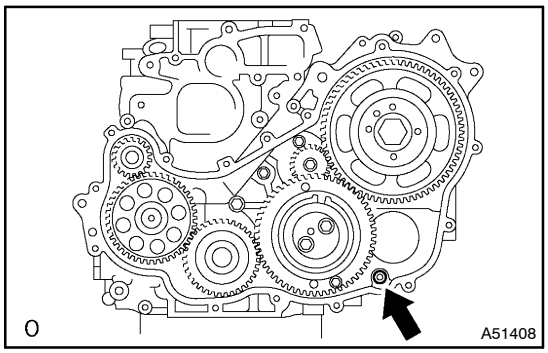
(a) Using SST and a hammer, tap in a new oil seal until its surface is flush with the timing gear case edge.
SST 09214–76011

(b) Apply MP grease to the oil seal lip.

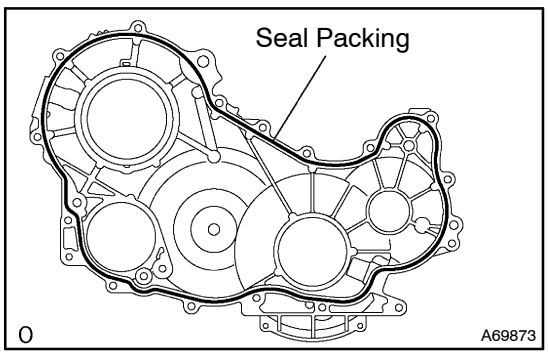


56. INSTALL TIMING GEAR CASE

(a) Remove the service bolt.



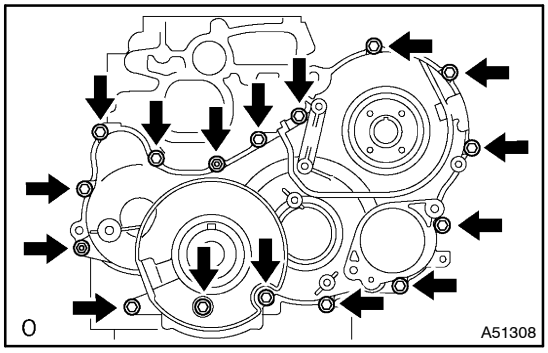
(b) Install a new O–ring to the timing gear case.



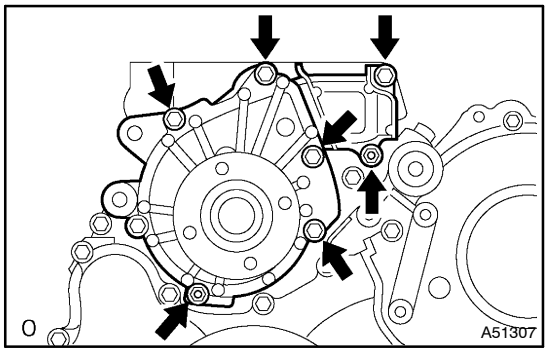
(c) Apply seal packing to the timing gear case as shown in the illustration.
Seal packing: Part No. 08826–00080 or equivalent

NOTICE:

- **Avoid applying an excessive amount to the surface.**
- **Install a nozzle that has been cut to a 5 mm (0.20 in.) opening.**
- **Parts must be assembled within 15 minutes of application. Otherwise the material must be removed and reapplied.**
- **Immediately remove nozzle from the tube and reinstall cap.**

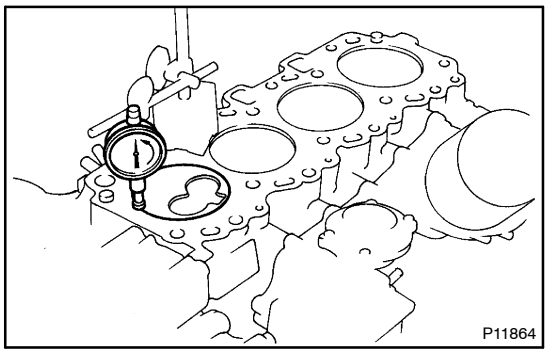


(d) Install the timing gear case with the 14 bolts and 2 nuts.
Torque: 13 N·m (133 kgf·cm, 10 ft·lbf)



57. INSTALL WATER PUMP ASSY

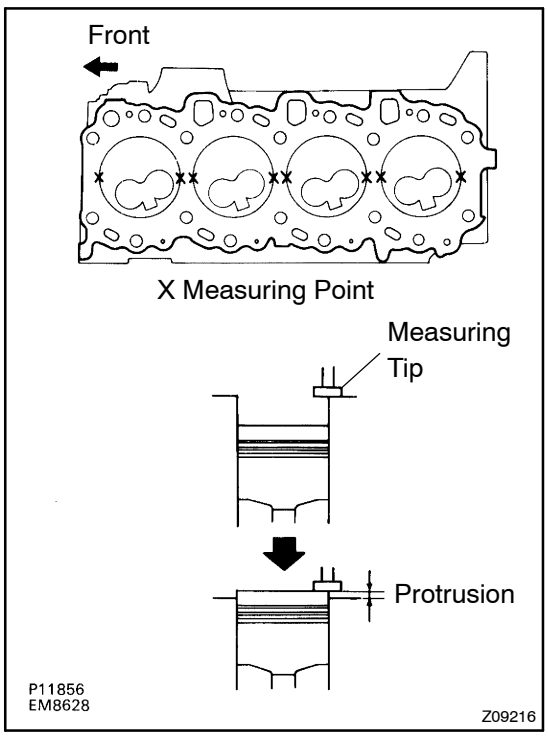
(a) Install the 5 bolts, 2 nuts, water pump and gasket.

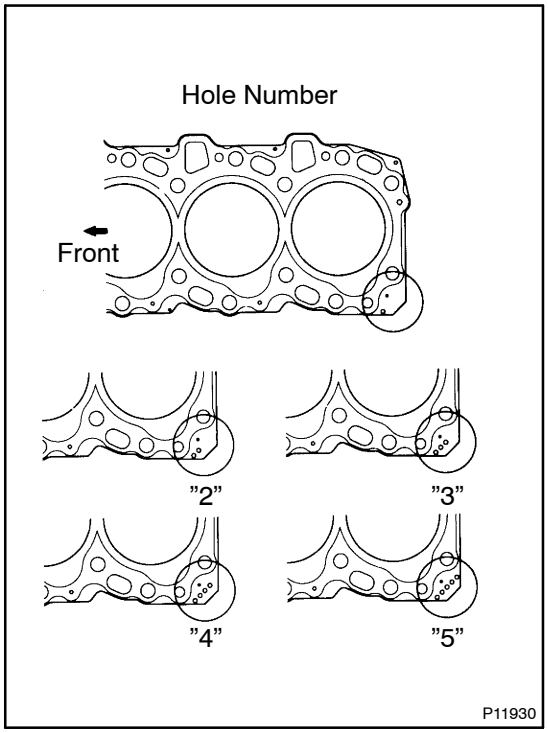


58. INSTALL CYLINDER HEAD SUB–ASSY

(a) Check the piston protrusions for each cylinder.
(1) Find where the piston head protrudes most by slowly turning the crankshaft clockwise and counterclockwise.
(2) Measure each cylinder at 2 places as shown in the illustration, making a total of 8 measurement.
(3) For the piston protrusion value of each cylinder, use the average of the 2 measurements of each cylinder.

