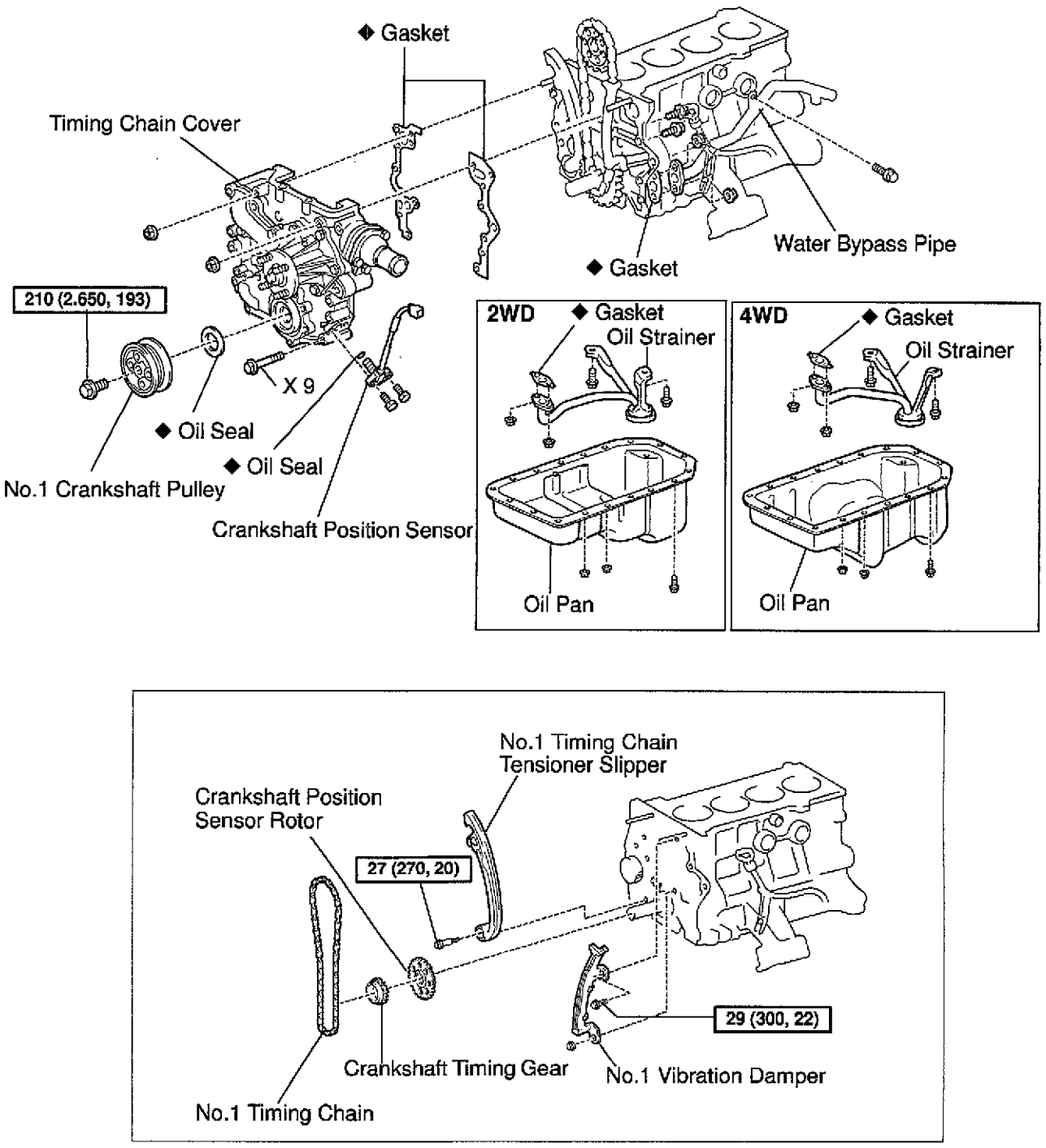
TIMING CHAIN(2RZ–FE) COMPONENTS

EM06Y–01



N·m (kgf·cm, ft·lbf) : Specified Torque
◆ Non–reusable part

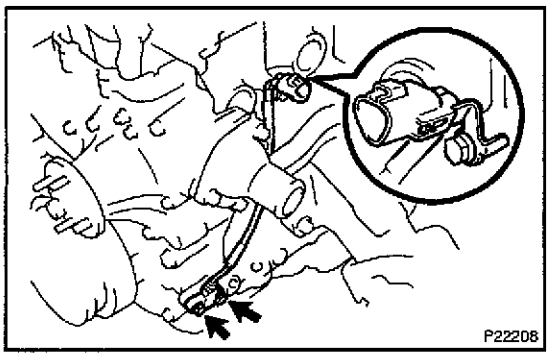
A01416

EM08Z–01

REMOVAL

1. **DRAIN ENGINE OIL**
2. **REMOVE CYLINDER HEAD ASSEMBLY**
   (See page EM–33)
3. **REMOVE CRANKSHAFT POSITION SENSOR**

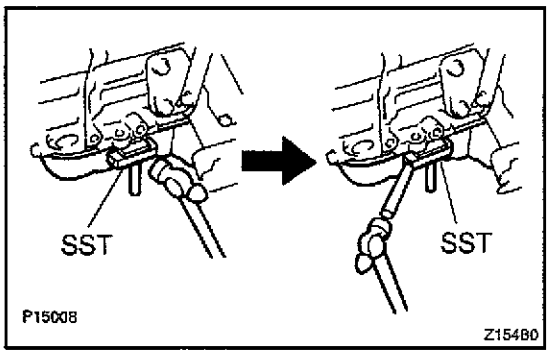
(a) Remove the 2 bolts crankshaft position sensor.
(b) Remove the O – ring from crankshaft position sensor.



