


5. Tighten:

- primary sheave nut ①

 **160 Nm (16.0 m · kg, 115 ft · lb)**

CAUTION:

- **Before tightening the nut to remount the primary sheave, make sure that the serrations of the cam are fitted firmly into the serrations of the crankshaft. Also, make sure that cam is properly seated.**
- **Apply grease to the thread and seat of the primary sheave nut.**

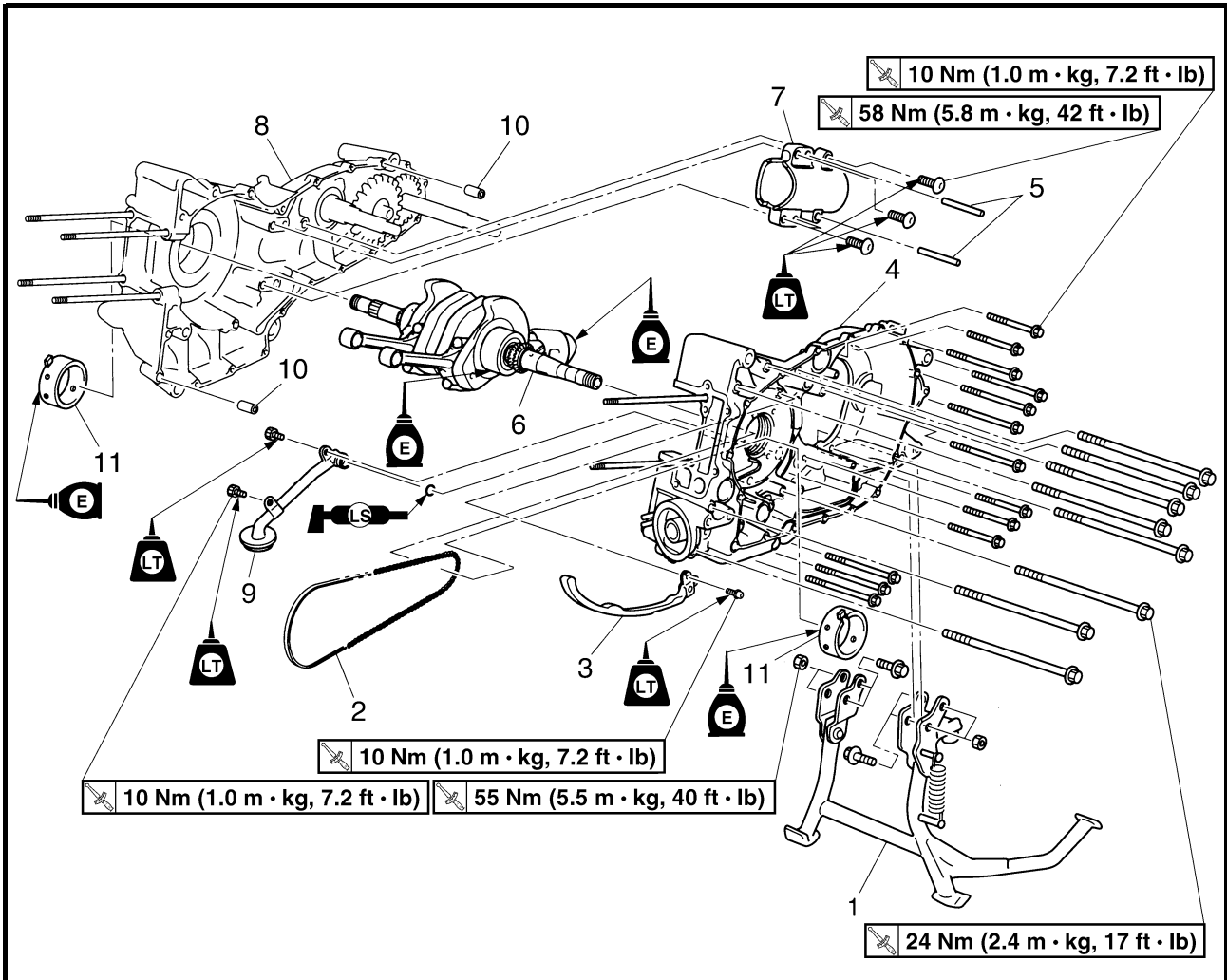
	Recommended lubricant Shell BT grease 3®
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NOTE:

While holding the primary sheave with the sheave holder ②, tighten the primary sheave nut ①.