Protrusion: 0.08 – 0.33 mm (0.0031 – 0.0130 in.)





(b) Select a new cylinder head gasket.

HINT:

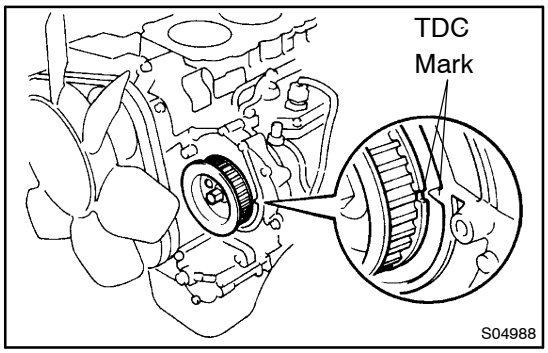
There are 5 types of cylinder head gasket (hole number 1 to 5) installed at factory, but only 3 types for supply parts (hole number ”1”, ”3” and ”5”), so when replacing the gasket select from one of 3 types above.

Installed cylinder head gasket thickness:

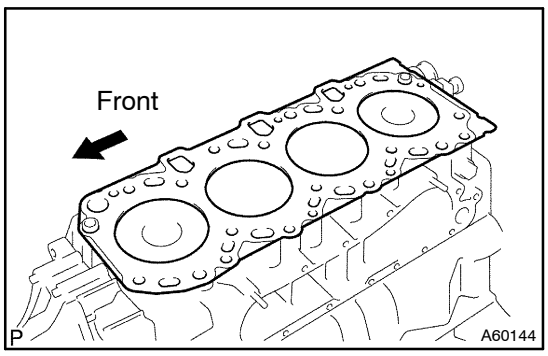
Hole number ”1”	0.80 – 0.90 mm (0.0315 – 0.0354 in.)
Hole number ”3”	0.90 – 1.00 mm (0.0354 – 0.0394 in.)
Hole number ”5”	1.00 – 1.10 mm (0.0394 – 0.0433 in.)

Select the largest piston protrusion value from the measurements made, then select the appropriate cylinder head gasket according to the table below.

Piston protrusion mm (in.)	Gasket size
0.08 – 0.12 (0.0031 – 0.0047)	Use ”1”
0.13 – 0.22 (0.0051 – 0.0087)	Use ”3”
0.23 – 0.33 (0.0091 – 0.0130)	Use ”5”



(c) Turn the crankshaft pulley, and align the TDC mark of the timing gear cover with the No. 2 camshaft timing pulley.



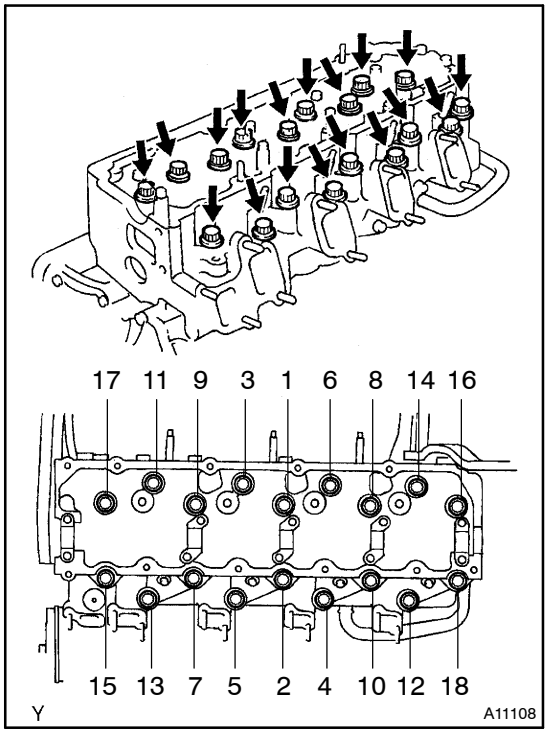
(d) Place the cylinder head on the cylinder block.

(1) Place the cylinder head gasket in position on the cylinder block.

NOTICE:

Be careful of the installation direction.

(2) Place the cylinder head in position on the cylinder head gasket.



(e) Install the cylinder head bolts.

HINT:

- The cylinder head bolts are tightened in 3 progressive steps (steps (2), (4) and (5)).
- If any bolts is broken or deformed, replace it.

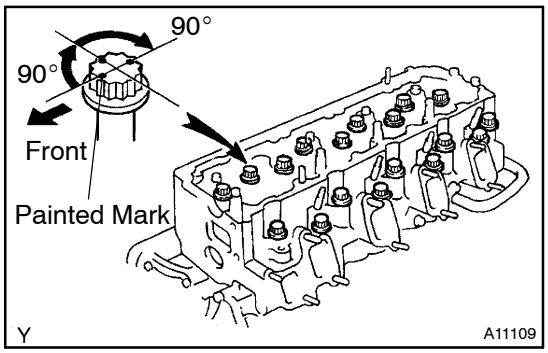
(1) Apply a light coat of engine oil on the threads and under the heads of the cylinder head bolts.

(2) Install and uniformly tighten the 18 cylinder head bolts, in several passes in the sequence shown.

Torque: 40 N·m (408 kgf·cm, 30 ft·lbf)

HINT:

If any one of the cylinder head bolts does not meet the torque specification, replace the cylinder head bolt.

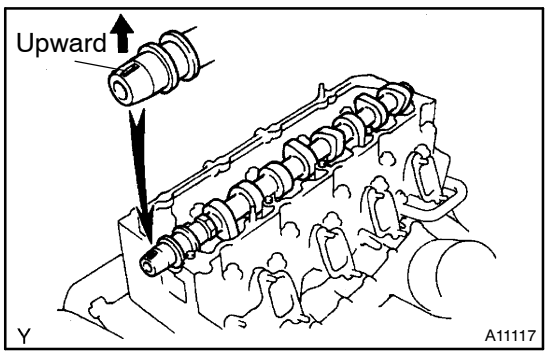


(3) Mark the front of the cylinder head bolt with paint.