4. **REMOVE OIL PAN**

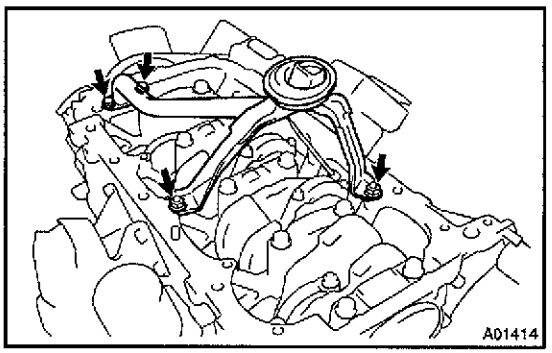
(a) Remove the 16 bolts and 2 nuts.
(b) Insert the blade of SST between the cylinder block and oil pan, cut off applied sealer and remove the oil pan.
SST 09032–00100

NOTICE:
Be careful not to damage the oil pan flanges of the oil pan and cylinder block.



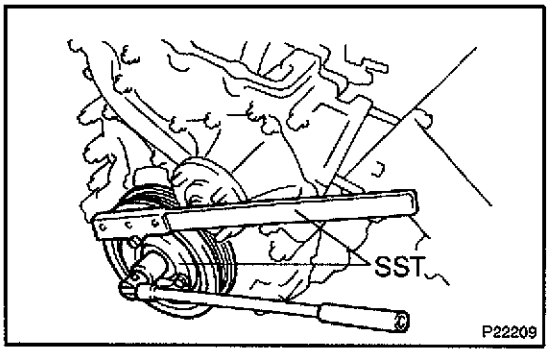
5. **REMOVE OIL STRAINER**

Remove the 2 bolts, 2 nuts, oil strainer and gasket.

