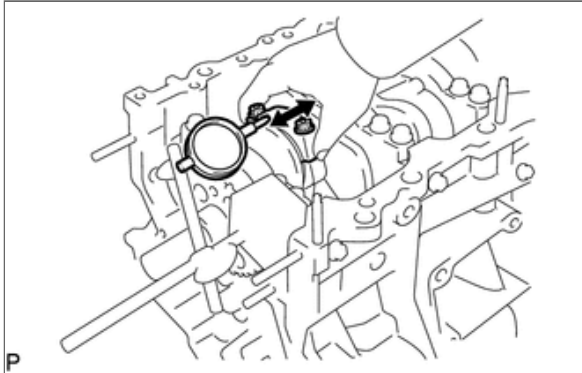


PROCEDURE

1.INSPECT CONNECTING ROD THRUST CLEARANCE

a.



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 (0.00591 to 0.0118 in.)

Maximum thrust clearance:

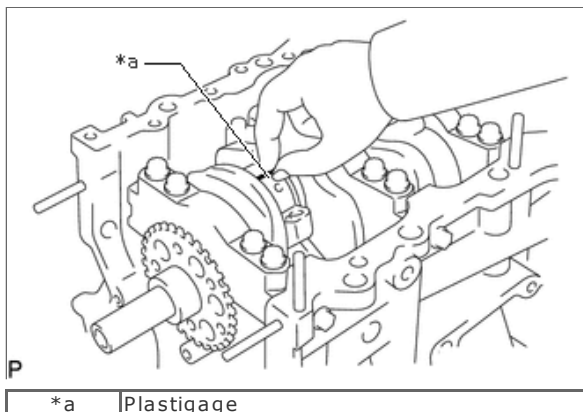
0.35 mm (0.0138 in.)

If the thrust clearance is more than the maximum, inspect the connecting rod sub-assembly and crankshaft.

2.INSPECT CONNECTING ROD OIL CLEARANCE

- a. Uniformly loosen the 2 connecting rod bolts and remove the connecting rod cap together with the connecting rod bearing.
- b. Clean the crank pin and bearing.
- c. Check the crank pin and bearing for pitting and scratches. If the crank pin or bearing is damaged, replace the bearings. If necessary, replace the crankshaft.

d.



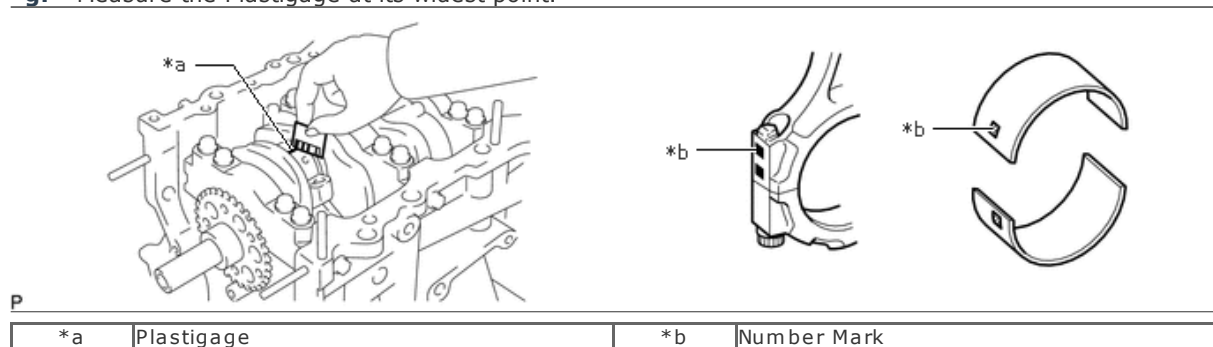
Lay a strip of Plastigage across the crank pin.

NOTICE:

Do not turn the crankshaft.

- e. Install the connecting rod bearing cap.
Click here [Engine / Hybrid System>1GR-FE ENGINE MECHANICAL>CYLINDER BLOCK>REASSEMBLY](#)

- f. Uniformly loosen the 2 connecting rod bolts and remove the connecting rod cap together with the connecting rod bearing.
- g. Measure the Plastigage at its widest point.



Standard oil clearance:
0.040 to 0.066 mm (0.00157 to 0.00260 in.)

Maximum oil clearance:
0.086 mm (0.00399 in.)

If the clearance is the maximum or more, select and replace the connecting rod bearing or replace the crankshaft.

HINT:

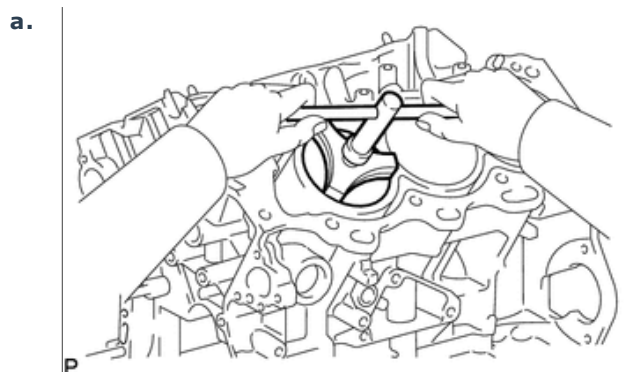
If replacing a bearing, replace it with one that has the same number marked on the connecting rod. There are 4 sizes of standard bearings, marked "1", "2", "3" and "4" accordingly.