(4) Retighten the cylinder head bolts 90° in the numerical order shown.

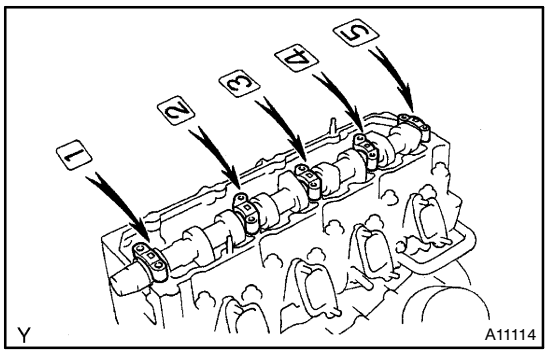
(5) Retighten cylinder head bolts by an additional 90°.

(6) Check that the painted mark is now facing rearward.

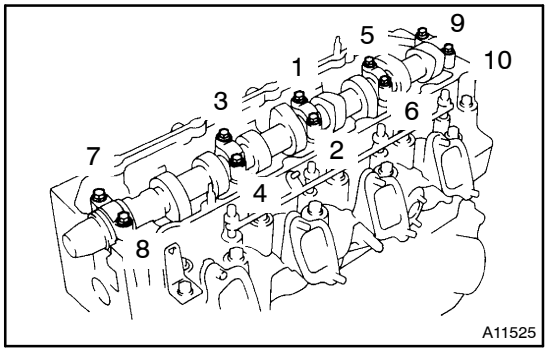


59. INSTALL CAMSHAFT

(a) Place the camshaft on the cylinder head, facing the key groove upward.



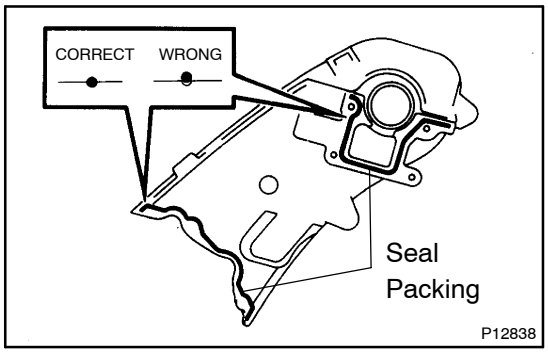
(b) Install the 5 bearing caps in their proper locations.



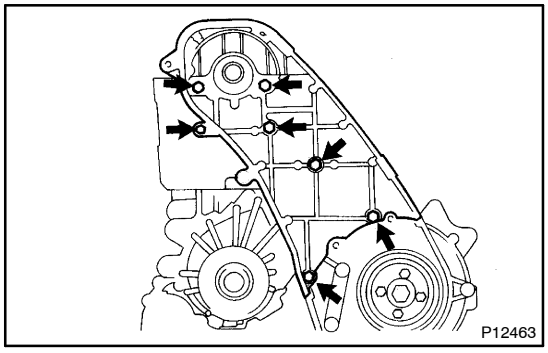
(c) Install and uniformly tighten the 10 bearing cap bolts, in several passes, in the sequence shown.
Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)

60. INSTALL CAMSHAFT OIL SEAL RETAINER

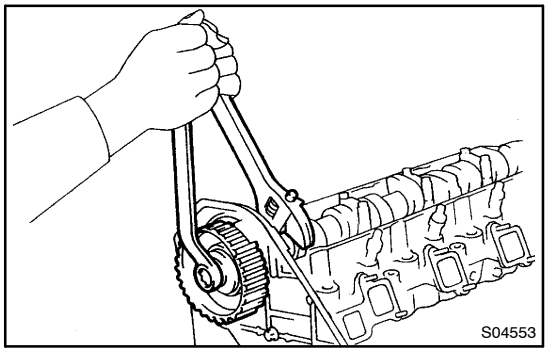
(a) Remove any old packing (FIGP) material and be careful not to drop any oil on the contact surfaces of timing gear cover and camshaft oil seal retainer.
(1) Using a razor blade and basket scraper, remove all the old packing (FIPG) material from the gasket surfaces and sealing groove.
(2) Thoroughly clean all components to remove all the loose material.
(3) Using a non–residue solvent, clean both sealing surfaces.



(b) Apply seal packing to camshaft oil seal retainer as shown in the illustration.
Seal packing: Part No. 08826–00080 or equivalent
(1) Parts must be assembled within 5 minutes of application. Otherwise the material must be removed and reapplied.
(2) Immediately remove nozzle from the tube and reinstall cap.

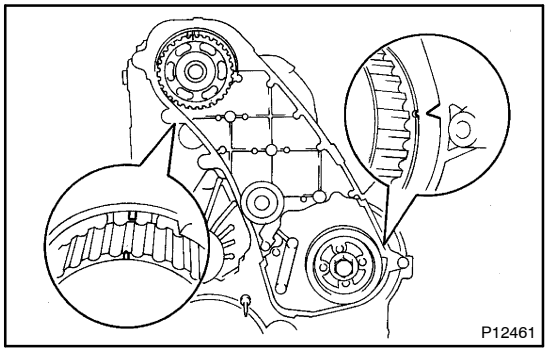


(c) Install the camshaft oil seal retainer with the 7 bolts.
Torque: 10 N·m (102 kgf·cm, 7 ft·lbf)



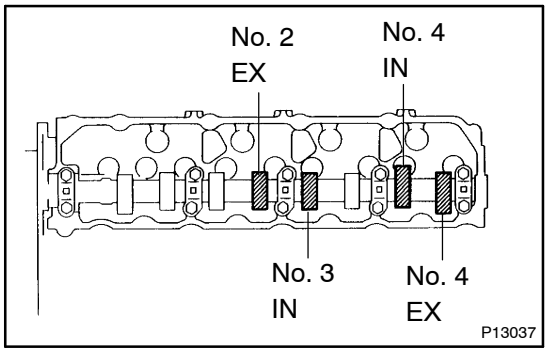
61. INSTALL CAMSHAFT TIMING PULLEY

(a) Install the set key to the key groove of the camshaft.
(b) Align the set key with the key groove of the timing pulley.
(c) Hold the hexagon wrench head portion of the camshaft, and install the timing pulley with the bolt.
Torque: 98 N·m (1,000 kgf·cm, 72 ft·lbf)



62. INSPECT VALVE CLEARANCE

(a) Set the camshaft timing pulley at each position.