	Sheave holder 90890-01481
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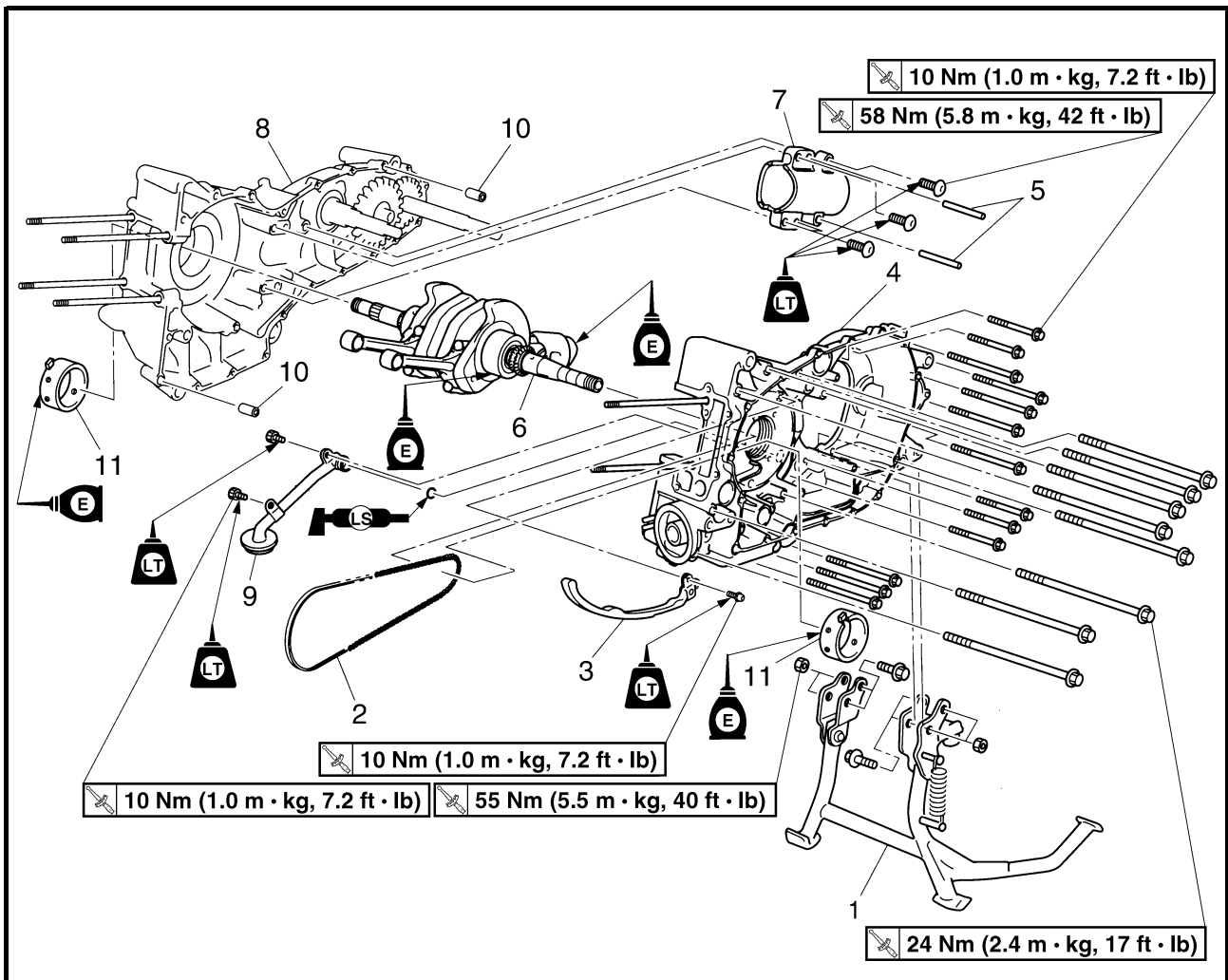
CRANKCASE AND CRANKSHAFT
CRANKSHAFT ASSEMBLY