Standard Bearing Center Wall Thickness:

Item	Specified Condition
Mark 1	1.484 to 1.487 mm (0.05843 to 0.05854 in.)
Mark 2	1.487 to 1.490 mm (0.05854 to 0.05866 in.)
Mark 3	1.490 to 1.493 mm (0.05866 to 0.05878 in.)
Mark 4	1.493 to 1.496 mm (0.05878 to 0.05900 in.)

- h. Completely remove the Plastigage.

3.REMOVE PISTON WITH CONNECTING ROD



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

- b. Push out the piston with connecting rod from the cylinder block sub-assembly.

HINT:

Arrange the removed parts so that they can be reinstalled in their original locations.

4.REMOVE CONNECTING ROD BEARING

13041

- a. Remove the connecting rod bearing from the connecting rod sub-assembly and connecting rod bearing cap.

HINT:

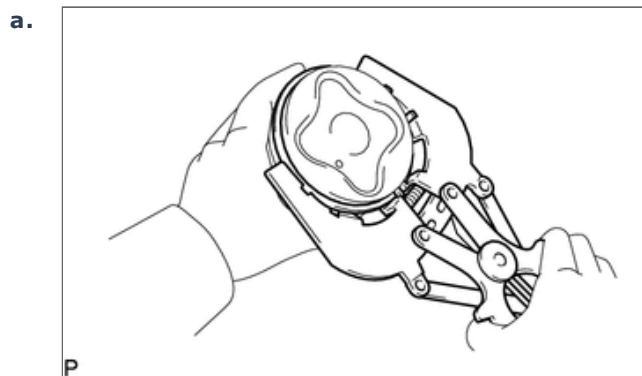
Arrange the removed parts so that they can be reinstalled in their original locations.

5.REMOVE PISTON RING SET

13011

HINT:

Arrange the removed parts so that they can be reinstalled in their original locations.

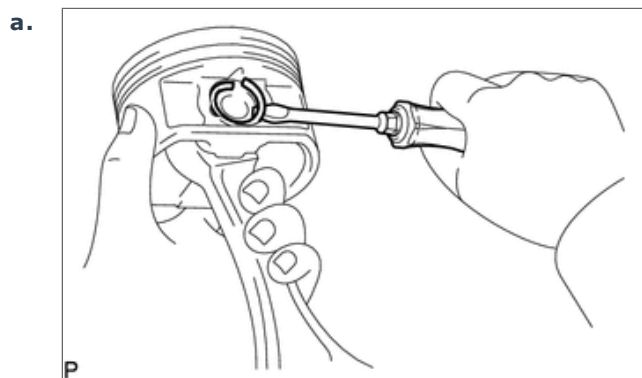


Using a piston ring expander, remove the No. 1 compression ring and No. 2 compression ring.

- b. Remove the 2 oil rings (side rail) and oil ring (expander) by hand.

6.REMOVE PISTON PIN HOLE SNAP RING

13101A



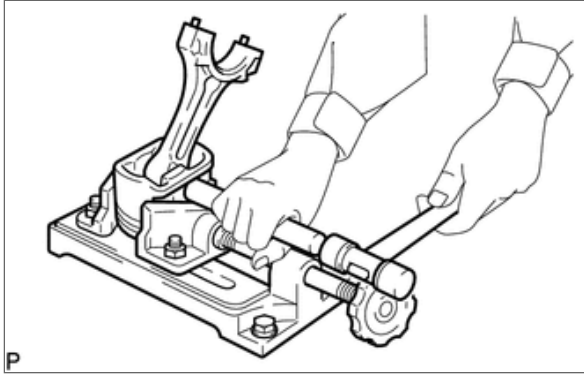
Using a screwdriver, pry out the 2 piston pin hole snap rings.

7.REMOVE PISTON WITH PIN SUB-ASSEMBLY

13101

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

b.



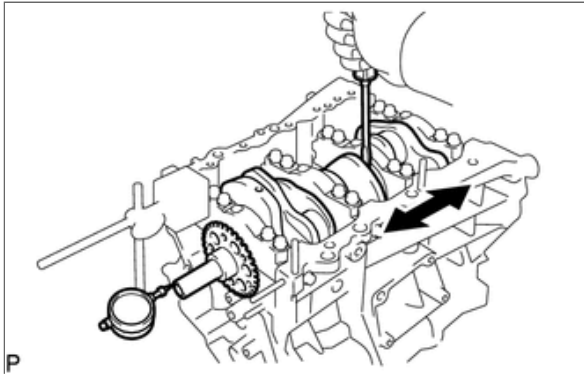
Using a plastic-faced hammer and brass bar, lightly tap out the piston pin and remove the connecting rod sub-assembly.

HINT:

Arrange the removed parts so that they can be reinstalled in their original locations.