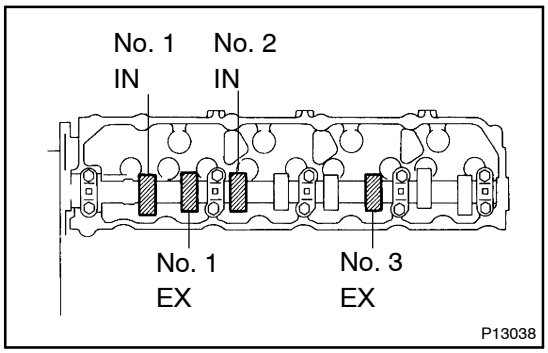


(b) Check only the valve indicated.

(1) Using a feeler gauge, measure the clearance between the valve lifter and camshaft.

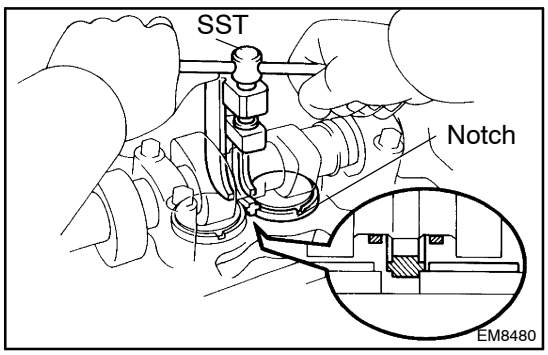
(2) Record the out–of–specification valve clearance measurements. They will be sued later to determine the required replacement valve lifter.

Valve clearance (cold):
Intake 0.20 – 0.30 mm (0.008 – 0.012 in.)
Exhaust 0.25 – 0.35 mm (0.010 – 0.014 in.)



(c) Turn the crankshaft pulley one revolution (360°) and align the mark as above (See procedure (a)).

(d) Check only the valves indicated as shown. Measure the valve clearance (See procedure (b) above).



63. ADJUST VALVE CLEARANCE

(a) Remove the adjusting shim.

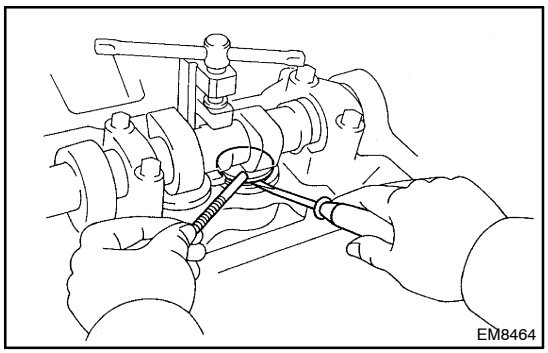
(1) Turn the camshaft to position the cam lob of the camshaft on the adjusting valve upward.

(2) Using SST, press down the valve lifter.

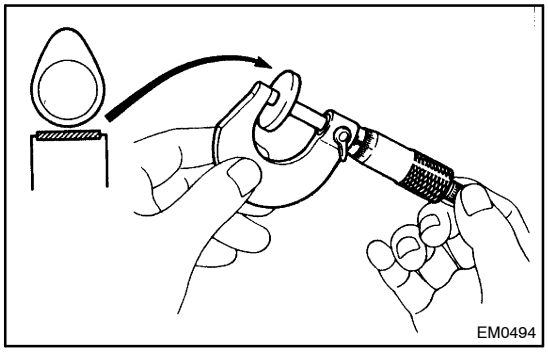
SST 09248–64011

HINT:

Before pressing down the valve lifter, position the notch on the exhaust manifold side.



(3) Remove the adjusting shim with a small screwdriver and magnetic finger.


EM0494

(b) Determine the replacement adjusting shim size by following the Formula or Charts:

(1) Using a micrometer, measure the thickness of the removed shim.

(2) Calculate the thickness of a new shim so that the valve clearance comes within specified value.

T ..... Thickness of removed shim
A ..... Measured valve clearance
N ..... Thickness of new shim

Intake	N = T + (A – 0.25 mm (0.010 in.))
Exhaust	N = T + (A – 0.40 mm (0.016 in.))

(3) Select a new shim with a thickness as close as possible to the calculated value.

HINT:
Shims are available in 17 sizes in increments of 0.050 mm (0.0020 in.), from 2.500 mm (0.0984 in.) to 3.300 mm (0.1299 in.).

Adjusting Shim Selection Using Chart (Intake)

Installed shim thickness mm (in.)

