

Product: COMPACT WHEEL LOADER

Model: 910 COMPACT WHEEL LOADER 41Y

Configuration: 910 WHEEL LOADER 41Y00001-UP (MACHINE) POWERED BY 3204 ENGINE

Disassembly and Assembly 3204 VEHICULAR ENGINE FOR 910 WHEEL LOADER

Media Number -SEN7985-00

Publication Date -01/01/1980

Date Updated -12/10/2001

Cylinder Head

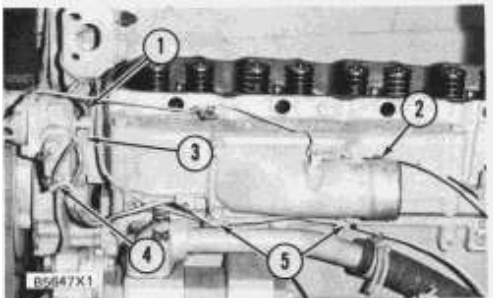
SMCS - 1100-11; 1100-12; 1101-15; 1101-16

Remove Cylinder Head

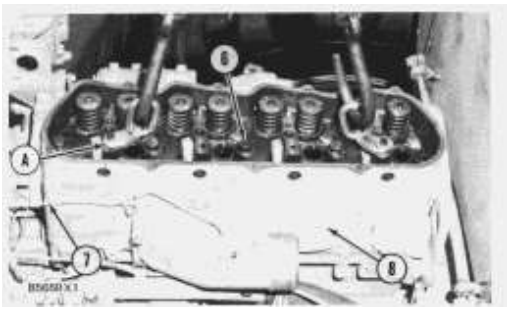
	Tools Needed	A
5P9736	Bracket-Link	2

start by:

- a) remove fuel injection nozzles
- b) remove exhaust manifold



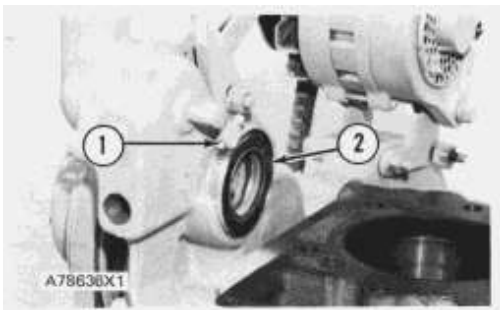
1. Remove tube assembly (1). Loosen hose clamp (3) between the cylinder head and timing gear cover.
2. Disconnect air filter indicator tube (2) from the pipe assembly.
3. Disconnect water temperature adapter (4) from the housing. Disconnect clips (5) and pull the adapter clear of the cylinder head.



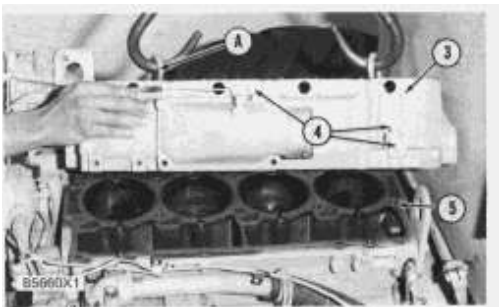
4. Disconnect tube (7) from the ether start aid valve tube.
5. Fasten tooling (A) and a hoist to the cylinder head as shown. Remove bolts (6) that hold the cylinder head to the cylinder block. Remove cylinder head (8). The weight of the cylinder head is 120 lb. (54 kg).

Install Cylinder Head

Tools Needed		A
5P9736	Bracket-Link	2



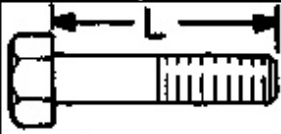
1. Inspect the condition of water ferrule and seal (2). Make a replacement if needed. Put water ferrule and seal (2) in position with the adjustment screw of hose clamp (1) toward the top and approximately 45° to the right of vertical (as seen from the front of the engine).



2. Clean the surfaces of the cylinder head and the cylinder block that make contact with each other. Make sure the surfaces are clean and dry. Install a new cylinder head gasket (5) on the cylinder block.
3. Fasten tooling (A) and a hoist to the cylinder head. Put cylinder head (3) in position on the cylinder block.