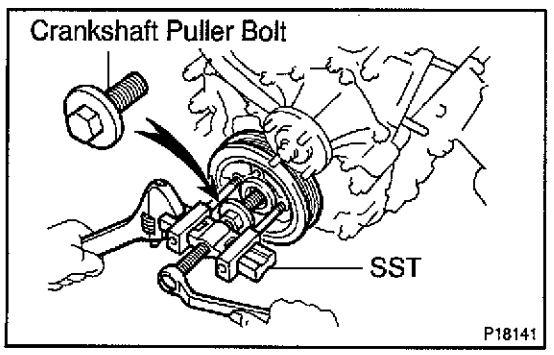


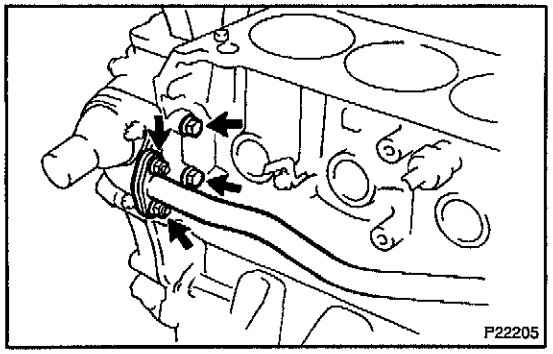
6. **REMOVE CRANKSHAFT PULLEY**

(a) Using SST, remove the pulley bolt.
SST 09213–54015, 09330–00021
(b) Remove the crankshaft pulley.



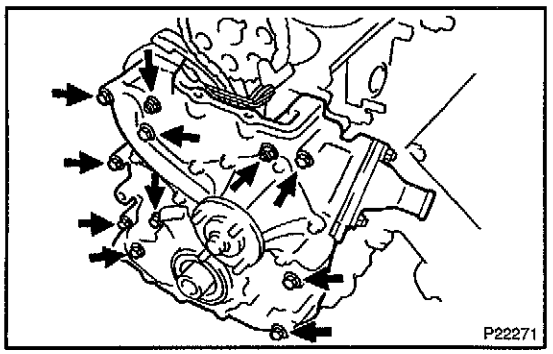
HINT:
If necessary, remove the pulley with SST and crankshaft pulley bolt.
SST 09950–50010 (09951–05010, 09952–05010, 09953–05010, 09954–05020)



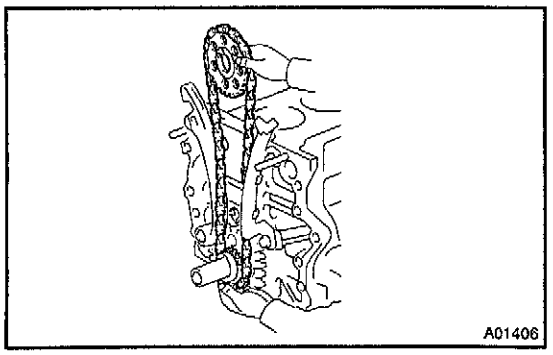


7. REMOVE TIMING CHAIN COVER

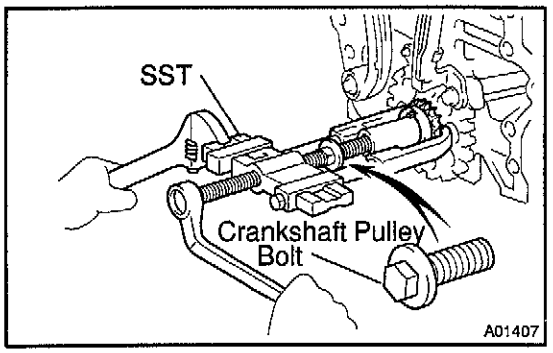
(a) Remove the 2 water bypass pipe nuts.
(b) Remove the 2 timing chain cover bolts.



(c) Remove the 9 bolts and 2 nuts.
(d) Using a plastic faced hammer, loosen the chain cover and remove the timing chain cover and 3 gasket.



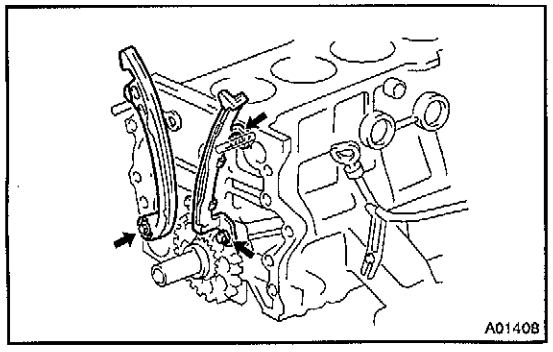
8. REMOVE NO.1 TIMING CHAIN AND CAMSHAFT TIMING GEAR



9. REMOVE CRANKSHAFT TIMING GEAR

HINT:
If necessary, remove the gear with SST and crankshaft pulley bolt.