Measured clearance mm (in.)	2.500 (0.0984)	2.520 (0.0992)	2.540 (0.1000)	2.550 (0.1004)	2.560 (0.1008)	2.580 (0.1016)	2.600 (0.1024)	2.620 (0.1031)	2.640 (0.1039)	2.650 (0.1043)	2.660 (0.1047)	2.680 (0.1055)	2.700 (0.1063)	2.720 (0.1071)	2.740 (0.1079)	2.750 (0.1083)	2.760 (0.1087)	2.780 (0.1094)	**2.800 (0.1102)**	2.820 (0.1110)	2.840 (0.1118)	2.850 (0.1122)	2.860 (0.1126)	2.880 (0.1134)	2.900 (0.1142)	2.920 (0.1150)	2.940 (0.1157)	2.950 (0.1161)	2.960 (0.1165)	2.980 (0.1173)	3.000 (0.1181)	3.020 (0.1189)	3.040 (0.1197)	3.050 (0.1201)	3.060 (0.1205)	3.080 (0.1213)	3.100 (0.1220)	3.120 (0.1228)	3.140 (0.1236)	3.150 (0.1240)	3.160 (0.1244)	3.180 (0.1252)	3.200 (0.1260)	3.220 (0.1268)	3.240 (0.1276)	3.250 (0.1280)	3.260 (0.1283)	3.280 (0.1291)	3.300 (0.1299)
0.000 – 0.020 (0.0000 – 0.0008)													01	01	01	01	01	42	42	06	06	06	06	43	43	11	11	11	11	44	44	16	16	16	16	45	45	21	21	21	21	46	46	26	26	26	26	47	47
0.021 – 0.040 (0.0008 – 0.0016)												01	01	01	01	42	42	42	06	06	06	43	43	43	11	11	11	44	44	44	16	16	16	45	45	45	21	21	21	46	46	46	26	26	26	47	47	47	31
0.041 – 0.060 (0.0016 – 0.0024)										01	01	01	01	01	42	42	42	06	06	06	43	43	43	11	11	11	44	44	44	16	16	16	45	45	45	21	21	21	46	46	46	26	26	26	47	47	47	31	31
0.061 – 0.080 (0.0024 – 0.0031)									01	01	01	01	01	42	42	42	06	06	06	43	43	43	11	11	11	44	44	44	16	16	16	45	45	45	21	21	21	46	46	46	26	26	26	47	47	47	31	31	31
0.081 – 0.100 (0.0032 – 0.0039)								01	01	01	01	01	42	42	06	06	06	06	43	43	11	11	11	11	44	44	16	16	16	16	45	45	21	21	21	21	46	46	26	26	26	26	47	47	31	31	31	31	48
0.101 – 0.120 (0.0040 – 0.0047)							01	01	01	01	01	42	42	06	06	06	06	43	43	11	11	11	11	44	44	16	16	16	16	45	45	21	21	21	21	46	46	26	26	26	26	47	47	31	31	31	31	48	48
0.121 – 0.140 (0.0048 – 0.0055)						01	01	01	01	42	42	42	06	06	06	43	43	43	11	11	11	44	44	44	16	16	16	45	45	45	21	21	21	46	46	46	26	26	26	47	47	47	31	31	31	48	48	48	36
0.141 – 0.160 (0.0056 – 0.0063)				01	01	01	01	01	42	42	42	06	06	06	43	43	43	11	11	11	44	44	44	16	16	16	45	45	45	21	21	21	46	46	46	26	26	26	47	47	47	31	31	31	48	48	48	36	36
0.161 – 0.180 (0.0063 – 0.0071)			01	01	01	01	01	42	42	42	06	06	06	43	43	43	11	11	11	44	44	44	16	16	16	45	45	45	21	21	21	46	46	46	26	26	26	47	47	47	31	31	31	48	48	48	36	36	36
0.181 – 0.199 (0.0071 – 0.0078)		01	01	01	01	01	42	42	06	06	06	06	43	43	11	11	11	11	44	44	16	16	16	16	45	45	21	21	21	21	46	46	26	26	26	26	47	47	31	31	31	31	48	48	36	36	36	36	49
0.200 – 0.300 (0.0079 – 0.0118)																																																	
0.301 – 0.320 (0.0119 – 0.0126)	42	06	06	06	06	43	43	11	11	11	11	44	44	16	16	16	16	45	45	21	21	21	21	46	46	26	26	26	26	47	47	31	31	31	31	48	48	36	36	36	36	49	49	41	41	41	41	41	
0.321 – 0.340 (0.0126 – 0.0134)	06	06	06	43	43	43	11	11	11	44	44	44	16	16	16	45	45	45	21	21	21	46	46	46	26	26	26	47	47	47	31	31	31	48	48	48	36	36	36	49	49	49	41	41	41	41	41		
0.341 – 0.360 (0.0134 – 0.0142)	06	06	43	43	43	11	11	11	44	44	44	16	16	16	45	45	45	21	**21**	21	46	46	46	26	26	26	47	47	47	31	31	31	48	48	48	36	36	36	49	49	49	41	41	41	41	41			
0.361 – 0.380 (0.0142 – 0.0150)	06	43	43	43	11	11	11	44	44	44	16	16	16	45	45	45	21	21	21	46	46	46	26	26	26	47	47	47	31	31	31	48	48	48	36	36	36	49	49	49	41	41	41	41					
0.381 – 0.400 (0.0150 – 0.0157)	43	43	11	11	11	11	44	44	16	16	16	16	45	45	21	21	21	21	46	46	26	26	26	26	47	47	31	31	31	31	48	48	36	36	36	36	49	49	41	41	41	41	41						
0.401 – 0.420 (0.0158 – 0.0165)	43	11	11	11	11	44	44	16	16	16	16	45	45	21	21	21	21	46	46	26	26	26	26	47	47	31	31	31	31	48	48	36	36	36	36	49	49	41	41	41	41	41							
0.421 – 0.440 (0.0166 – 0.0173)	11	11	11	44	44	44	16	16	16	45	45	45	21	21	21	46	46	46	26	26	26	47	47	47	31	31	31	48	48	48	36	36	36	49	49	49	41	41	41	41	41								
0.441 – 0.460 (0.0174 – 0.0181)	11	11	44	44	44	16	16	16	45	45	45	21	21	21	46	46	46	26	26	26	47	47	47	31	31	31	48	48	48	36	36	36	49	49	49	41	41	41	41	41									
0.461 – 0.480 (0.0181 – 0.0189)	11	44	44	44	16	16	16	45	45	45	21	21	21	46	46	46	26	26	26	47	47	47	31	31	31	48	48	48	36	36	36	49	49	49	41	41	41	41											
0.481 – 0.500 (0.0189 – 0.0197)	44	44	16	16	16	16	45	45	21	21	21	21	46	46	26	26	26	26	47	47	31	31	31	31	48	48	36	36	36	36	49	49	41	41	41	41	41												
0.501 – 0.520 (0.0197 – 0.0205)	44	16	16	16	16	45	45	21	21	21	21	46	46	26	26	26	26	47	47	31	31	31	31	48	48	36	36	36	36	49	49	41	41	41	41	41													
0.521 – 0.540 (0.0205 – 0.0213)	16	16	16	45	45	45	21	21	21	46	46	46	26	26	26	47	47	47	31	31	31	48	48	48	36	36	36	49	49	49	41	41	41	41	41														
0.541 – 0.560 (0.0213 – 0.0220)	16	16	45	45	45	21	21	21	46	46	46	26	26	26	47	47	47	31	31	31	48	48	48	36	36	36	49	49	49	41	41	41	41	41															
0.561 – 0.580 (0.0221 – 0.0228)	16	45	45	45	21	21	21	46	46	46	26	26	26	47	47	47	31	31	31	48	48	48	36	36	36	49	49	49	41	41	41	41																	
0.581 – 0.600 (0.0229 – 0.0236)	45	45	21	21	21	21	46	46	26	26	26	26	47	47	31	31	31	31	48	48	36	36	36	36	49	49	41	41	41	41	41																		
0.601 – 0.620 (0.0237 – 0.0244)	45	21	21	21	21	46	46	26	26	26	26	47	47	31	31	31	31	48	48	36	36	36	36	49	49	41	41	41	41	41																			
0.621 – 0.640 (0.0244 – 0.0252)	21	21	21	46	46	46	26	26	26	47	47	47	31	31	31	48	48	48	36	36	36	49	49	49	41	41	41	41	41																				
0.641 – 0.660 (0.0252 – 0.0260)	21	21	46	46	46	26	26	26	47	47	47	31	31	31	48	48	48	36	36	36	49	49	49	41	41	41	41	41																					
0.661 – 0.680 (0.0260 – 0.0268)	21	46	46	46	26	26	26	47	47	47	31	31	31	48	48	48	36	36	36	49	49	49	41	41	41	41																							
0.681 – 0.700 (0.0268 – 0.0276)	46	46	26	26	26	26	47	47	31	31	31	31	48	48	36	36	36	36	49	49	41	41	41	41	41																								
0.701 – 0.720 (0.0276 – 0.0283)	46	26	26	26	26	47	47	31	31	31	31	48	48	36	36	36	36	49	49	41	41	41	41	41																									
0.721 – 0.740 (0.0284 – 0.0291)	26	26	26	47	47	47	31	31	31	48	48	48	36	36	36	49	49	49	41	41	41	41	41																										
0.741 – 0.760 (0.0292 – 0.0299)	26	26	47	47	47	31	31	31	48	48	48	36	36	36	49	49	49	41	41	41	41	41																											
0.761 – 0.780 (0.0300 – 0.0307)	26	47	47	47	31	31	31	48	48	48	36	36	36	49	49	49	41	41	41	41																													
0.781 – 0.800 (0.0307 – 0.0315)	47	47	31	31	31	31	48	48	36	36	36	36	49	49	41	41	41	41	41																														
0.801 – 0.820 (0.0315 – 0.0323)	47	31	31	31	31	48	48	36	36	36	36	49	49	41	41	41	41	41																															
0.821 – 0.840 (0.0323 – 0.0331)	31	31	31	48	48	48	36	36	36	49	49	49	41	41	41	41	41																																
0.841 – 0.860 (0.0331 – 0.0339)	31	31	48	48	48	36	36	36	49	49	49	41	41	41	41	41																																	
0.861 – 0.880 (0.0339 – 0.0346)	31	48	48	48	36	36	36	49	49	49	41	41	41	41																																			
0.881 – 0.900 (0.0347 – 0.0354)	48	48	36	36	36	36	49	49	41	41	41	41	41																																				
0.901 – 0.920 (0.0355 – 0.0362)	48	36	36	36	36	49	49	41	41	41	41	41																																					
0.921 – 0.940 (0.0363 – 0.0370)	36	36	36	49	49	49	41	41	41	41	41																																						
0.941 – 0.960 (0.0370 – 0.0378)	36	36	49	49	49	41	41	41	41	41																																							
0.961 – 0.980 (0.0378 – 0.0386)	36	49	49	49	41	41	41	41																																									
0.981 – 1.000 (0.0386 – 0.0394)	49	49	41	41	41	41	41																																										
1.001 – 1.020 (0.0394 – 0.0402)	49	41	41	41	41	41																																											
1.021 – 1.040 (0.0402 – 0.0409)	41	41	41	41	41																																												
1.041 – 1.060 (0.0410 – 0.0417)	41	41	41	41																																													
1.061 – 1.080 (0.0418 – 0.0425)	41	41																																															
1.081 – 1.100 (0.0426 – 0.0433)	41																																																