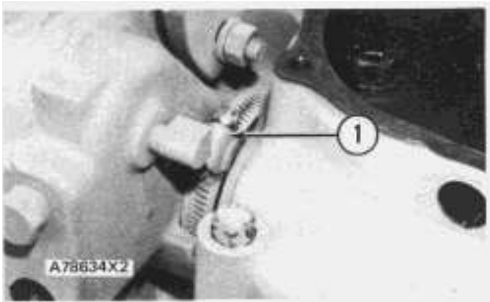
NOTE: If plugs (4) were removed, put 5P3413 Pipe Sealant on the threads and install the plugs in the cylinder head.

4. Put 5P960 Multipurpose Type Grease on the threads of all the cylinder head bolts.

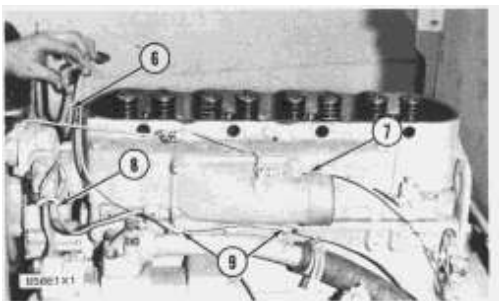
A77829X1 HEAD BOLT LOCATION CHART				
Dia.	Part No.	Location (Bolt No.)	Bolt Length "L"	
			in.	mm
1/2"	5P7810	5, 2, 4, 10	5.50	139.7
	2H6488	7, 9, 3, 1, 6, 8	5.00	127.0
	L1329	16, 14, 12, 17	3.00	76.2
	2B947	18, 11, 13, 15	2.25	57.2
3/8"	5B9603	20,21	5.00	127.0
	1A5964	19	4.50	114.3
	S1571	22	1.75	44.5

5. Install the cylinder head bolts and tighten as follows:

- a) Tighten bolts 1 through 18 in number sequence to a torque of 60 ± 10 lb.ft. (80 ± 14 N·m).
- b) Tighten bolts 1 through 18 in number sequence to a torque of 110 ± 5 lb.ft. (150 ± 7 N·m).
- c) Tighten bolts 1 through 18 again in number sequence to a torque of 110 ± 5 lb.ft. (150 ± 7 N·m).
- d) Tighten bolts 19 through 22 in number sequence to a torque of 32 ± 5 lb.ft. (43 ± 7 N·m).



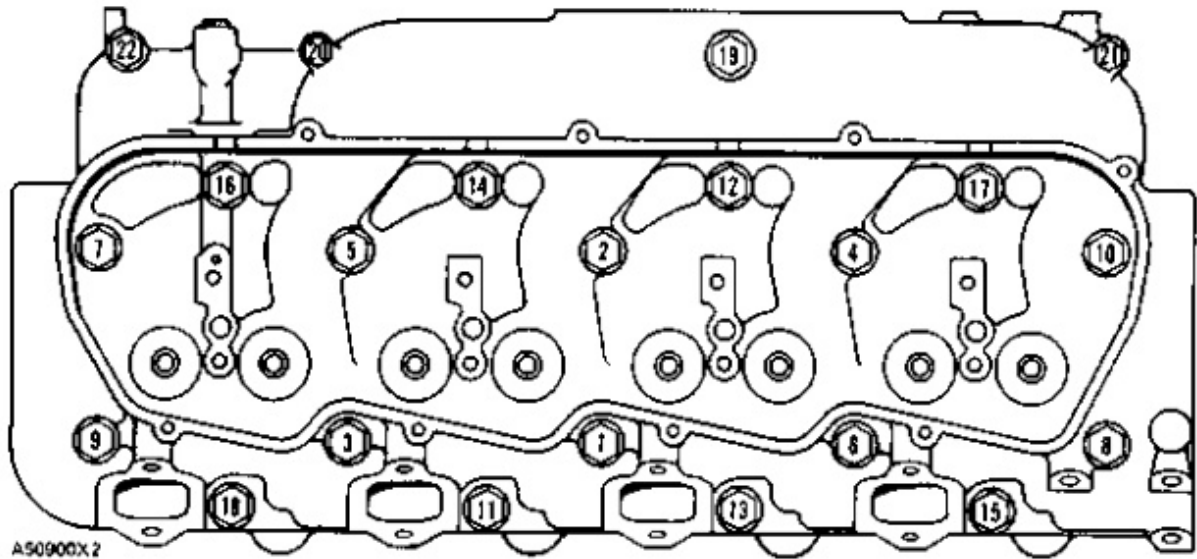
6. Tighten hose clamp (1).