Order	Job/Part	Q'ty	Remarks
	Removing the crankshaft assembly		Remove the parts in the order listed.
	Engine		Refer to "ENGINE REMOVAL".
	Cylinder head		Refer to "CYLINDER HEAD".
	Cylinder/piston		Refer to "CYLINDER AND PISTON".
	Starter clutch/A.C. magneto rotor		Refer to "STARTER CLUTCH AND A.C. MAGNETO ROTOR".
	Clutch		Refer to "CLUTCH".
	Oil pump		Refer to "OIL PUMP".
	Right crankcase cover		Refer to "V-BELT AUTOMATIC TRANSMISSION".
1	Centerstand assembly	1	
2	Timing chain	1	
3	Timing chain guide (intake side)	1	
4	Left crankcase	1	Refer to "DISASSEMBLING THE CRANKCASE" and "ASSEMBLING THE CRANKCASE".

CRANKCASE AND CRANKSHAFT

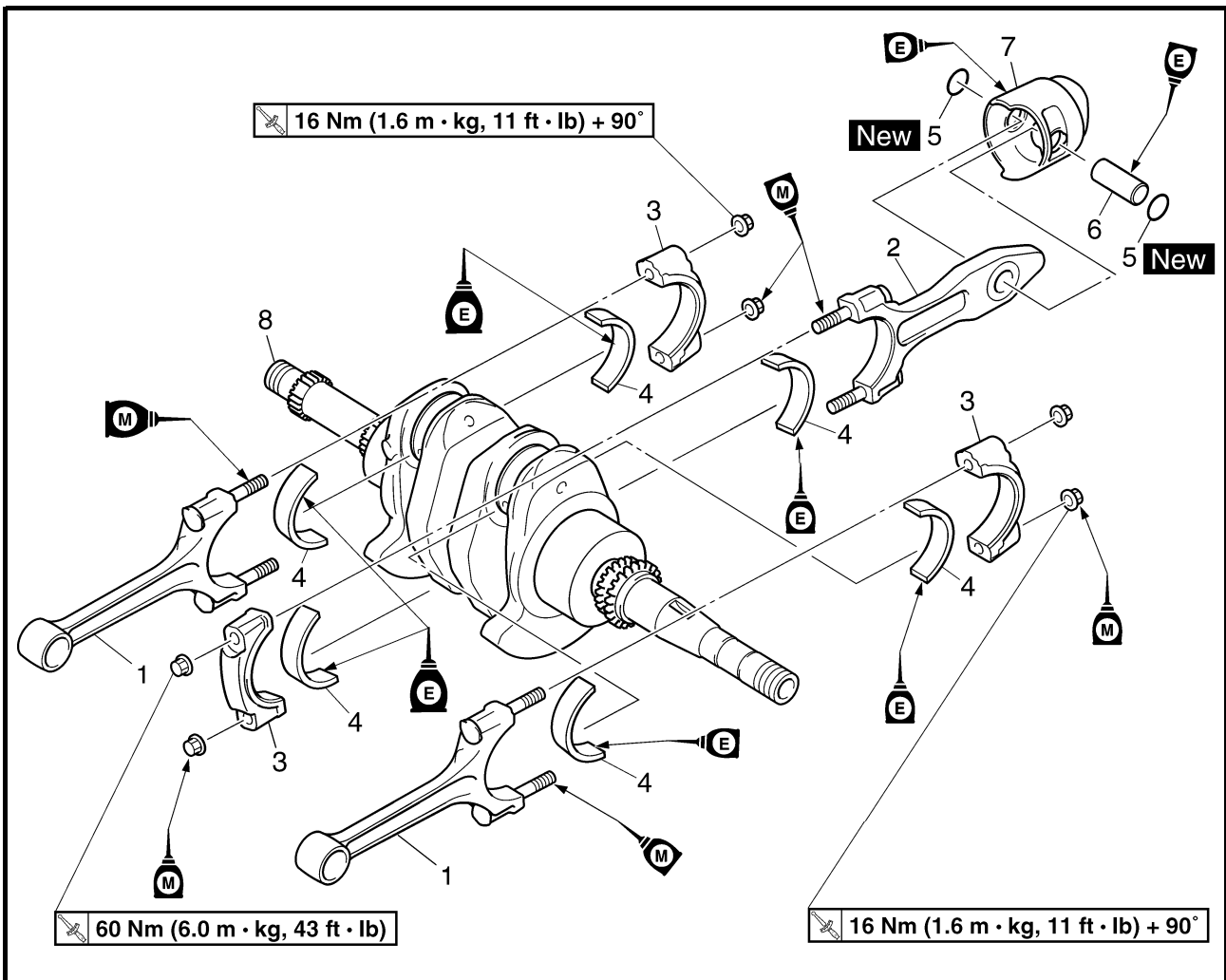
ENG



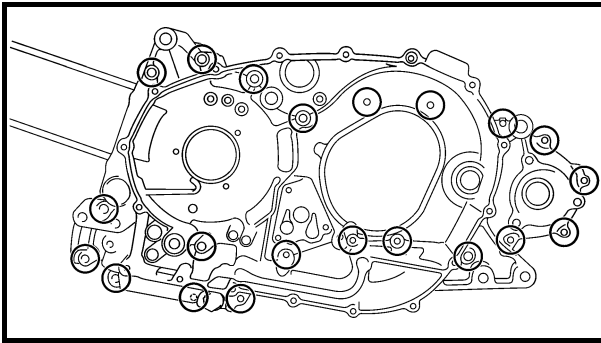
Order	Job/Part	Q'ty	Remarks
5	Dowel pin	2	Refer to "INSTALLING THE CRANKSHAFT".
6	Crankshaft assembly	1	
7	Balancer cylinder	1	
8	Right crankcase	1	Refer to "REMOVING THE CRANKSHAFT MAIN JOURNAL BEARINGS" and "INSTALLING THE CRANKSHAFT MAIN JOURNAL BEARINGS" For installation, reverse the removal procedure.