New shim thickness mm (in.)

Shim No.	Thickness	Shim No.	Thickness
01	2.50 (0.0984)	46	2.95 (0.1161)
42	2.55 (0.1004)	26	3.00 (0.1181)
06	2.60 (0.1024)	47	3.05 (0.1201)
43	2.65 (0.1043)	31	3.10 (0.1220)
11	2.70 (0.1063)	48	3.15 (0.1240)
44	2.75 (0.1083)	36	3.20 (0.1260)
16	2.80 (0.1102)	49	3.25 (0.1280)
45	2.85 (0.1122)	41	3.30 (0.1299)
21	2.90 (0.1142)		

Intake valve clearance (Cold):
0.20 – 0.30 mm (0.008 – 0.012 in.)

EXAMPLE:

The 2.800 mm (0.1102 in.) shim is installed and the measured clearance is 0.350 mm (0.0138 in.). Replace the 2.800 mm (0.1102 in.) shim with a new No. 21 shim.

V03782

Adjusting Shim Selection Using Chart (Exhaust)

Measured clearance mm (in.)	Installed shim thickness mm (in.)																																																
	2.500 (0.0984)	2.520 (0.0992)	2.540 (0.1000)	2.550 (0.1004)	2.560 (0.1008)	2.580 (0.1016)	2.600 (0.1024)	2.620 (0.1031)	2.640 (0.1039)	2.650 (0.1043)	2.660 (0.1047)	2.680 (0.1055)	2.700 (0.1063)	2.720 (0.1071)	2.740 (0.1079)	2.750 (0.1083)	2.760 (0.1087)	2.780 (0.1094)	2.800 (0.1102)	2.820 (0.1110)	2.840 (0.1118)	2.850 (0.1122)	2.860 (0.1126)	2.880 (0.1134)	2.900 (0.1142)	2.920 (0.1150)	2.940 (0.1157)	2.950 (0.1161)	2.960 (0.1165)	2.980 (0.1173)	3.000 (0.1181)	3.020 (0.1189)	3.040 (0.1197)	3.050 (0.1201)	3.060 (0.1205)	3.080 (0.1213)	3.100 (0.1220)	3.120 (0.1228)	3.140 (0.1236)	3.150 (0.1240)	3.160 (0.1244)	3.180 (0.1252)	3.200 (0.1260)	3.220 (0.1268)	3.240 (0.1276)	3.250 (0.1280)	3.260 (0.1283)	3.280 (0.1291)	3.300 (0.1299)
0.000 – 0.020 (0.0000 – 0.0008)															01	01	01	01	01	42	42	42	42	06	06	43	43	43	43	11	11	44	44	44	44	16	16	45	45	45	45	21	21	46	46	46	46	26	26
0.021 – 0.040 (0.0008 – 0.0016)														01	01	01	01	01	42	42	42	06	06	06	43	43	43	11	11	11	44	44	44	16	16	16	45	45	45	21	21	21	46	46	46	26	26	26	47
0.041 – 0.060 (0.0016 – 0.0024)													01	01	01	01	01	42	42	42	06	06	06	43	43	43	11	11	11	44	44	44	16	16	16	45	45	45	21	21	21	46	46	46	26	26	26	47	47
0.061 – 0.080 (0.0024 – 0.0031)												01	01	01	01	01	42	42	42	06	06	06	43	43	43	11	11	11	44	44	44	16	16	16	45	45	45	21	21	21	46	46	46	26	26	26	47	47	47
0.081 – 0.100 (0.0032 – 0.0039)										01	01	01	01	01	42	42	42	42	06	06	43	43	43	43	11	11	44	44	44	44	16	16	45	45	45	45	21	21	46	46	46	46	26	26	47	47	47	47	31
0.101 – 0.120 (0.0040 – 0.0047)									01	01	01	01	01	42	42	42	42	06	06	43	43	43	43	11	11	44	44	44	44	16	16	45	45	45	45	21	21	46	46	46	46	26	26	47	47	47	47	31	31
0.121 – 0.140 (0.0048 – 0.0055)								01	01	01	01	01	42	42	42	06	06	06	43	43	43	11	11	11	44	44	44	16	16	16	45	45	45	21	21	21	46	46	46	26	26	26	47	47	47	31	31	31	48
0.141 – 0.160 (0.0056 – 0.0063)							01	01	01	01	01	42	42	42	06	06	06	43	43	43	11	11	11	44	44	44	16	16	16	45	45	45	21	21	21	46	46	46	26	26	26	47	47	47	31	31	31	48	48
0.161 – 0.180 (0.0063 – 0.0071)						01	01	01	01	01	42	42	42	06	06	06	43	43	43	11	11	11	44	44	44	16	16	16	45	45	45	21	21	21	46	46	46	26	26	26	47	47	47	31	31	31	48	48	48
0.181 – 0.200 (0.0071 – 0.0079)				01	01	01	01	01	42	42	42	42	06	06	43	43	43	43	11	11	44	44	44	44	16	16	45	45	45	45	21	21	46	46	46	46	26	26	47	47	47	47	31	31	48	48	48	48	36
0.201 – 0.220 (0.0079 – 0.0087)			01	01	01	01	01	42	42	42	42	06	06	43	43	43	43	11	11	44	44	44	44	16	16	45	45	45	45	21	21	46	46	46	46	26	26	47	47	47	47	31	31	48	48	48	48	36	36
0.221 – 0.240 (0.0087 – 0.0094)		01	01	01	01	01	42	42	42	06	06	06	43	43	43	11	11	11	44	44	44	16	16	16	45	45	45	21	21	21	46	46	46	26	26	26	47	47	47	31	31	31	48	48	48	36	36	36	49
0.241 – 0.249 (0.0095 – 0.0098)		01	01	01	01	42	42	42	06	06	06	43	43	43	11	11	11	44	44	44	16	16	16	45	45	45	21	21	21	46	46	46	26	26	26	47	47	47	31	31	31	48	48	48	36	36	36	49	49
0.250 – 0.350 (0.0098 – 0.0138)																																																	
0.351 – 0.360 (0.0138 – 0.0142)	42	06	06	06	06	43	43	11	11	11	11	44	44	16	16	16	16	45	45	21	21	21	21	46	46	26	26	26	26	47	47	31	31	31	31	48	48	36	36	36	36	49	49	41	41	41	41	41	
0.361 – 0.380 (0.0142 – 0.0150)	42	06	06	06	43	43	43	11	11	11	44	44	44	16	16	16	45	45	45	21	21	21	46	46	46	26	26	26	47	47	47	31	31	31	48	48	48	36	36	36	49	49	49	41	41	41	41	41	
0.381 – 0.400 (0.0150 – 0.0157)	06	06	43	43	43	43	11	11	44	44	44	44	16	16	45	45	45	45	21	21	46	46	46	46	26	26	47	47	47	47	31	31	48	48	48	48	36	36	49	49	49	49	41	41	41	41	41		
0.401 – 0.420 (0.0158 – 0.0165)	06	43	43	43	43	11	11	44	44	44	44	16	16	45	45	45	45	21	21	46	46	46	46	26	26	47	47	47	47	31	31	48	48	48	48	36	36	49	49	49	49	41	41	41	41				
0.421 – 0.440 (0.0166 – 0.0173)	43	43	43	11	11	11	44	44	44	16	16	16	45	45	45	21	21	21	46	46	46	26	26	26	47	47	47	31	31	31	48	48	48	36	36	36	49	49	49	41	41	41	41	41					