7. Connect air filter indicator tube (7) to the pipe assembly.
8. Connect water temperature adapter (8) to the housing. Connect clips (9) to the cylinder head.
9. Install tube assembly (6).

end by:

- a) install exhaust manifold
- b) install fuel injection nozzles



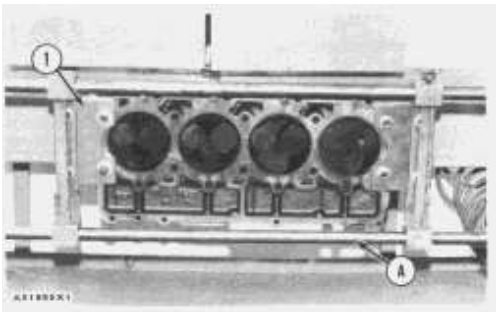
HEAD BOLT LOCATION AND TIGHTENING SEQUENCE

Disassemble Cylinder Head

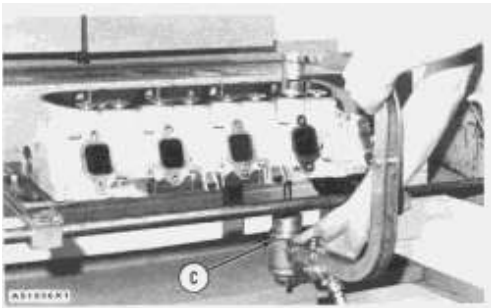
	Tools Needed	A	B	C	D
FT806	Cylinder Head Stand	1			
FT967	Adapter Plate	2			
8S2263	Valve Spring Tester		1		
5S1330	Valve Spring Compressor			1	
8S7170	Valve Seat Insert Puller Group				1

start by:

- a) remove cylinder heads



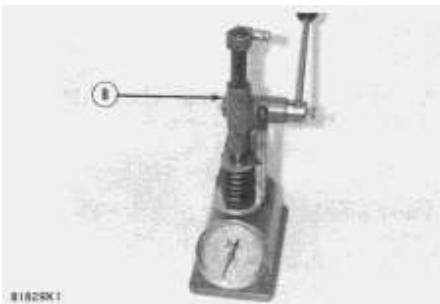
1. Fasten a hoist and put the cylinder head in position on tool (A). Use adapter plates (1) from tooling (A) to hold the head in place.



2. Put the valve springs under compression with tool (C).

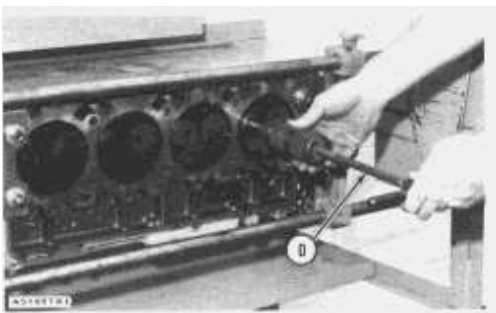
3. Remove the locks from the valves.

4. Remove tool (C), retainer, spring, washer and valve from the cylinder head. Put identification on the valve as to its location in the cylinder head.



5. Check the valve spring force with tool (B). Spring force must be 35 ± 5 lb. (155 ± 22 N) when the length of the spring force is 1.715 in. (43.56 mm).

6. Do Steps 2 through 5 for the remainder of the valves.



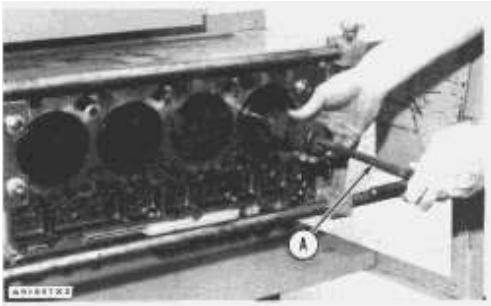
7. Remove the valve seat inserts with tooling (D).

NOTE: The valve guides are part of the cylinder head. Measure the bore in each valve guide .75 in. (19.0 mm) from the outside edge on both ends of each valve guide. The bore must be $.3745 \pm .0005$ in. (9.512 ± 0.013 mm). The maximum permissible bore is .3760 in. (9.550 mm). Valve guides worn more than the maximum specification can be made to the original size by knurling. See RECONDITIONING PROCEDURES FORM NO. REG00867.