9	Oil strainer	1	
10	Dowel pin	2	
11	Crankshaft main journal bearing	2	



CONNECTING ROD



Order	Job/Part	Q'ty	Remarks
	Removing the connecting rod		Remove the parts in the order listed.
1	Connecting rod	2	Refer to "REMOVING THE CONNECTING RODS" and "INSTALLING THE CONNECTING RODS". For installation, reverse the removal procedure.
2	Connecting rod (balancer)	1	
3	Connecting rod cap	3	
4	Big end bearing	6	
5	Circlip	2	
6	Piston pin	1	
7	Balancer piston	1	
8	Crankshaft	1	



EAS00385

DISASSEMBLING THE CRANKCASE

1. Remove:
 - crankcase bolts

NOTE: _____

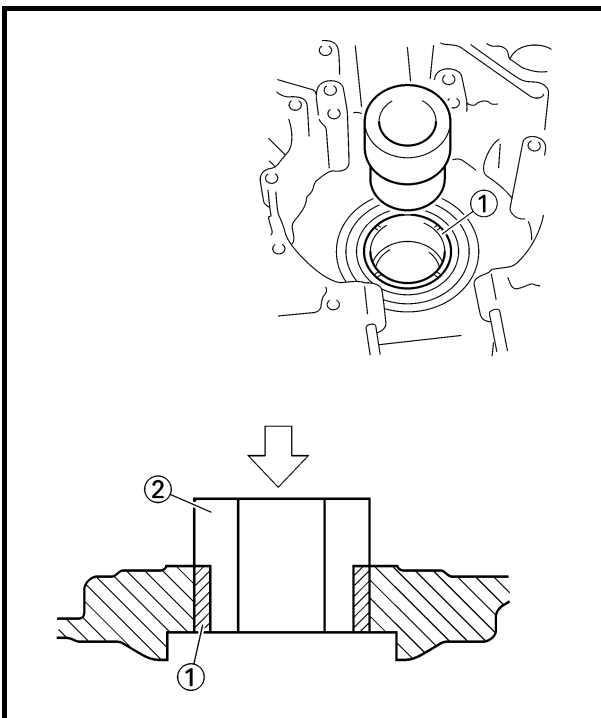
Loosen each bolt 1/4 of a turn at a time, in stages and in a crisscross pattern. After all of the bolts are fully loosened, remove them.

2. Remove:
 - left crankcase

CAUTION: _____

Tap on one side of the crankcase with a soft-face hammer. Tap only on reinforced portions of the crankcase, not on the crankcase mating surfaces. Work slowly and carefully and make sure that the crankcase halves separate evenly.