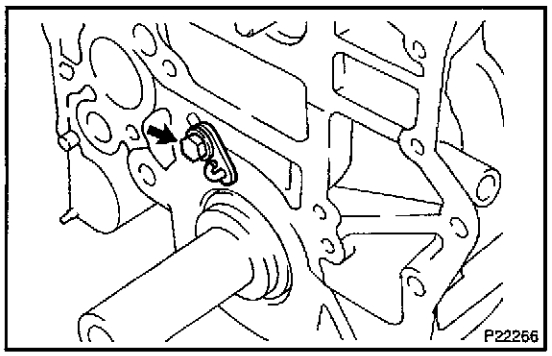
SST 09950–40010 (09951–04010, 09952–04010, 09953–04010, 09954–04010, 09955–04060)



10. REMOVE NO.1 TIMING CHAIN TENSIONER SLIPPER AND NO.1 VIBRATION DAMPER

(a) Remove the bolt and slipper.
(b) Remove the 2 bolts and No.1 damper.

11. REMOVE CRANKSHAFT POSITION SENSOR ROTOR

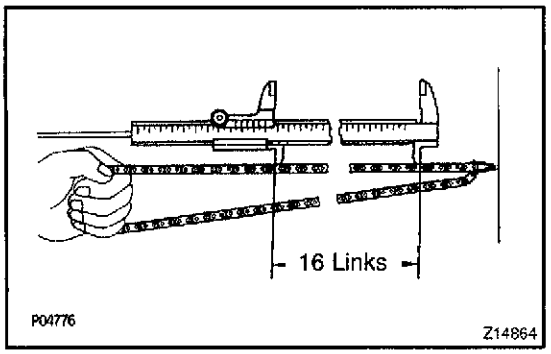


12. REMOVE TIMING CHAIN OIL JET

Remove the bolt, oil jet and gasket.

EM0B0-01

INSPECTION



1. INSPECT TIMING CHAINS, TIMING GEARS AND TIMING SPROCKETS

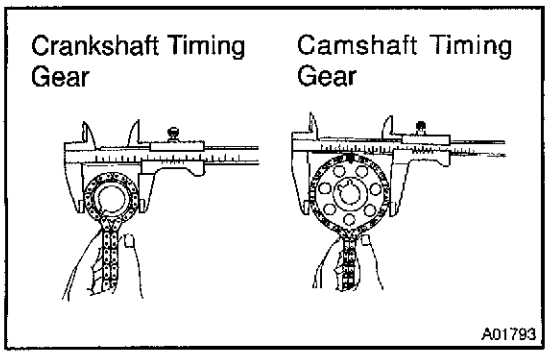
(a) Measure the length of 16 links with the chain fully stretched.

Maximum chain elongation:
No.1 Timing chain
147.5 mm (5.807 in.)

If the elongation is greater than maximum, replace the chain.

HINT:

Make the same measurements pulling at 3 or more places selected at random.



(b) Wrap the chain around the timing gear and timing sprocket.

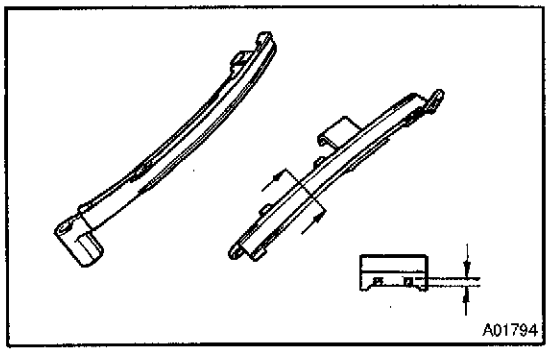
(c) Using vernier calipers, measure the timing gear and timing sprocket diameter with the chain.

NOTICE:

Vernier calipers must contact the chain rollers for measuring.

Minimum gear diameter:
Camshaft
113.8 mm (4.480 in.)
Crankshaft
59.4 mm (2.339 in.)

If the diameter is less than minimum, replace the chain, gears and sprocket.

