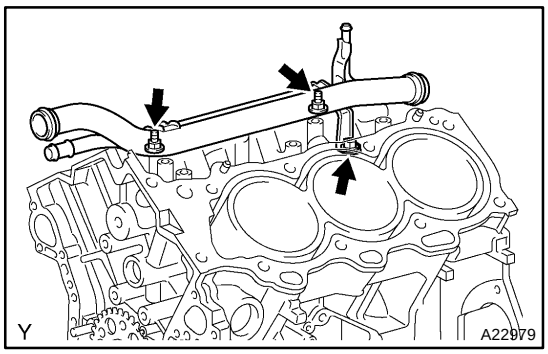
EM1XZ−01

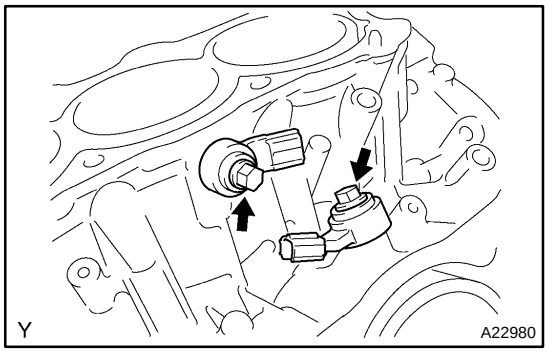
DISASSEMBLY



1. REMOVE WATER OUTLET PIPE NO.1

(a) Separate the knock sensor wire.

(b) Remove the 3 bolts and water outlet pipe.

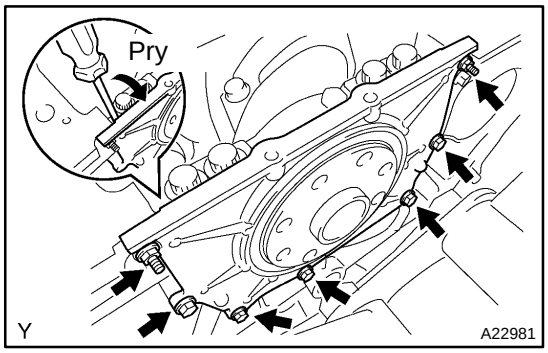


2. REMOVE KNOCK SENSOR

(a) Disconnect the knock sensor connectors.

(b) Remove the 2 bolts and 2 knock sensors.

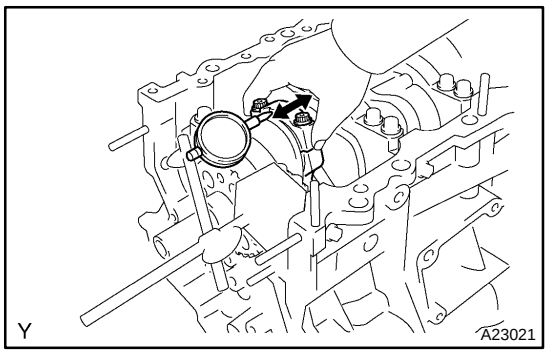
3. REMOVE WATER DRAIN COCK



4. REMOVE ENGINE REAR OIL SEAL RETAINER

(a) Remove the 5 bolts and 2 nuts.

(b) Using a screwdriver, remove the oil seal retainer by prying between the oil seal retainer and crankshaft bearing cap.



5. INSPECT CONNECTING ROD THRUST CLEARANCE

Using a dial indicator, measure the thrust clearance while moving the connecting rod back and forth.

Standard thrust clearance:
0.15 to 0.30 mm (0.0059 to 0.0118 in.)
Maximum thrust clearance: 0.35 mm (0.0138 in.)

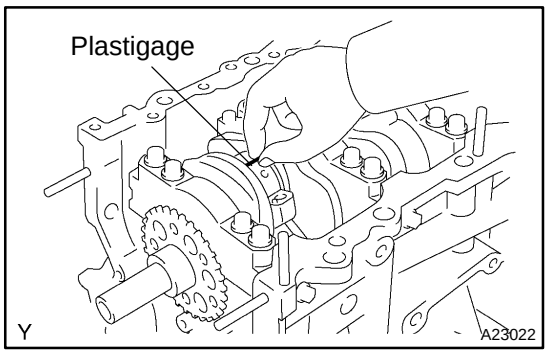
6. INSPECT CONNECTING ROD OIL CLEARANCE

(a) Check that the matchmarks on the connecting rod and cap are aligned to ensure correct reassembling.