3. Remove:
 - dowel pins



EAS00387

REMOVING THE CRANKSHAFT MAIN JOURNAL BEARINGS

1. Remove:
 - crankshaft assembly
 - crankshaft main journal bearings ①

NOTE: _____

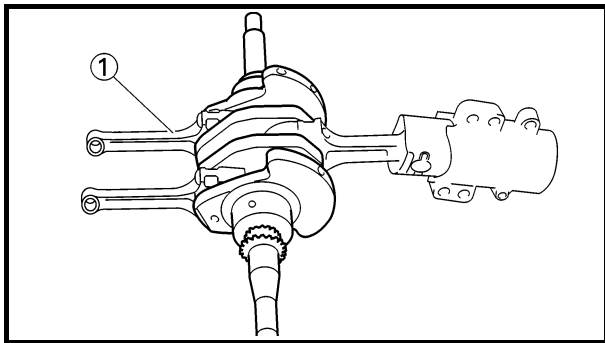
Remove the main journal bearing by the plane bearing installer ②.



Plane bearing installer
90890-04139

NOTE: _____

Identify the position of each crankshaft main journal bearing so that it can be reinstalled in its original place.



EAS00391

REMOVING THE CONNECTING RODS

The following procedure applies to all of the connecting rods.

1. Remove:
 - connecting rod ①
 - big end bearings

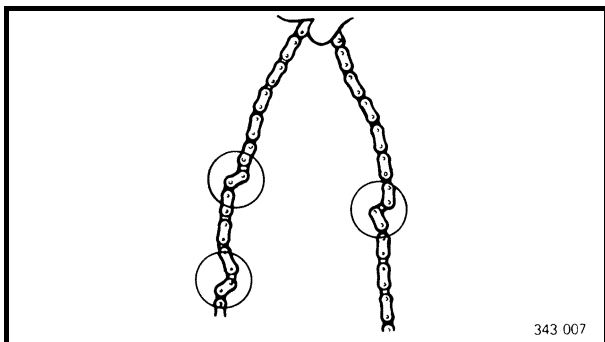
NOTE:

Identify the position of each big end bearing so that it can be reinstalled in its original place.

EAS00399

CHECKING THE CRANKCASE

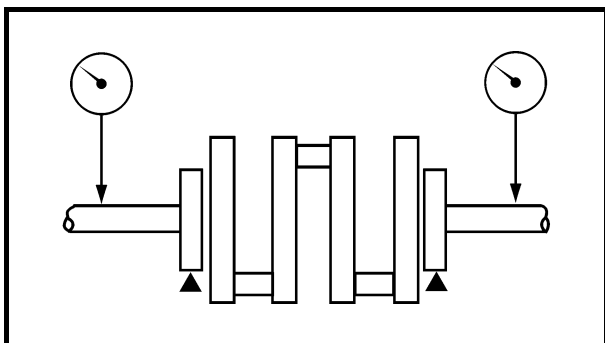
1. Thoroughly wash the crankcase halves in a mild solvent.
2. Thoroughly clean all the gasket surfaces and crankcase mating surfaces.
3. Check:
 - crankcase
Cracks/damage → Replace.
 - oil delivery passages
Obstruction → Blow out with compressed air.



EAS00207

CHECKING THE TIMING CHAIN

1. Check:
 - timing chain
Damage/stiffness → Replace the timing chain and camshaft sprockets as a set.

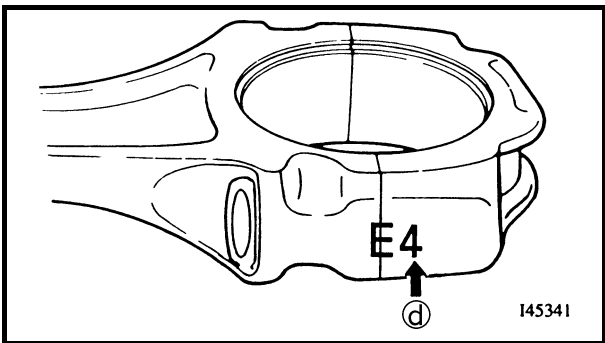
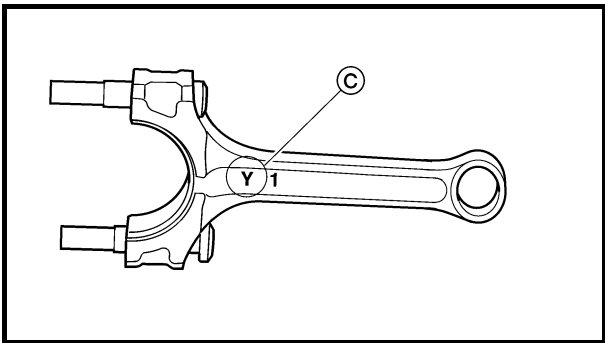