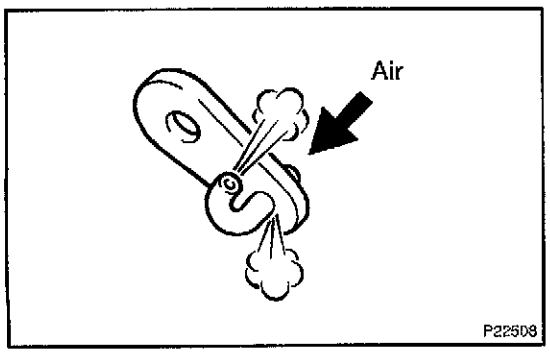


2. INSPECT CHAIN TENSIONER SLIPPER AND VIBRATION DAMPERS

Measure the chain tensioner slipper and vibration damper wears.

Maximum wear:
1.0 mm (0.039 in.)

If the wear is greater than maximum, replace the slipper and/or dampers.



3. INSPECT OIL JET

Check the oil for damage or clogging.

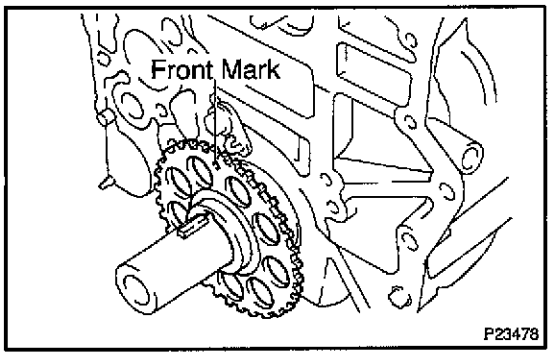
If necessary, replace the oil jet.

4. INSPECT NO.1 CHAIN TENSIONER

(See Pub No. RM521E)

EM091-01

INSTALLATION



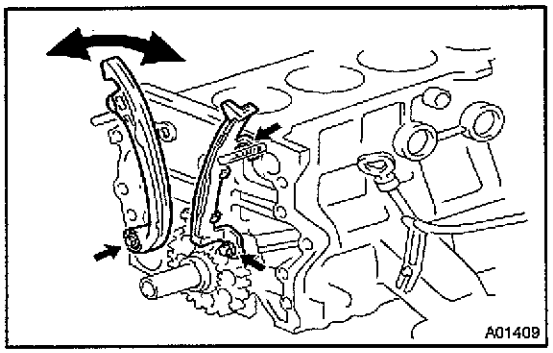
1. INSTALL OIL JET

Install a new gasket and the oil jet with the bolt.

Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)

2. INSTALL CRANKSHAFT POSITION SENSOR ROTOR

Install the rotor to the crankshaft with the front mark (cavity) of the rotor facing forward.



3. INSTALL NO.1 TIMING CHAIN TENSIONER SLIPPER AND NO.1 VIBRATION DAMPER

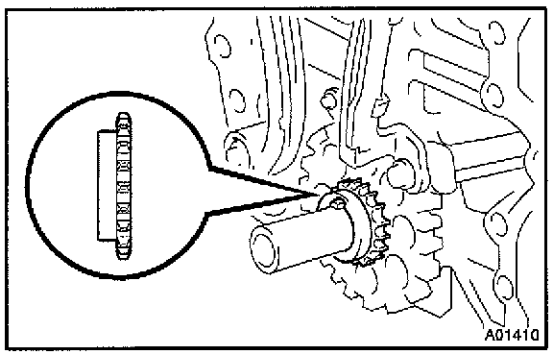
(a) Install the No.1 damper with the bolt and nut.

Torque: 29 N·m (300 kgf·cm, 22 ft·lbf)

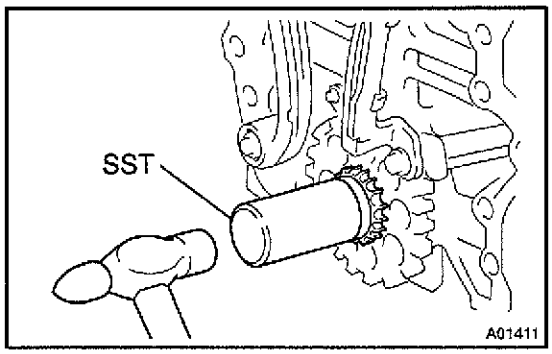
(b) Install the slipper with the bolt.