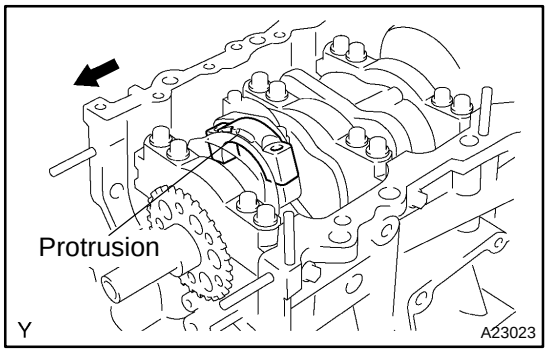
(b) Using SST, remove the 2 connecting rod cap bolts.
SST 09011−38121

(c) Clean the crank pin, bearing and connecting rod.

(d) Check the crank pin and bearing for pits and scratches.

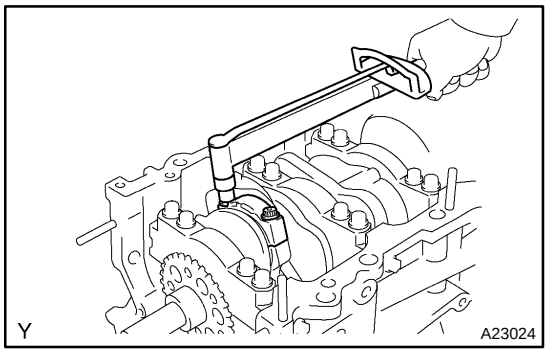


(e) Lay a strip of Plastigage across the crank pin.



(f) Check that the protrusion of the connecting rod cap is facing the correct direction.

(g) Apply a light coat of engine oil to the threads of the connecting rod cap bolts.



(h) Using SST, tighten the bolts alternately to the specified torque.

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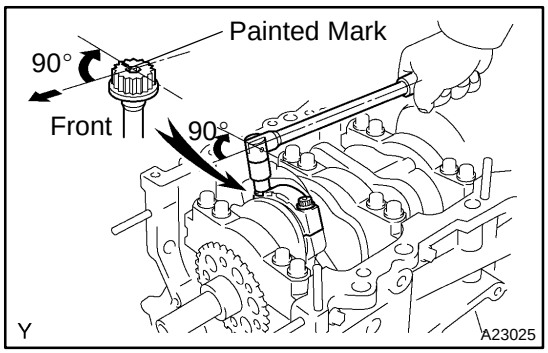
Torque: 25 N·m (250 kgf·cm, 18 ft·lbf)



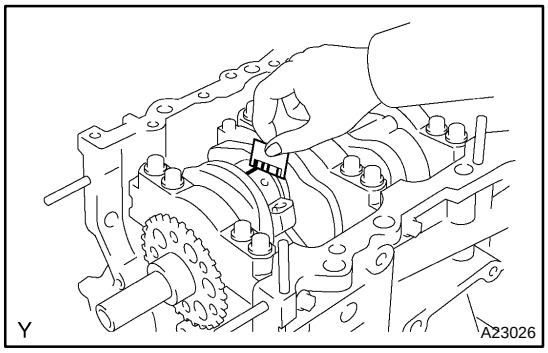
(i) Mark the front side of each connecting cap bolt with paint.

(j) Retighten the cap bolts 90° as shown in the illustration.

NOTICE:

Do not turn the crankshaft.

(k) Remove the 2 bolts, connecting rod cap and lower bearing.



(l) Measure the Plastigage at its widest point.

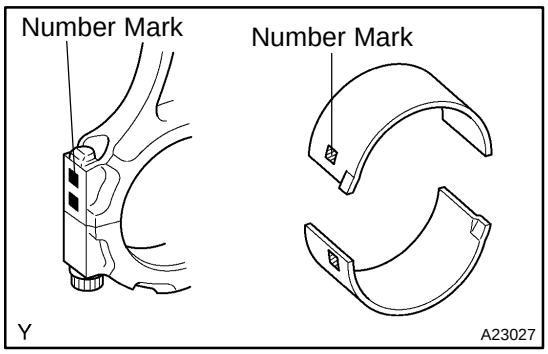
Standard oil clearance:

0.026 to 0.046 mm (0.0010 to 0.0018 in.)

Maximum oil clearance: 0.066 mm (0.0025 in.)

NOTICE:

Completely remove the Plastigage.

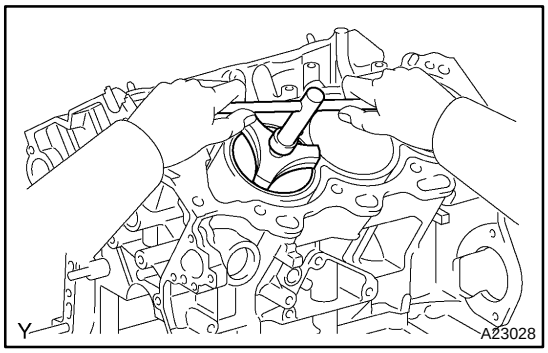


(m) If replacing a bearing, replace it with one that has the same number marked on the connecting rod. There are 4 sizes of standard bearings, marked ”1 ”, ”2”, ”3” and ”4” accordingly.

