ECB03230

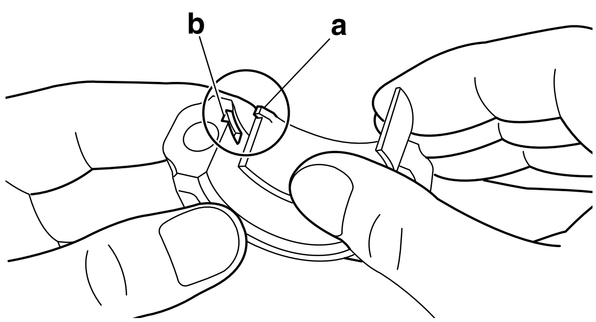
NOTICE

Do not interchange the big end bearings and connecting rods. To obtain the correct crankshaft-pin-to-big-end-bearing clearance and prevent engine damage, the big end bearings must be installed in their original positions.

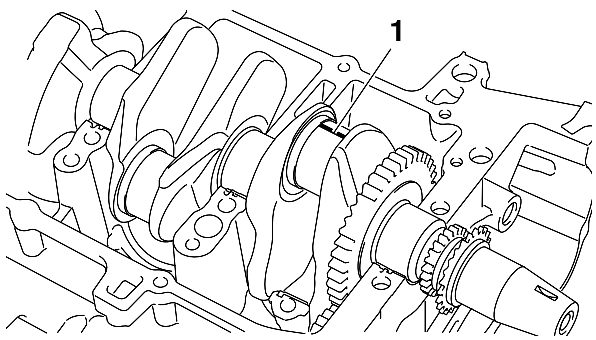
a. Clean the big end bearings, crankshaft pins, and the inside of the connecting rods halves.
b. Install the big end upper bearing into the connecting rod and the big end lower bearing into the connecting rod cap.

TIP

Align the projections “a” on the big end bearings with the notches “b” in the connecting rod and connecting rod cap.



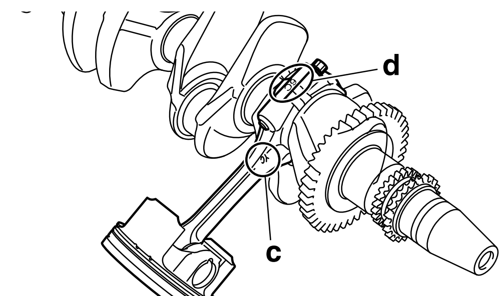
c. Put a piece of Plastigauge® “1” on the crankshaft pin.

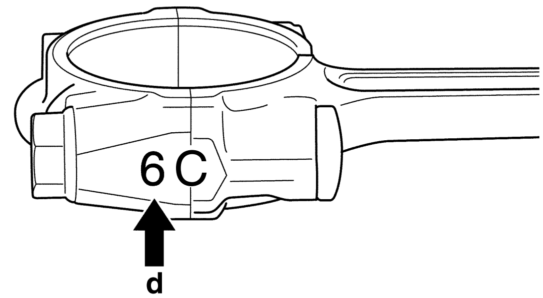


d. Assemble the connecting rod halves.

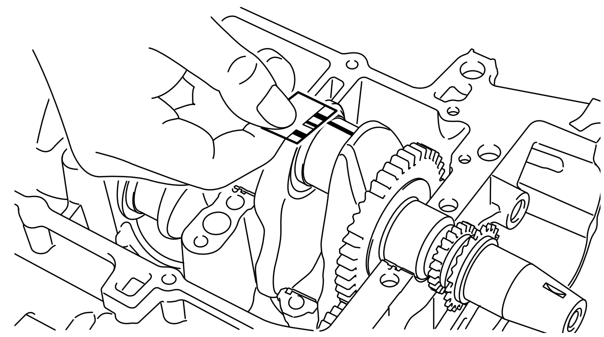
TIP

- Do not move the connecting rod or crankshaft until the clearance measurement has been completed.
- Apply molybdenum disulfide oil onto the bolts, threads, and bolt seats.
- Make sure that the “Y” mark “c” on the connecting rod faces towards the rear side (AC magneto rotor side) of the crankshaft.
- Make sure that the characters “d” on both the connecting rod and connecting rod cap are aligned.





e. Tighten the connecting rod bolts.
   Refer to “INSTALLING THE CONNECTING RODS AND PISTONS” on page 5-76.
f. Remove the connecting rod and big end bearings.
g. Measure the compressed Plastigauge® width on the crankshaft pin. If the crankshaft-pin-to-big-end-bearing clearance is out of specification, select replacement big end bearings.