Assemble Cylinder Head

Tools Needed		A	B	C
8S7170	Valve Seat Insert Puller Group	1		
5S1322	Valve Keeper Inserter		1	
5P1330	Valve Spring Compressor			1

1. Clean and remove burrs and all foreign material from the valve seat bores.

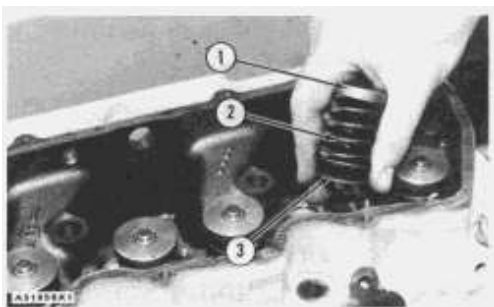


2. Lower the temperature of the valve seat inserts and install them with tooling (A).

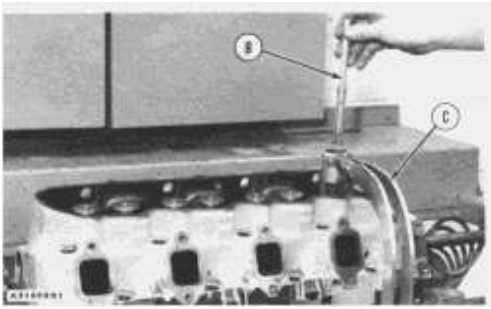
NOTICE

Do not make the diameter of the extractor (part of tooling A) in valve seat insert larger when the insert is installed in the cylinder head.

3. Grind the valve inserts according to specifications given in ENGINE SPECIFICATIONS.



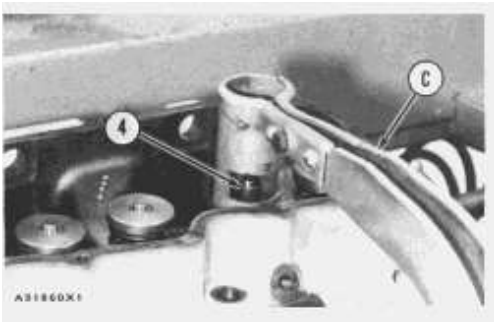
4. Put clean engine oil on the valve stem. Install the valve, washer (3), spring (2) and retainer (1) in the cylinder head.



5. Put the valve spring under compression with tool (C).
6. Install the locks on the valve stem with tool (B).

! WARNING

Make sure locks (4) are in their correct position on the valve. The locks can be thrown from the valve when tool (C) is released if the locks are not in their correct position on the valve.



7. Remove tool (C) and hit the valve with a rubber hammer to be sure the locks are in their correct position.
8. Do Steps 4 through 7 for the remainder of the valves.

end by:

- a) install cylinder heads
-

Product: COMPACT WHEEL LOADER

Model: 910 COMPACT WHEEL LOADER 41Y

Configuration: 910 WHEEL LOADER 41Y00001-UP (MACHINE) POWERED BY 3204 ENGINE

Disassembly and Assembly 3204 VEHICULAR ENGINE FOR 910 WHEEL LOADER

Media Number -SEN7985-00

Publication Date -01/01/1980

Date Updated -12/10/2001

Valve Lifters

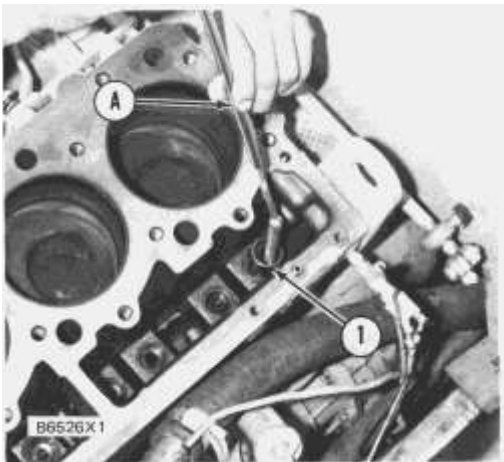
SMCS - 1209-10

Remove And Install Valve Lifters

Tools Needed		A
8S2293	Magnet	1

start by:

a) remove cylinder head



1. Use tool (A) to remove valve lifters (1) from the cylinder block.
2. Put STP Oil Treatment or Casite Motor Honey on the lifter face that makes contact with the camshaft.
3. Install the valve lifter (1) in the cylinder block with tool (A).