Torque: 27 N·m (270 kgf·cm, 20 ft·lbf)

(c) Check that the slipper moves smoothly.



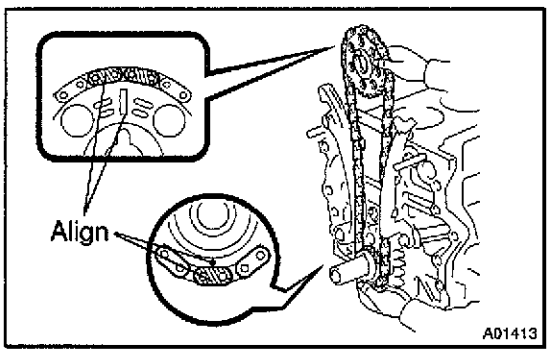
4. INSTALL CRANKSHAFT TIMING GEAR



HINT:

If necessary, install the gear with SST.

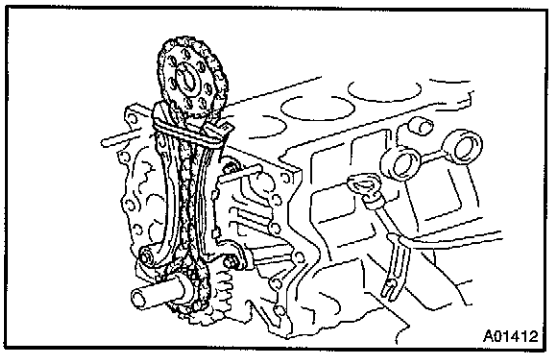
SST 09636–20010



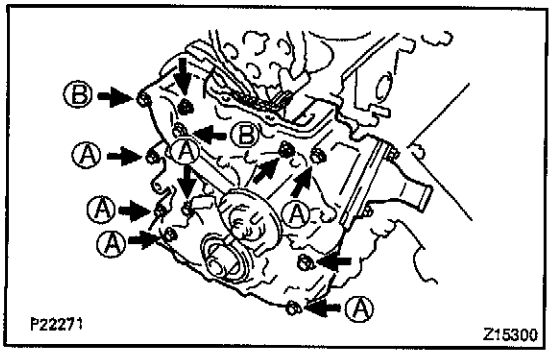
5. INSTALL NO.1 TIMING CHAIN AND CAMSHAFT TIMING GEAR

(a) Align the timing mark between the mark link of the No.1 timing chain, and install the No.1 timing chain to the timing gear.

(b) Align the timing mark of the crankshaft timing gear with the mark link of the No.1 timing chain and install the No.1 timing chain.



(c) Tie the No.1 timing chain with a cord as shown in the illustration, and make sure it doesn't come loose.

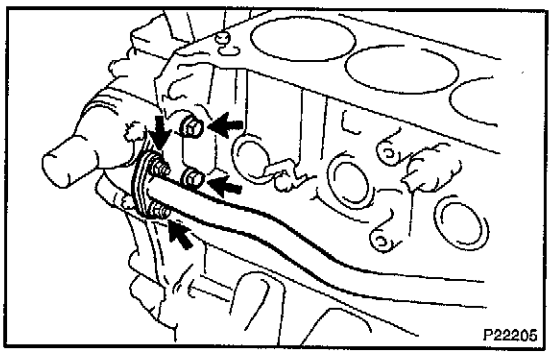


6. INSTALL TIMING CHAIN COVER

(a) Install 3 new gaskets to the cylinder block and water bypass pipe.

(b) Install the timing chain cover with the 9 bolts and 2 nuts.

