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# Service Repair Manual

## **Models**

### 330C FM EXCAVATOR

Product: EXCAVATOR

Model: 330C FM EXCAVATOR B4N

Configuration: 330C Forest Swing Machines B4N00001-UP (MACHINE) POWERED BY C-9 Engine

## Disassembly and Assembly

C9

### Engine For Caterpillar Built Machines

Media Number -SEN9502-16

Publication Date -01/03/2014

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i05919858

## Cylinder Head - Install

SMCS - 1100-012

### Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	138-7575	Link Bracket	2
B	4C-5593	Anti-Seize Compound	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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1. Position a new gasket on the engine.
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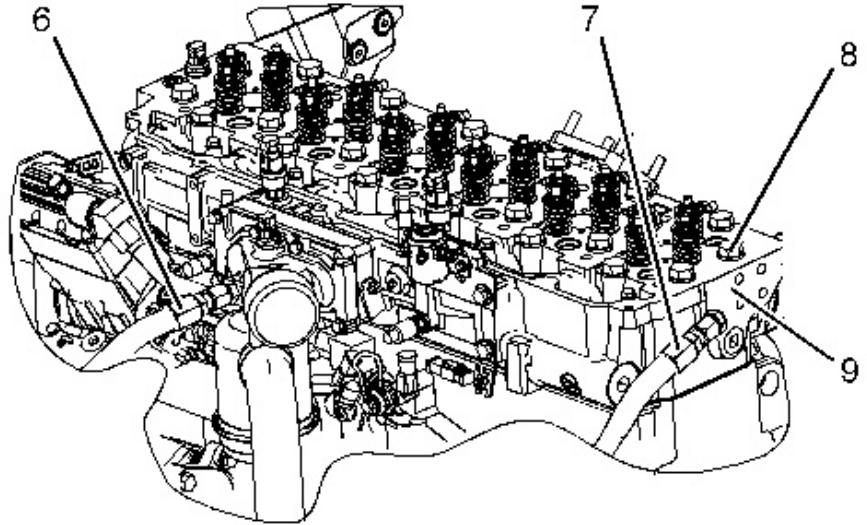


Illustration 1

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2. Attach Tooling (A) and a suitable lifting device to cylinder head (9). The weight of cylinder head (9) is approximately 147 kg (325 lb). Position the cylinder head onto the dowels in the engine block.
3. Apply Tooling (B) to the threads of bolts (8). Install bolts (8).

Tighten the plugs (not shown) for the high-pressure oil gallery on each end of the cylinder head to the following torque  $285 \pm 25 \text{ N}\cdot\text{m}$  ( $210 \pm 18 \text{ lb ft}$ ).

**Note:** Refer to Reuse and Salvage Guidelines, SEBF8301, "Inspection and Reuse of Critical Fasteners Used in All Engines" for reuse criteria of bolts (8).

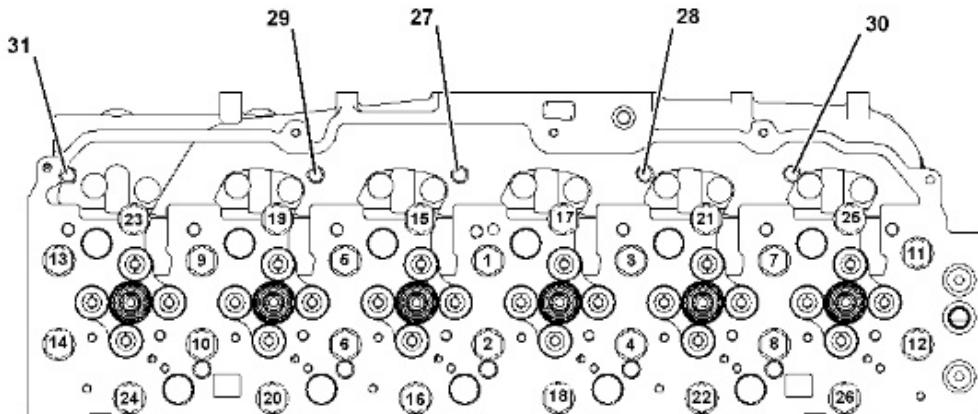


Illustration 2

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4. Tighten bolts (8) according to the following procedure:
  - a. Tighten Bolt (1) through Bolt (26) in a numerical sequence to a torque of  $160 \pm 15 \text{ N}\cdot\text{m}$  ( $118 \pm 11 \text{ lb ft}$ ).
  - b. Loosen Bolt (1) through Bolt (26) until the washers are loose under the bolt heads.