HINT:

Standard bearing center wall thickness

Mark	mm (in.)
”1”	1.484 to 1.487 (0.0584 to 0.0585)
”2”	1.487 to 1.490 (0.0585 to 0.0587)
”3”	1.490 to 1.493 (0.0587 to 0.0588)
”4”	1.493 to 1.496 (0.0588 to 0.0589)



7. REMOVE PISTON W/CONNECTING ROD

(a) Using a ridge reamer, remove all the carbon from the top of the cylinder.

(b) Push in the piston w/ connecting rod and upper bearing through the top of the cylinder block.

HINT:

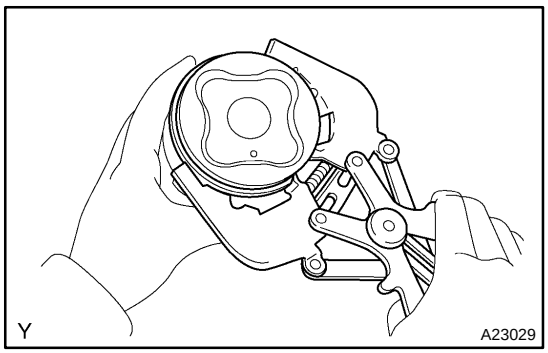
- Keep the bearings, connecting rod and cap together.
- Arrange the piston and connecting rod assemblies in the correct order.

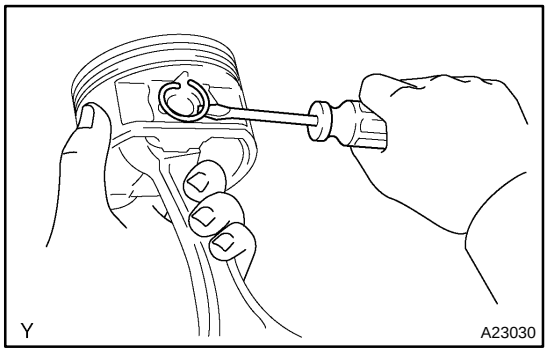
8. REMOVE CONNECTING ROD BEARING

9. REMOVE PISTON RING SET

(a) Using a piston ring expander, remove the 2 compression rings.

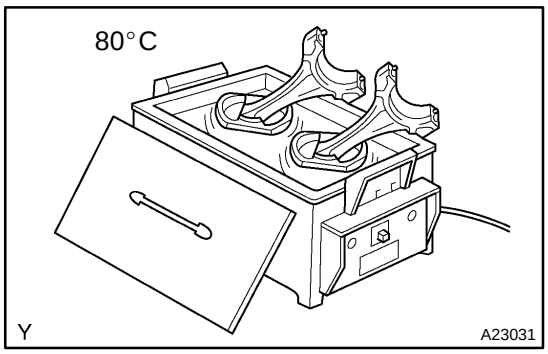
(b) Remove the 2 side rails and oil ring by hand.





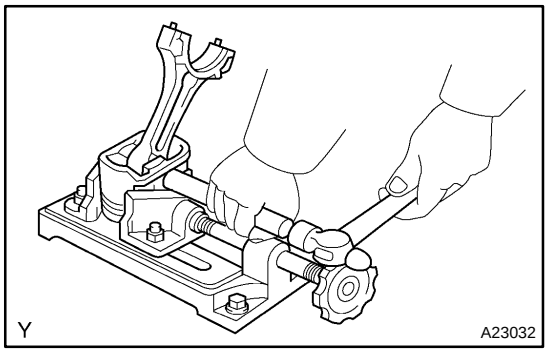
10. REMOVE PISTON PIN HOLE SNAP RING

Using a screwdriver, pry out the 2 snap rings.



11. REMOVE PISTON PIN

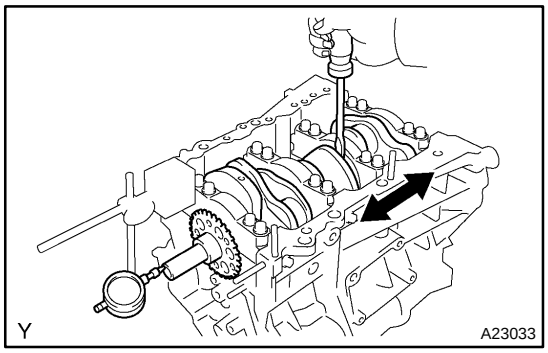
(a) Gradually heat the piston to approx. 80°C (176°F).



(b) Using a plastic−faced hammer and brass bar, lightly tap out the piston pin and remove the connecting rod.