end by:

a) install cylinder head

Product: COMPACT WHEEL LOADER

Model: 910 COMPACT WHEEL LOADER 41Y

Configuration: 910 WHEEL LOADER 41Y00001-UP (MACHINE) POWERED BY 3204 ENGINE

Disassembly and Assembly 3204 VEHICULAR ENGINE FOR 910 WHEEL LOADER

Media Number -SEN7985-00

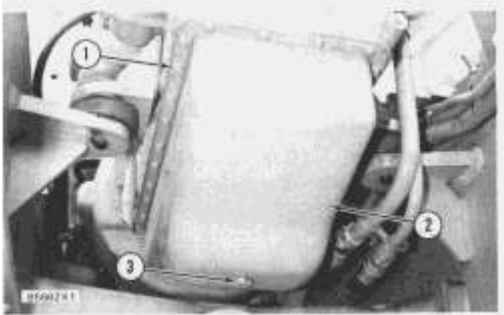
Publication Date -01/01/1980

Date Updated -12/10/2001

Oil Pan

SMCS - 1302-11; 1302-12

Remove Oil Pan



1. Remove drain plug (3) and drain the oil from the oil pan.
2. Remove the oil level gauge (not shown) from the guide tube.
3. Remove bolts (1) that hold the oil pan to the cylinder block. Remove oil pan (2).

Install Oil Pan

1. Inspect the oil pan gasket. If necessary, make a replacement.



2. Put oil pan (1) in position on the cylinder block. Install the bolts that hold it.
3. Install the oil level gauge in the guide tube.

4. Install the plug in the oil pan. Tighten the plug to a torque of 50 ± 10 lb.ft. (70 ± 14 N·m).

5. Fill the engine with oil to the correct level. See LUBRICATION AND MAINTENANCE GUIDE.

Product: COMPACT WHEEL LOADER

Model: 910 COMPACT WHEEL LOADER 41Y

Configuration: 910 WHEEL LOADER 41Y00001-UP (MACHINE) POWERED BY 3204 ENGINE

Disassembly and Assembly 3204 VEHICULAR ENGINE FOR 910 WHEEL LOADER

Media Number -SEN7985-00

Publication Date -01/01/1980

Date Updated -12/10/2001

Connecting Rod Bearings

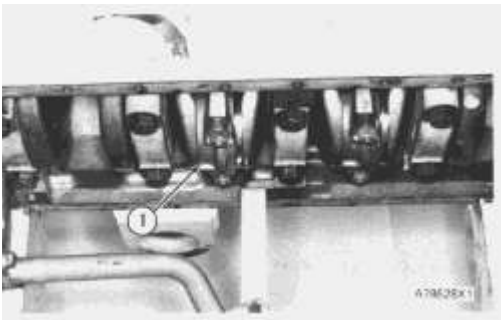
SMCS - 1219-10

Remove And Install Connecting Rod Bearings

Tools Needed	A
Plastigage	*

start by:

a) remove oil pan



1. Turn the crankshaft until two pistons are at bottom center. Remove connecting rod caps (1) from the two connecting rods. Remove the lower half of the bearings from the caps.
2. Push the connecting rods away from the crankshaft and remove the upper half of the bearings.

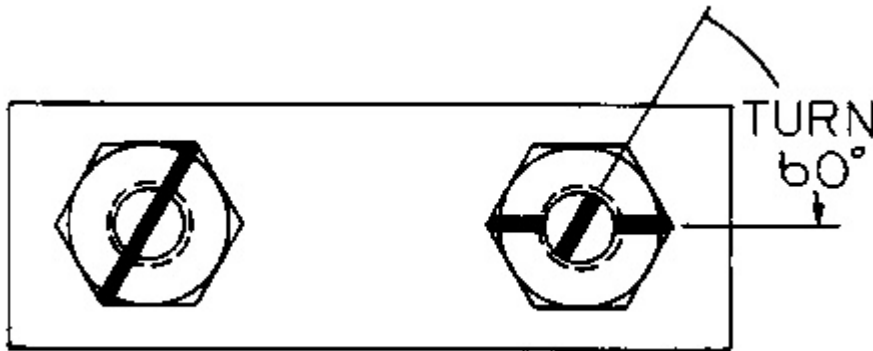
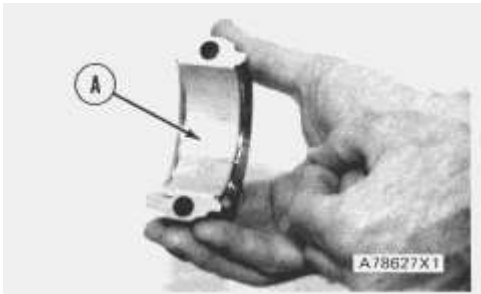
NOTICE

Be careful not to damage the crankshaft journals. Do not turn the crankshaft while any of the connecting rod caps are removed.