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2. Select:
   - Big end bearings (P_1-P_3)

TIP

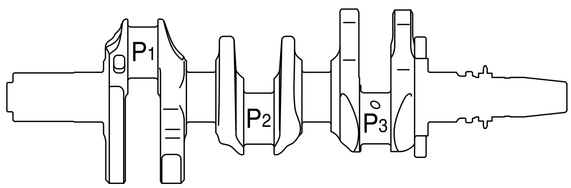
- The numbers “A” stamped into the crankshaft web and the numbers “B” on the connecting rods are used to determine the replacement big end bearings sizes.

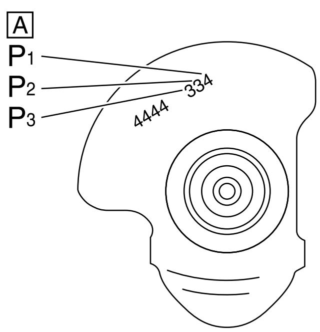
- "P_1"–"P_3" refer to the bearings shown in the crankshaft illustration.

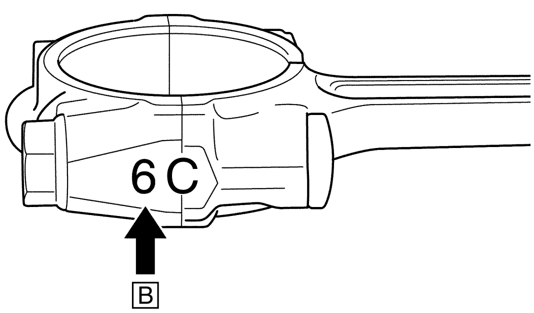
For example, if the connecting rod "P_1" and the crankshaft web "P_1" numbers are 6 and 4 respectively, then the bearing size for "P_1" is:

"P_1" (connecting rod) - "P_1" (crankshaft) = 6 - 4 = 2 (black)

Bearing color code
1.Blue 2.Black 3.Brown 4.Green
5.Yellow 6.Pink







EBS30673

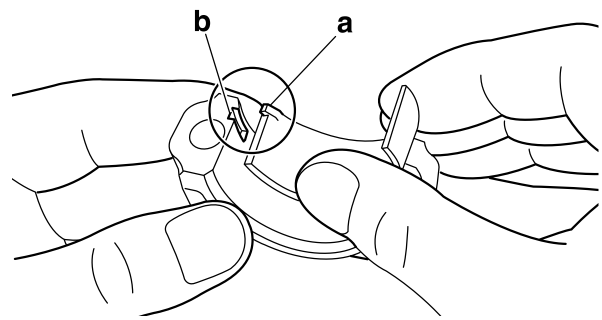
INSTALLING THE CONNECTING RODS AND PISTONS

The following procedure applies to all of the connecting rods and pistons.

1. Install:
   - Big end bearings

TIP

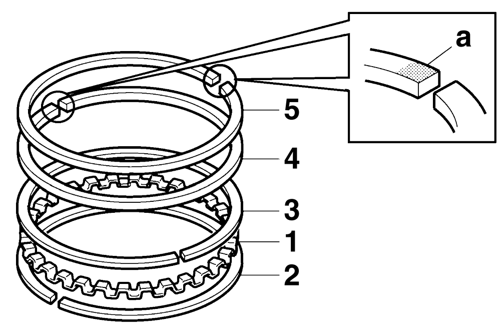
- Be sure to reinstall each big end bearing in its original place.
- Align the projections "a" on the big end bearings with the notches "b" in the connecting rods and connecting rod caps.



2. Install:
   - Oil ring expander "1"
   - Lower oil ring rail "2"
   - Upper oil ring rail "3"
   - 2nd ring "4"
   - Top ring "5"
   (into the piston)

TIP

Be sure to install the piston rings so that the manufacturer's marks "a" face up.



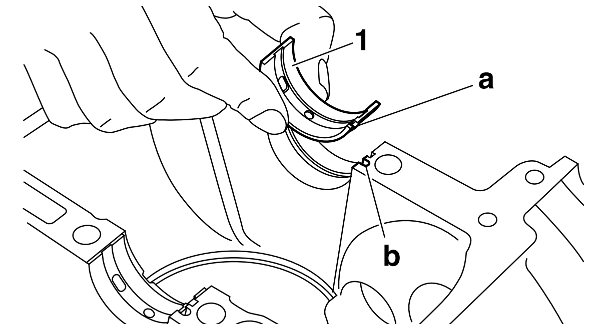
3. Install:
   - Piston "1"
   (onto the respective connecting rod "2")
   - Piston pin "3"
   - Piston pin clips "4" New

TIP

- Apply engine oil onto the piston pin.
- Make sure that the "Y" mark "a" on the connecting rod faces left when the punch mark "b" on the piston is pointing up as shown.
- Install the piston pin clips, so that the clip ends are 3 mm (0.12 in) "c" or more from the cutout in the piston.
- Reinstall each piston into its original cylinder.