8.INSPECT CRANKSHAFT THRUST CLEARANCE

a.



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

Standard thrust clearance:

0.04 to 0.24 mm (0.00157 to 0.00945 in.)

Maximum thrust clearance:

0.30 mm (0.0118 in.)

If the thrust clearance is more than the maximum, replace the thrust washers as a set.

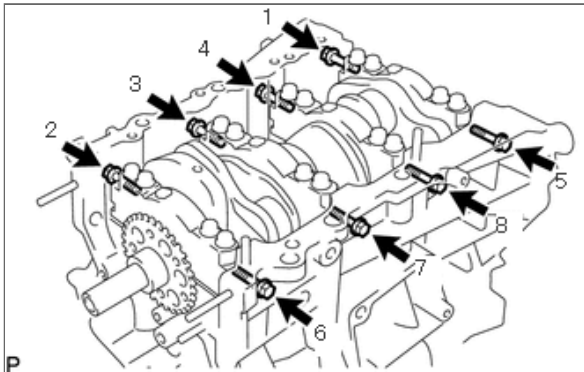
Standard thrust washer thickness:

1.93 to 1.98 mm (0.0760 to 0.0780 in.)

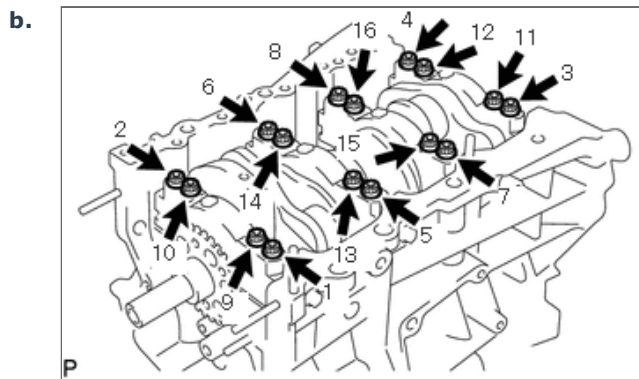
If necessary, replace the crankshaft.

9.REMOVE CRANKSHAFT BEARING CAP

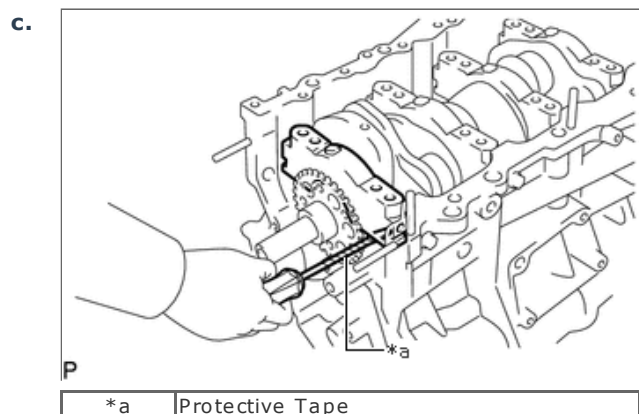
a.



Uniformly loosen the 8 bolts in several steps in the sequence shown in the illustration and remove the 8 bolts and 8 seal washers.



Uniformly loosen the 16 crankshaft bearing cap set bolts in several steps in the sequence shown in the illustration and remove the crankshaft bearing cap set bolts.



Using a screwdriver, pry out the crankshaft bearing caps. Remove the 4 crankshaft bearing caps and lower crankshaft bearings.

NOTICE:

- Push up on the crankshaft bearing cap little by little, alternating between the right and left sides until the crankshaft bearing cap can be removed.
- Be careful not to damage the joint surfaces of the cylinder block sub-assembly and crankshaft bearing cap.

HINT:

Tape the screwdriver tip before use.

10.REMOVE CRANKSHAFT

13411

- a. Remove the crankshaft.

11.REMOVE CRANKSHAFT THRUST WASHER

11011

- a. Remove the 2 upper crankshaft thrust washers and 2 lower upper crankshaft thrust washers.

12.REMOVE CRANKSHAFT BEARING

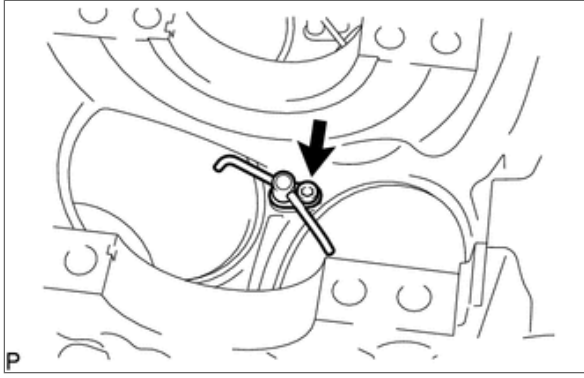
11711

- a. Remove the upper crankshaft bearing and lower upper crankshaft bearing.

13.REMOVE NO. 1 OIL NOZZLE SUB-ASSEMBLY

15708

a.



Using a 5 mm hexagon socket wrench, remove the 3 bolts and 3 No. 1 oil nozzle sub-assemblies.