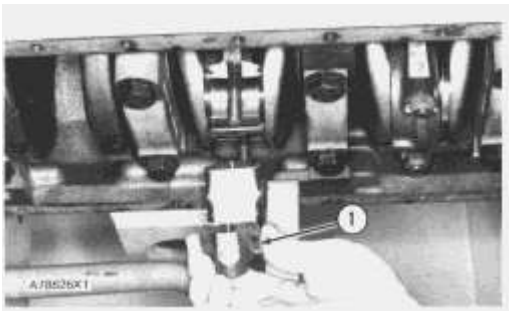
3. Clean the surfaces where the bearings fit. Install the upper half of the new bearings in the rods. Put the connecting rods in position on the crankshaft.
4. Clean the surfaces where the bearings fit. Install the lower half of the new bearings in the caps. Put clean engine oil on the bolt threads and contact surfaces of the nuts.

NOTICE

When the connecting rod caps are installed make sure that the numbers on the side of the caps are next to and respective with the number on the side of the connecting rods.



93833X1



5. Check the bearing clearance with Plastigage (A). Put the caps (1) in position on the connecting rods and install the nuts. Tighten the nuts to a torque of 30 ± 3 lb.ft. (40 ± 4 N·m). Put a mark on each nut and the end of each bolt. Tighten the nuts $60^\circ \pm 5^\circ$ more.

6. Remove the cap. Measure the thickness of the Plastigage. The rod bearing clearance must be $.0033 \pm .0018$ in. (0.084 ± 0.046 mm). The maximum permissible clearance is $.007$ in. (0.18 mm).

7. Put clean engine oil on the bearings and crankshaft journals. Put the caps in position on the connecting rods and install the nuts. Tighten the nuts to a torque of 30 ± 3 lb.ft. (40 ± 4 N·m). Put a mark on each nut and the end of each bolt. Tighten the nuts $60^\circ \pm 5^\circ$ more.

8. Do Steps 1 through 7 again for the other bearings.

end by:

a) install oil pan

Product: COMPACT WHEEL LOADER

Model: 910 COMPACT WHEEL LOADER 41Y

Configuration: 910 WHEEL LOADER 41Y00001-UP (MACHINE) POWERED BY 3204 ENGINE

Disassembly and Assembly 3204 VEHICULAR ENGINE FOR 910 WHEEL LOADER

Media Number -SEN7985-00

Publication Date -01/01/1980

Date Updated -12/10/2001

Crankshaft Main Bearings

SMCS - 1203-10

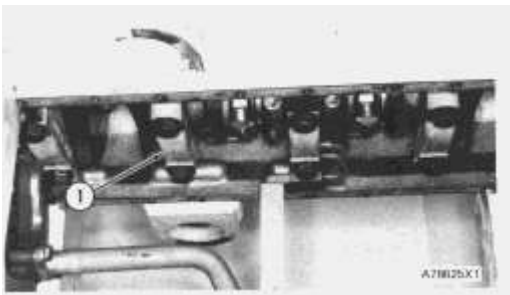
Remove And Install Crankshaft Main Bearings

	Tools Needed	A	B	C
2P5518	Bearing Tool	1		
	Plastigage		*	
8S2328	Dial Test Indicator Group			1

start by:

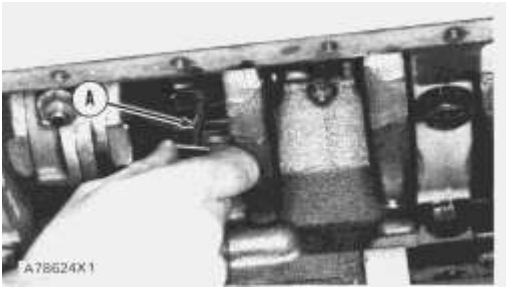
a) remove oil pan

1. The main bearing caps are installed with the part number toward the front of the engine. Each cap has a number on the bottom of the cap which is the same as the number on the camshaft side of the cylinder block.