HINT:

- The piston and pin are a matched set.
- Arrange the pistons, pins, rings, connecting rods and bearings in the correct order.



12. INSPECT CRANKSHAFT THRUST CLEARANCE

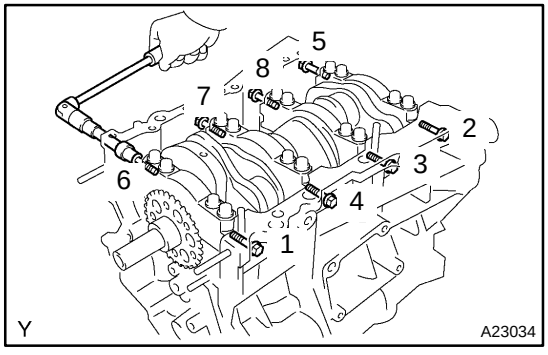
(a) Using a dial indicator, measure the thrust clearance while prying the crankshaft back and forth with a screwdriver.

Standard thrust clearance:
0.04 to 0.24 mm (0.0016 to 0.0094 in.)
Maximum thrust clearance: 0.30 mm (0.0118 in.)

If the thrust clearance is greater than the maximum, replace the pair of the thrust washers or the crankshaft.

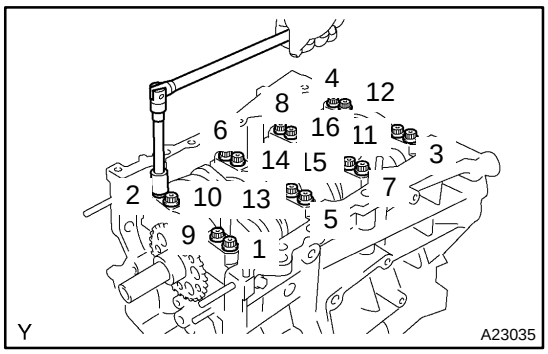
HINT:

Thrust washer thickness is 1.93 to 1.98 mm (0.0760 to 0.0780 in.)

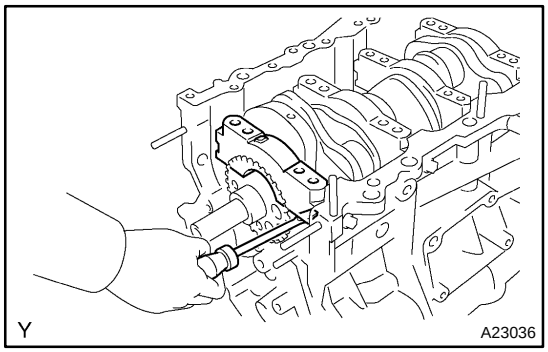


13. REMOVE CRANKSHAFT

(a) Using several steps, uniformly loosen and remove the 8 main bearing cap bolts and seal washers in the sequence as shown in the illustration.



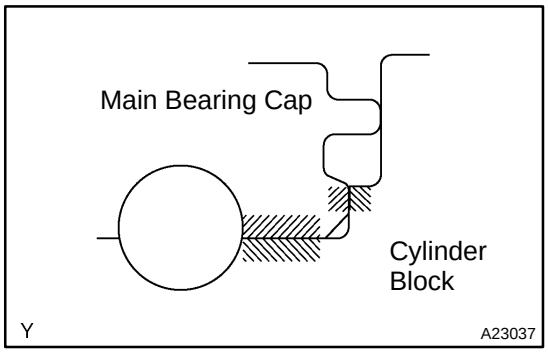
(b) Using several steps, uniformly loosen and remove the 16 main bearing cap bolts in the sequence as shown in the illustration.



(c) Using a screwdriver, pry out the main bearing caps. Remove the 4 main bearing caps and lower bearings.

NOTICE:

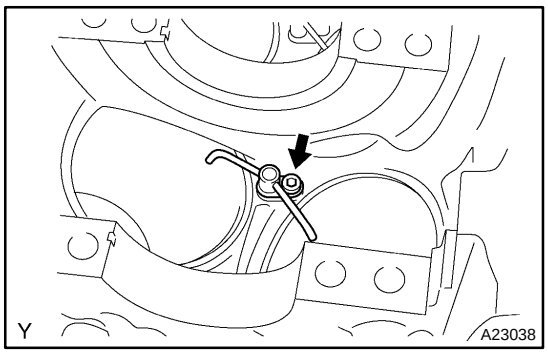
- **Pull up the main bearing cap while turning it little by little to the right and the left.**



- **Be careful not to damage the joint surface of the cylinder block and the main bearing cap.**

14. REMOVE CRANKSHAFT THRUST WASTER SET

15. REMOVE CRANKSHAFT BEARING



16. REMOVE OIL NOZZLE

Using a 5 mm socket hexagon wrench, remove the 3 oil nozzles.