

Product: MOTOR GRADER

Model: 140H NA MOTOR GRADER 9ZN

Configuration: 140H Motor Grader 9ZN00001-UP (MACHINE) POWERED BY 3306 Engine

Disassembly and Assembly 3304B and 3306B Engines for Caterpillar Built Machines

Media Number -SEN5598-09

Publication Date -01/01/2013

Date Updated -25/01/2013

i00977179

Pistons and Connecting Rods - Assemble

SMCS - 1225-016

Assembly Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	7S-9470	Piston Ring Expander	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

1. Clean the grooves of the used pistons with an acceptable tool or **1U-8811** Cleaner .
 2. Install the connecting rod bearings. Ensure that the tabs on the back side of the connecting rod bearings are in the tab grooves of the connecting rod and the connecting rod cap.
-

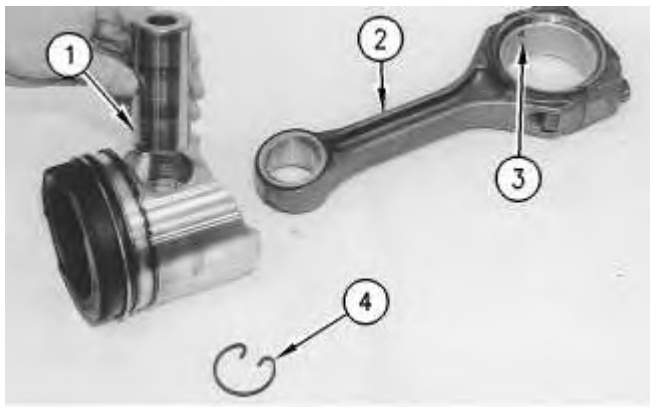


Illustration 1

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3. Install connecting rod (2) into the piston. Ensure that bearing tab slot (3) and the identification marks are on the same side as the "V" mark on the top of the piston.
4. Lubricate piston pin (1) with clean engine oil and install piston pin (1) through the piston and connecting rod. Install retaining ring (4) on the end of the piston pin.



Illustration 2

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5. Install the oil control ring on the piston with Tool (A) .
6. Use Tool (A) to install the intermediate piston ring with the side marked "UP-2" toward the top of the piston.
7. Use Tool (A) to install the top piston ring with the side marked "UP-1" toward the top of the piston.

Note: The gaps in the intermediate piston ring and the top piston ring should be separated by 120 degrees.

End By: Install the pistons and connecting rods. Refer to Disassembly and Assembly, "Pistons and Connecting Rods - Install".

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i00976704

Pistons and Connecting Rods - Install

SMCS - 1225-012

Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	5P-3525	Piston Ring Compressor	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

1. Rotate the crankshaft until the bearing journals are at the bottom center. The bearing journals that are at the bottom center are for the piston installation.
 2. Put clean engine oil on the crankshaft journals and on the inside of the cylinder liners. Put clean engine oil on the piston rings and the connecting rod bearings.
 3. Move the piston rings on the pistons until the ring openings are separated by approximately 120 degrees.
-



Illustration 1

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4. Put the piston in the cylinder liner with the "V" mark on the piston in alignment with the "V" mark on the cylinder block. Put tool (A) in position on the cylinder block and compress the piston rings.

NOTICE

The "V" mark must be visible on the piston and the cylinder block. If the "V" mark is not visible, the piston must be installed with the relief for the valve positioned toward the pushrod opening in the cylinder block. Damage may result if the pistons are not installed properly.

5. Push the piston into the cylinder liner and out of the ring compressor.

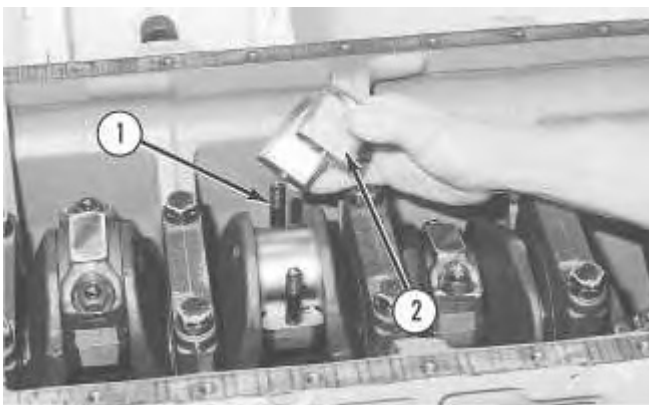


Illustration 2

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6. Guide connecting rod (1) into position on the crankshaft.
7. Put clean engine oil (SAE 30) on the lower half of the connecting rod bearing and on the connecting rod bolts.

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