CHECKING THE CRANKSHAFT AND CONNECTING RODS

1. Measure:
 - crankshaft runout
Out of specification → Replace the crankshaft.



Crankshaft runout
Less than 0.03 mm (0.0012 in)



d. Assemble the connecting rod halves.

NOTE: _____

- Do not move the connecting rod or crankshaft until the clearance measurement has been completed.
- Apply molybdenum disulfide grease onto the bolts, threads, and nut seats.
- Make sure that the “Y” mark © on the connecting rod faces towards the left side of the crankshaft.
- Make sure that the characters ⓓ on both the connecting rod and connecting rod cap are aligned.

e. Tighten the connecting rod nuts.

CAUTION: _____

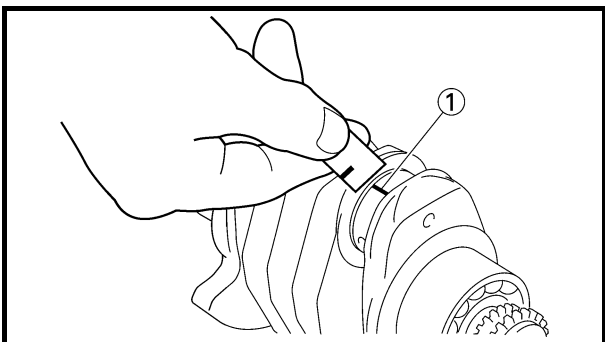
- When tightening the connecting rod nuts, be sure to use an F-type torque wrench.
- After tightening the connecting rod nut to the specified torque, turn the connecting rod nut another +90°.

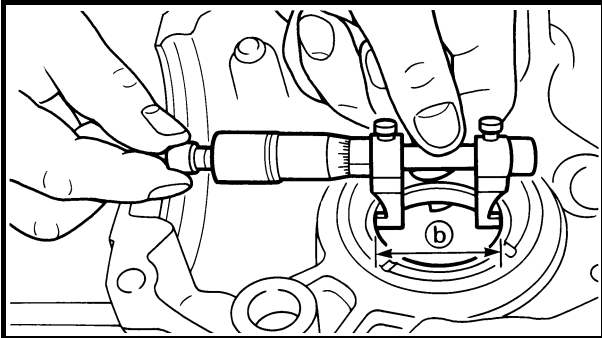
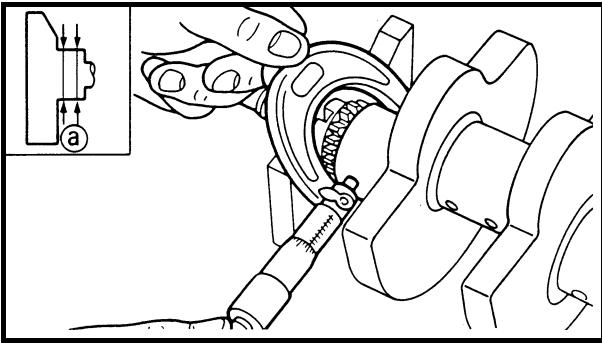
Refer to “INSTALLING THE CONNECTING RODS”.

	<p>Connecting rod nut 16 Nm (1.6 m · kg, 11 ft · lb) + 90°</p>
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f. Remove the connecting rod and big end bearings.
 Refer to “REMOVING THE CONNECTING RODS”.

g. Measure the compressed Plastigauge® width ① on each crankshaft pin.
 If the clearance is out of specification, select replacement big end bearings.





- a. Clean the surface of main journal and journal bearings.
- b. Check the bearing surface. If the bearing surface is worn or scratched, the bearings should be replaced.