TIP

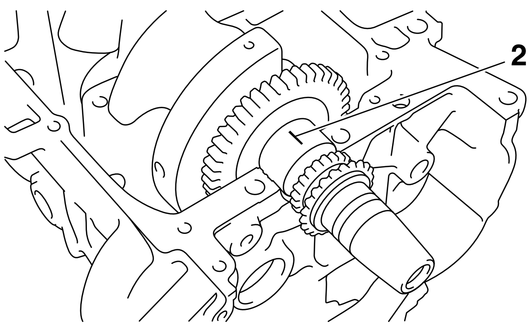
Align the projections “a” on the crankshaft journal upper bearings with the notches “b” in the upper crankcase.



d. Put a piece of Plastigauge® “2” on each crankshaft journal.

TIP

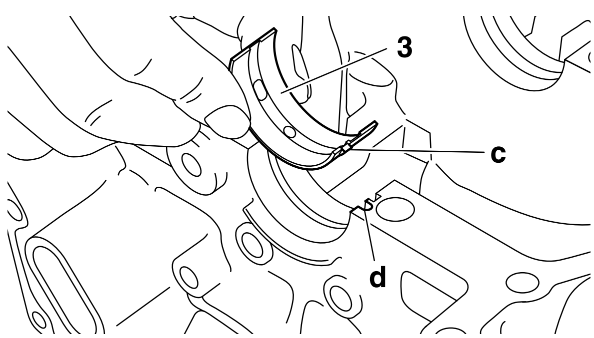
Do not put the Plastigauge® over the oil hole in the crankshaft journal.



e. Install the crankshaft journal lower bearings “3” into the crankcase (lower) and assemble the crankcase halves.

TIP

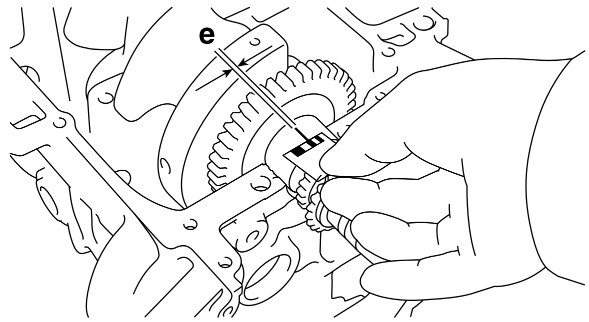
- Align the projections “c” of the crankshaft journal lower bearings with the notches “d” in the crankcase (lower).
- Do not move the crankshaft until the clearance measurement has been completed.



f. Tighten the bolts to specification in the tightening sequence cast on the crankcase.
   Refer to “CRANKCASE” on page 5-64.

g. Remove the crankcase (lower) and the crankshaft journal lower bearings.

h. Measure the compressed Plastigauge® width “e” on each crankshaft journal.
   If the crankshaft-journal-to-crankshaft-journal-bearing clearance is out of specification, select replacement crankshaft journal bearings.



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5. Select:
   - Crankshaft journal bearings (J_1 –J_4)

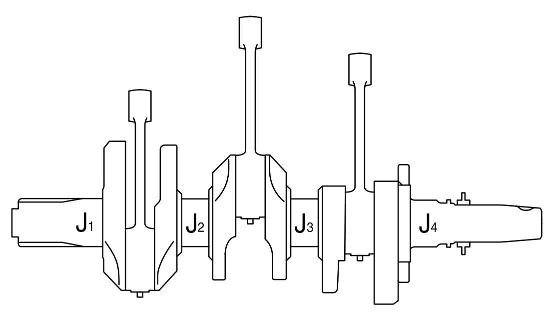
TIP

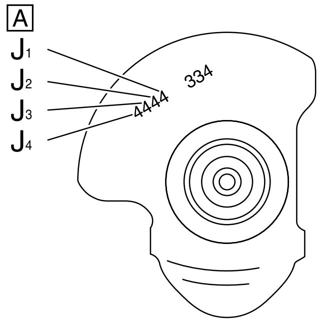
- The numbers “A” stamped into the crankshaft web and the numbers “B” stamped into the crankcase (lower) are used to determine the replacement crankshaft journal bearing sizes.
- “J_1”–“J_4” refer to the bearings shown in the crankshaft and crankcase (lower) illustration.
- If “J_1”–“J_4” are the same, use the same size for all of the bearings.