0.441 – 0.460 (0.0174 – 0.0181)	43	43	11	11	11	44	44	44	16	16	16	45	45	45	21	21	21	46	46	46	26	26	26	47	47	47	31	31	31	48	48	48	36	36	36	49	49	49	41	41	41	41	41						
0.461 – 0.480 (0.0181 – 0.0189)	43	11	11	11	44	44	44	16	16	16	45	45	45	21	21	21	46	46	46	26	26	26	47	47	47	31	31	31	48	48	48	36	36	36	49	49	49	41	41	41	41	41							
0.481 – 0.500 (0.0189 – 0.0197)	11	11	44	44	44	44	16	16	45	45	45	45	21	21	46	46	46	46	26	26	47	47	47	47	31	31	48	48	48	48	36	36	49	49	49	49	41	41	41	41	41								
0.501 – 0.520 (0.0197 – 0.0205)	11	44	44	44	44	16	16	45	45	45	45	21	21	46	46	46	46	26	26	47	47	47	47	31	31	48	48	48	48	36	36	49	49	49	49	41	41	41	41										
0.521 – 0.540 (0.0205 – 0.0213)	44	44	44	16	16	16	45	45	45	21	21	21	46	46	46	26	26	26	47	47	47	31	31	31	48	48	48	36	36	36	49	49	49	41	41	41	41	41											
0.541 – 0.560 (0.0213 – 0.0220)	44	44	16	16	16	45	45	45	21	21	21	46	46	46	26	26	26	47	47	47	31	31	31	48	48	48	36	36	36	49	49	49	41	41	41	41	41												
0.561 – 0.580 (0.0221 – 0.0228)	44	16	16	16	45	45	45	21	21	21	46	46	46	26	26	26	47	47	47	31	31	31	48	48	48	36	36	36	49	49	49	41	41	41	41	41													
0.581 – 0.600 (0.0229 – 0.0236)	16	16	45	45	45	45	21	21	46	46	46	46	26	26	47	47	47	47	31	31	48	48	48	48	36	36	49	49	49	49	41	41	41	41	41														
0.601 – 0.620 (0.0237 – 0.0244)	16	45	45	45	45	21	21	46	46	46	46	26	26	47	47	47	47	31	31	48	48	48	48	36	36	49	49	49	49	41	41	41	41																
0.621 – 0.640 (0.0244 – 0.0252)	45	45	45	21	21	21	46	46	46	26	26	26	47	47	47	31	31	31	48	48	48	36	36	36	49	49	49	41	41	41	41	41																	
0.641 – 0.660 (0.0252 – 0.0260)	45	45	21	21	21	46	46	46	26	26	26	47	47	47	31	31	31	48	48	48	36	36	36	49	49	49	41	41	41	41	41																		
0.661 – 0.680 (0.0260 – 0.0268)	45	21	21	21	46	46	46	26	26	26	47	47	47	31	31	31	48	48	48	36	36	36	49	49	49	41	41	41	41	41																			
0.681 – 0.700 (0.0268 – 0.0276)	21	21	46	46	46	46	26	26	47	47	47	47	31	31	48	48	48	48	36	36	49	49	49	49	41	41	41	41	41																				
0.701 – 0.720 (0.0276 – 0.0283)	21	46	46	46	46	26	26	47	47	47	47	31	31	48	48	48	48	36	36	49	49	49	49	41	41	41	41																						
0.721 – 0.740 (0.0284 – 0.0291)	46	46	46	26	26	26	47	47	47	31	31	31	48	48	48	36	36	36	49	49	49	41	41	41	41	41																							
0.741 – 0.760 (0.0292 – 0.0299)	46	46	26	26	26	47	47	47	31	31	31	48	48	48	36	36	36	49	49	49	41	41	41	41	41																								
0.761 – 0.780 (0.0300 – 0.0307)	46	26	26	26	47	47	47	31	31	31	48	48	48	36	36	36	49	49	49	41	41	41	41	41																									
0.781 – 0.800 (0.0307 – 0.0315)	26	26	47	47	47	47	31	31	48	48	48	48	36	36	49	49	49	49	41	41	41	41	41																										
0.801 – 0.820 (0.0315 – 0.0323)	26	47	47	47	47	31	31	48	48	48	48	36	36	49	49	49	49	41	41	41	41																												
0.821 – 0.840 (0.0323 – 0.0331)	47	47	47	31	31	31	48	48	48	36	36	36	49	49	49	41	41	41	41	41																													
0.841 – 0.860 (0.0331 – 0.0339)	47	47	31	31	31	48	48	48	36	36	36	49	49	49	41	41	41	41	41																														
0.861 – 0.880 (0.0339 – 0.0346)	47	31	31	31	48	48	48	36	36	36	49	49	49	41	41	41	41	41																															
0.881 – 0.900 (0.0347 – 0.0354)	31	31	48	48	48	48	36	36	49	49	49	49	41	41	41	41	41																																
0.901 – 0.920 (0.0355 – 0.0362)	31	48	48	48	48	36	36	49	49	49	49	41	41	41	41																																		
0.921 – 0.940 (0.0363 – 0.0370)	48	48	48	36	36	36	49	49	49	41	41	41	41	41																																			
0.941 – 0.960 (0.0370 – 0.0378)	48	48	36	36	36	49	49	49	41	41	41	41	41																																				
0.961 – 0.980 (0.0378 – 0.0386)	48	36	36	36	49	49	49	41	41	41	41	41																																					
0.981 – 1.000 (0.0386 – 0.0394)	36	36	49	49	49	49	41	41	41	41	41																																						
1.001 – 1.020 (0.0394 – 0.0402)	36	49	49	49	49	41	41	41	41																																								
1.021 – 1.040 (0.0402 – 0.0409)	49	49	49	41	41	41	41	41																																									
1.041 – 1.060 (0.0410 – 0.0417)	49	49	41	41	41	41	41																																										
1.061 – 1.080 (0.0418 – 0.0425)	49	41	41	41	41	41																																											
1.081 – 1.100 (0.0426 – 0.0433)	41	41	41	41	41																																												
1.101 – 1.120 (0.0433 – 0.0441)	41	41	41																																														
1.121 – 1.140 (0.0441 – 0.0449)	41	41																																															
1.141 – 1.150 (0.0449 – 0.0453)	41																																																