- c. Tighten Bolt (1) through Bolt (26) again in a numerical sequence to a torque of  $160 \pm 15 \text{ N}\cdot\text{m}$  ( $118 \pm 11 \text{ lb ft}$ ).
  - d. Place a mark on Bolt (1) through Bolt (26) .
  - e. Rotate Bolt (1) through Bolt (26) in a numerical sequence. Rotate the bolts in the clockwise direction for 90 degrees (1/4 turn) from the mark on the bolts.
  - f. Loosen Bolt (1) through Bolt (26) until the washers are loose under the bolt heads.
  - g. Tighten Bolt (1) through Bolt (26) in a numerical sequence to a torque of  $160 \pm 15 \text{ N}\cdot\text{m}$  ( $118 \pm 11 \text{ lb ft}$ ).
  - h. Place a mark on Bolt (1) through Bolt (26) .
  - i. Rotate Bolt (1) through Bolt (26) in a numerical sequence. Rotate the bolts in the clockwise direction for 90 degrees (1/4 turn) from the mark on the bolts.
  - j. Tighten Bolt (27) through Bolt (31) in a numerical sequence to a torque of  $28 \pm 7 \text{ N}\cdot\text{m}$  ( $21 \pm 5 \text{ lb ft}$ ).
- Tighten the plugs (not shown) for the high-pressure oil gallery on each end of the cylinder head to the following torque  $285 \pm 25 \text{ N}\cdot\text{m}$  ( $210 \pm 18 \text{ lb ft}$ ).
- 5. Connect the sensors.
  - 6. Connect hose assemblies (6) and (7) .
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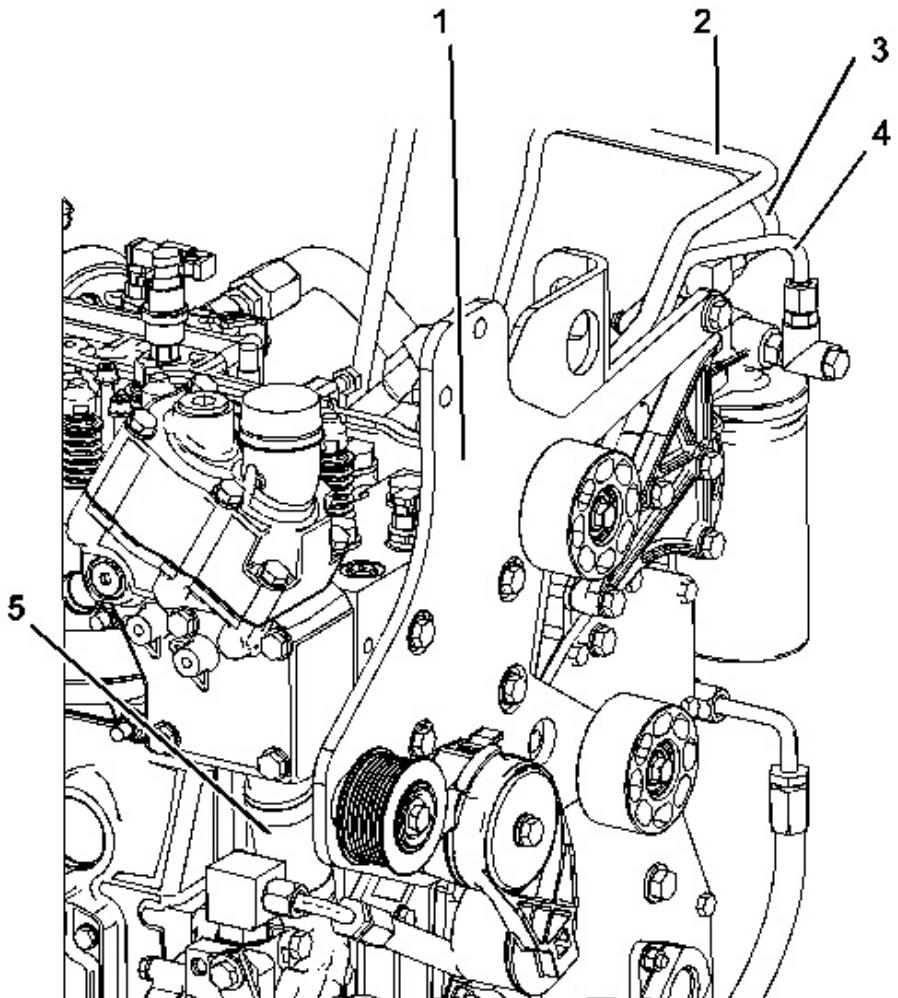


Illustration 3

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7. Connect hose (5) .
8. Install tube assembly (2) .
9. Connect tube assemblies (3) and (4) .
10. Install accessory drive group (1) .
11. Fill the cooling system. Refer to Operation and Maintenance Manual, "Refill Capacities and Recommendations".

**End By:**

- a. Install the valve mechanism cover base. Refer to Disassembly and Assembly, "Valve Mechanism Cover Base - Remove and Install".
- b. Install the alternator. Refer to Disassembly and Assembly, " Alternator - Remove and Install".
- c. Install the unit injectors. Refer to Disassembly and Assembly , "Unit Injector - Install".
- d. Install the rocker arm and shaft. Refer to Disassembly and Assembly , "Rocker Arm and Shaft - Install".

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