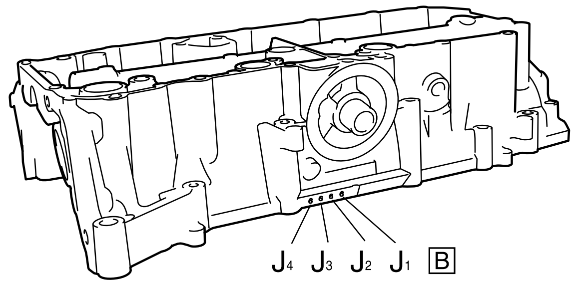
For example, if the crankcase “J_1” and crankshaft web “J_1” numbers are 6 and 4 respectively, then the bearing size for “J_1” is:

“J_1” (crankcase) - “J_1” (crankshaft web) +2 = 6 - 4 + 2 = 4 (green)

Bearing color code
2.Black 3.Brown 4.Green 5.Yellow 6.Pink 7.Red 8.White



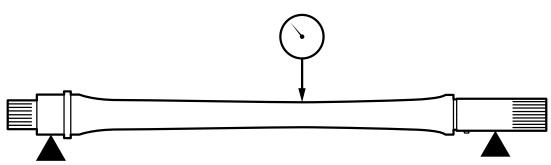




EBS30677
CHECKING THE BALANCER SHAFT

1. Measure:
   - Balancer shaft runout
     Out of specification → Replace the balancer shaft.

	Balancer shaft runout limit **0.200 mm (0.0079 in)**

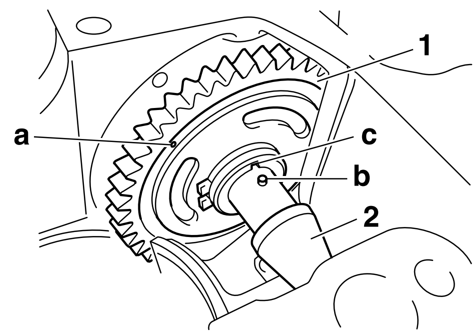


EBS30678
INSTALLING THE BALANCER SHAFT

1. Install:
   - Balancer driven gear “1”
   - Balancer shaft “2”

TIP

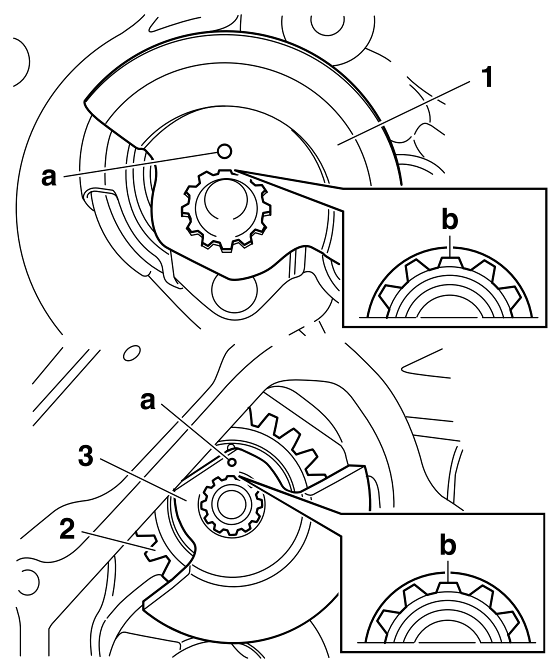
- Face the punch mark “a” on the balancer driven gear inward.
- Align the projection “b” on the balancer shaft with the slot “c” in the balancer driven gear.



2. Install:
   - Rear balancer weight “1”
   - Water pump drive gear “2”
   - Front balancer weight “3”
   - Washers
   - Lock washers **New**
   - Balancer weight bolts

TIP

Align the punch mark “a” on the balancer weight with the shorter spline “b” on the balancer shaft end.



3. Tighten:
   - Balancer weight bolts “1”

TIP

Place a wood “a” between the balancer weight “2” and crankcase.

	Balancer weight bolt **35 N·m (3.5 kgf·m, 25 lb·ft)**