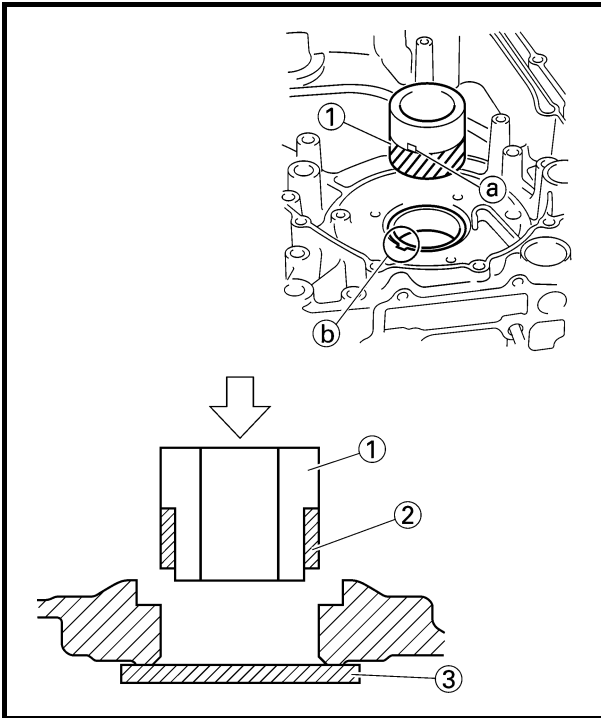
NOTE: _____
 If either of the right or left journal bearing is worn or scratched, both bearings should be replaced as a set.

- c. Measure the outside diameter (a) of each main journal at two places. If it is out of specification, replace the crankshaft.
- d. Measure the inside diameter (b) of each journal bearing at two places.
- e. If journal bearing inside diameter is “45.03” and crankshaft journal outside diameter is “44.98”, then the main journal oil clearance is:

Main journal oil clearance:
Journal bearing inside diameter –
Main journal outside diameter =
45.03 – 44.98 = 0.05 mm

If the oil clearance is out of specification, select a replacement bearings.





INSTALLING THE CRANKSHAFT MAIN JOURNAL BEARINGS

1. Attach:
 - crankshaft main journal bearings

NOTE: _____

Attach the crankshaft main journal bearing to the plane bearing installer ①.

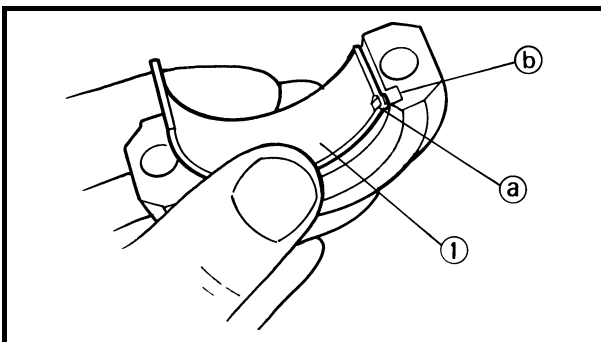


Plane bearing installer
90890-04139

2. Install:
 - crankshaft main journal bearings ②

NOTE: _____

- Align the projection ③ on the bearing with the projection ④ on the crankcase.
- Place an iron ⑤ plate beneath the crankcase and press fit until the end of the plain bearing installer touches the iron plate.

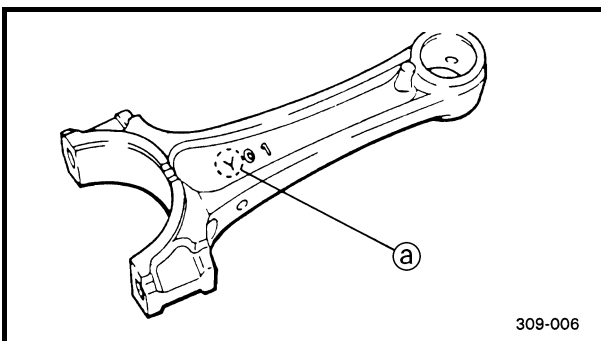


INSTALLING THE CONNECTING RODS

1. Install:
 - big end bearings ①

NOTE: _____

- Align the projection ③ of the big end bearings with the notches ④ in the connecting rod cap.
- Install each big end bearing in its original place.



2. Install:
 - connecting rods

NOTE: _____

- The stamped "Y" mark ③ on the connecting rods should face towards the left side of the crankcase.
- Install each connecting rod in its original place.

309-006