

**Disassembly and Assembly****C-15, C-16 and C-18 On-highway Engines**

Media Number -REN2306-04

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i01810431

## Crankshaft Main Bearings - Install

SMCS - 1203-012

### Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	2P-5518	Bearing Tool	1
B	-	Plastigage	-
C	8T-5096	Dial Indicator	1

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**NOTICE****Keep all parts clean from contaminants.****Contaminants may cause rapid wear and shortened component life.**

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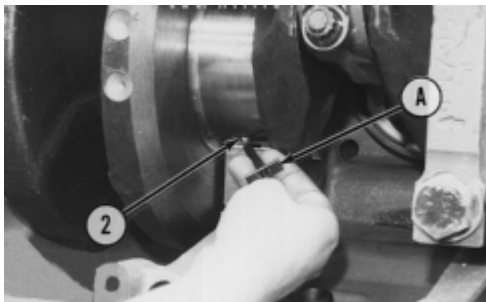
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Illustration 1

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**Note:** Install the crankshaft main bearings dry when clearance checks are made. Put clean engine oil on the crankshaft main bearings for final assembly.

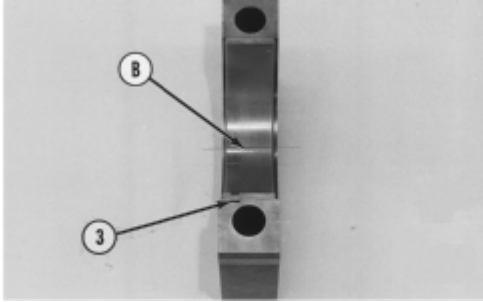
1. Install new upper main bearings by putting Tooling (A) in oil hole (2) and turning the

crankshaft in order to push the main bearing into the cylinder block. Insert the end of the bearing that does not have the tab into the cylinder block first.

**Note:** The upper halves of the main bearings have the oil groove and the oil hole.

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Illustration 2

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**Note:** Ensure that the main bearings are installed so that bearing tabs (3) fit into the notch in the cylinder block and in the main bearing caps.

2. Install new crankshaft main bearings in the main bearing caps.

**Note:** Refer to Special Publication, SEBD0531, "Engine Bearings and Crankshafts" for complete details concerning measuring of bearing clearances.

3. Use Tooling (B) to check the crankshaft main bearing clearances. Follow Steps 4 and 5 for the correct installation procedures and tightening procedures for the main bearing caps when the clearance check is performed. Refer to Disassembly and Assembly, "Bearing Clearance - Check".

Bearing clearance (new bearings) ... 0.091 to 0.186 mm (0.0036 to 0.0073 inch)

Maximum permissible bearing clearance (used bearings) ... 0.25 mm (0.010 inch)

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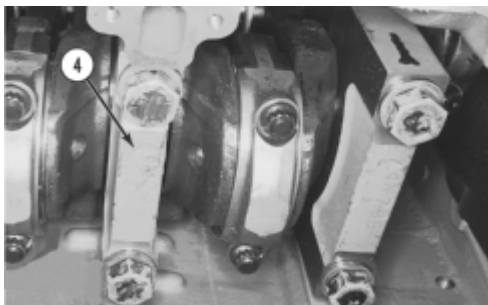
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Illustration 3

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Illustration 4

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**Note:** Ensure that the numbers on the main bearing caps match the numbers on the cylinder block. Also ensure that arrows (4) on the main bearing caps are toward the front of the cylinder block.

4. Apply clean engine oil on the bolts. Install the thrust plates during installation of the No. 4 main bearing. Install the main bearing caps and the bolts.

**Note:** Install the thrust plates for the No. 4 main bearing with the words "Block Side" toward the cylinder block.

5. Tighten the bolts for the main bearing caps, as follows:
    - a. Tighten the bolt first on the bearing tab side of the main bearing cap to a torque of  $260 \pm 14$  N·m ( $190 \pm 10$  lb ft).
    - b. Tighten the bolt opposite the bearing tab side to a torque of  $260 \pm 14$  N·m ( $190 \pm 10$  lb ft).
    - c. Put a mark on each bolt and on each main bearing cap.
    - d. Tighten the bolt opposite the bearing tab side for an additional  $120 \pm 5$  degrees (2 flats).
    - e. Tighten the bolt on the bearing tab side for an additional  $120 \pm 5$  degrees (2 flats).
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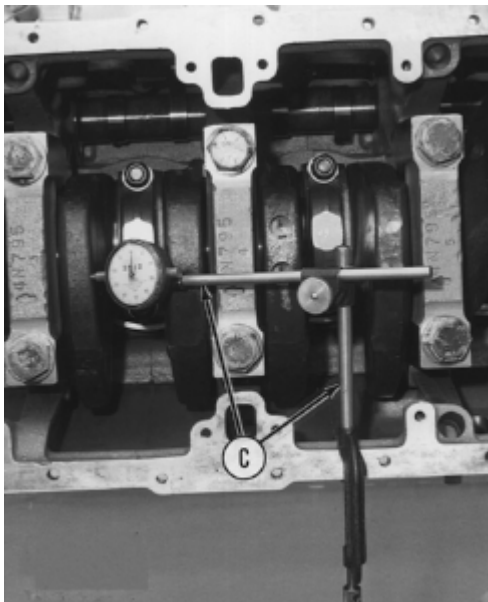


Illustration 5

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6. Use Tooling (C) to check the crankshaft end play. Ensure that Tooling (C) is against a machined surface. The end play is controlled by the thrust plates of No. 4 main bearing (center).

Crankshaft end play (new thrust plates) ... 0.15 to 0.55 mm (0.006 to 0.022 inch)

Maximum permissible crankshaft end play (used thrust plates) ... 0.89 mm (0.035 inch)

**End By:** Install the engine oil pump. Refer to Disassembly and Assembly, "Engine Oil Pump - Install".