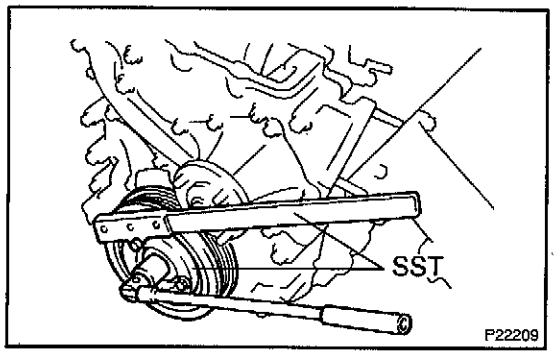
Torque:
Bolt:
12 mm head A: 20 N·m (200 kgf·cm, 14 ft·lbf)
12 mm head B: 24.5 N·m (250 kgf·cm, 18 ft·lbf)
14 mm head: 44 N·m (440 kgf·cm, 32 ft·lbf)
Nut : 20 N·m (200 kgf·cm, 14 ft·lbf)



(c) Install the 2 timing chain cover bolts.
Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)

(d) Install the 2 water bypass pipe nuts.
Torque: 20 N·m (200 kgf·cm, 14 ft·lbf)

(e) Remove the cord from the chain.



7. INSTALL CRANKSHAFT PULLEY

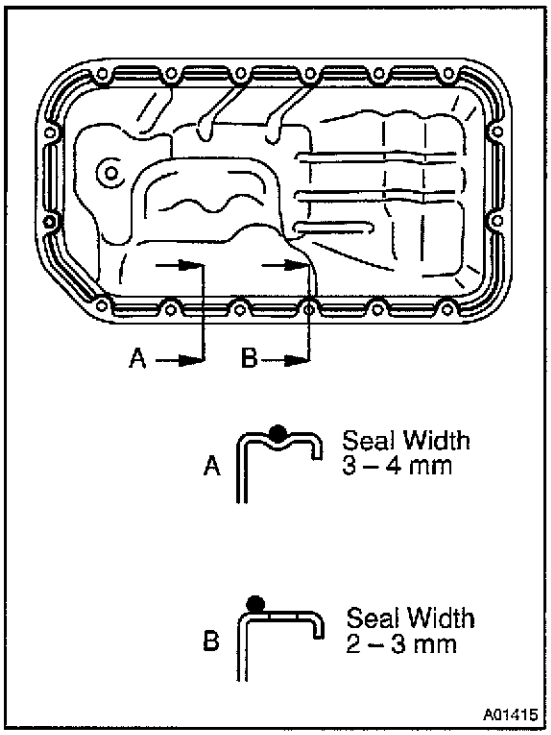
(a) Align the pulley set key with the key groove of the pulley, and slide on the pulley.

(b) Using SST, install and torque the pulley bolt.
SST 09213–54015, 09330–00021
Torque: 260 N·m (2,650 kgf·cm, 193 ft·lbf)

(c) w/ A/C:
Install the No.3 and No.2 crankshaft pulleys with the 4 bolts.
Torque: 25 N·m (250 kgf·cm, 18 ft·lbf)

8. INSTALL OIL STRAINER

Install a new gasket and the oil strainer with the bolt and 2 nuts.
Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)



9. INSTALL OIL PAN

(a) Remove any old packing (FIPG) material and be careful not to drop any oil on the contact surface of the oil pan.

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

NOTICE:

Do not use a solvent which will affect the painted surfaces.

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

Seal packing:

Part No. 08826–00080 or equivalent

- Install a nozzle that has been cut to a 2 – 3 mm (0.08 – 0.12 in.) opening or 3 – 4 mm (0.012 – 0.016 in.) opening.

HINT:

Avoid applying an excessive amount to the surface.

- Parts must be assembled within 5 minutes of application. Otherwise the material must be removed and reapplied.
- Immediately remove nozzle from the tube and reinstall cap.

(c) Install the oil pan with the 16 bolts and 2 nuts.

Torque: 12.5 N·m (130 kgf·cm, 9 ft·lbf)

10. INSTALL CRANKSHAFT POSITION SENSOR

Install a new O–ring.

Torque: 8.5 N·m (85 kgf·cm, 74 in.·lbf)

11. INSTALL CYLINDER HEAD ASSEMBLY

(See page EM–52)

12. FILL WITH ENGINE OIL

13. START ENGINE AND CHECK FOR LEAKS

14. VEHICLE ROAD TEST

Check for abnormal noise, shock slippage, correct shift points and smooth operation.

15. RECHECK ENGINE COOLANT AND ENGINE OIL LEVEL