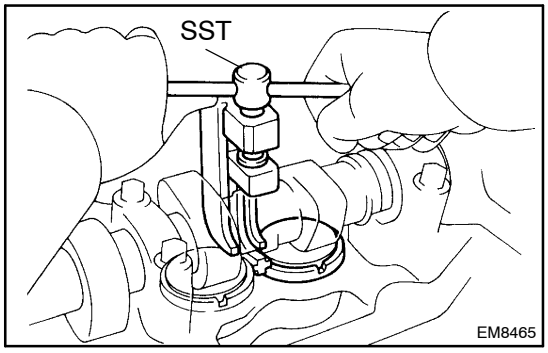
Exhaust valve clearance (Cold):
0.25 – 0.35 mm (0.010 – 0.014 in.)

EXAMPLE:
The 2.800 mm (0.1102 in.) shim is installed and the measured clearance is 0.390 mm (0.0154 in.). Replace the 2.800 mm (0.1102 in.) shim with a new No. 11 shim.

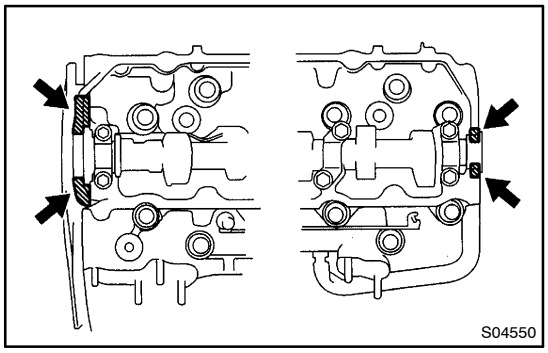
New shim thickness mm (in.)

Shim No.	Thickness	Shim No.	Thickness
01	2.50 (0.0984)	46	2.95 (0.1161)
42	2.55 (0.1004)	26	3.00 (0.1181)
06	2.60 (0.1024)	47	3.05 (0.1201)
43	2.65 (0.1043)	31	3.10 (0.1220)
11	2.70 (0.1063)	48	3.15 (0.1240)
44	2.75 (0.1083)	36	3.20 (0.1260)
16	2.80 (0.1102)	49	3.25 (0.1280)
45	2.85 (0.1122)	41	3.30 (0.1299)
21	2.90 (0.1142)		

V03783

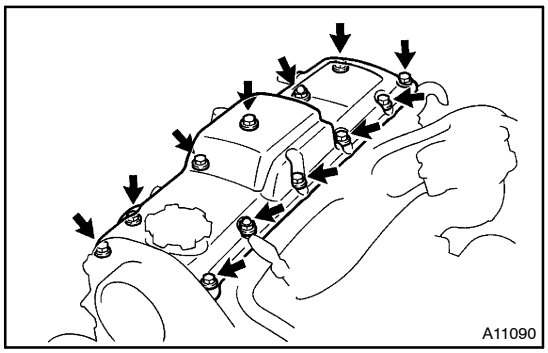


(c) Install a new adjusting shim.
(1) Place a new adjusting shim on the valve lifter.
(2) Using SST (A), press down the valve lifter and remove SST (B).
SST 09248–64011
(d) Recheck the valve clearance.



64. INSTALL CYLINDER HEAD COVER SUB–ASSY

(a) Apply seal packing to the cylinder head as shown in the illustration.
Seal packing: Part No. 08826–00080 or equivalent
(1) Parts must be assembled within 5 minutes of application. Otherwise the material must be removed and reapplied.
(2) Immediately remove nozzle from the tube and reinstall cap.



(b) Install the gasket to the cylinder head cover.
(c) Install the cylinder head cover with 10 bolts and 2 nuts. Uniformly tighten the bolts and nuts in several passes.
Torque: 9.0 N·m (92 kgf·cm, 80 in.·lbf)

65. INSTALL OIL FILLER CAP SUB–ASSY