2. Remove the bolts that hold main cap (1). Remove bearing cap (1) and the lower half of the main bearing.

3. Remove the bearing from the cap.



4. Turn the crankshaft until tool (A) can be installed in the oil hole in the crankshaft journal. Install tool (A). Turn the crankshaft in the direction which will push the upper main bearing out, tab end first.

NOTICE

If the crankshaft is turned in the wrong direction, the tab of the bearing will be pushed between the crankshaft and the cylinder block. This will cause damage to the crankshaft and block.

5. Install lower bearings in the bearing caps.
6. Install upper bearings in the cylinder block with tool (A).

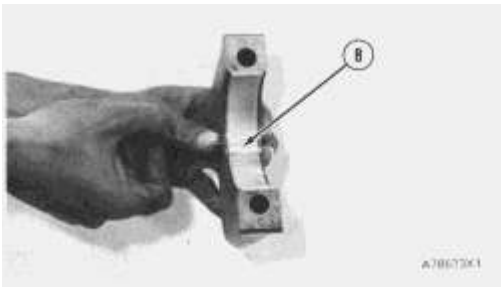
NOTE: Be sure the tab on the back of the bearings fits in the groove of the caps and cylinder block.

NOTICE

When bearing caps are installed, make sure the caps are installed with the part number toward the front of the engine and the number on the bottom of the cap is the same as the number on the camshaft side of the engine.

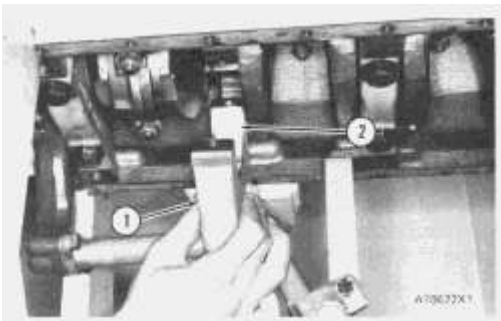
NOTE: When the bearing clearance is checked and the engine is in a vertical position, such as in the vehicle, the crankshaft will have to be lifted up and held against the upper halves of the main bearings to get a correct measurement with Plastigage (B). The Plastigage will not hold the weight of the crankshaft and give a correct indication. If the engine is in a horizontal position, such as on an engine stand, it is not necessary to hold the crankshaft up. Do not turn crankshaft when Plastigage is in position to check clearance.

7. Check the bearing clearance with tool (B) as follows:



a) Put tool (B) and cap (1) in position and install the bolts. Tighten the bolts to a torque of 120 ± 10 lb.ft. (160 ± 14 N·m).

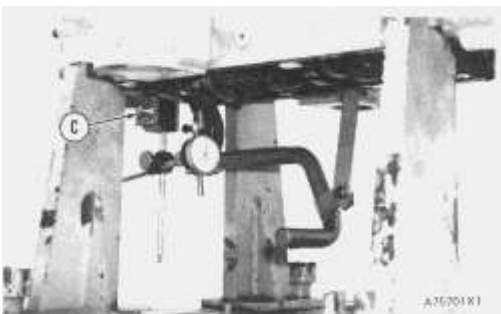
b) Remove the bearing cap and measure the thickness of the Plastigage. The main bearing clearance must be .0030 to .0066 in. (0.076 to 0.168 mm). The maximum permissible clearance is .010 in. (0.25 mm).



8. Put clean engine oil on the bolt threads and lower half of the main bearing. Put bearing cap (1) and lower half of main bearing (2) in position on the engine. Install the bolts. Tighten the bolts to a torque of 120 ± 10 lb.ft. (160 ± 14 N·m).

9. Do Steps 1 through 9 for the remainder of the bearings.

NOTE: When a replacement of the thrust plates on No. 3 main bearing is made, install the thrust plates with the identification "BLOCK SIDE" next to the block.



10. Check the crankshaft end play with tooling (C). The end play is controlled by the thrust bearing on No. 3 main bearing. The end play with a new bearing must be .0025 to .0190 in. (0.064 to 0.483 mm). The maximum permissible end play for used bearings is .035 in. (0.89 mm).

Product: COMPACT WHEEL LOADER

Model: 910 COMPACT WHEEL LOADER 41Y

Configuration: 910 WHEEL LOADER 41Y00001-UP (MACHINE) POWERED BY 3204 ENGINE

Disassembly and Assembly 3204 VEHICULAR ENGINE FOR 910 WHEEL LOADER

Media Number -SEN7985-00

Publication Date -01/01/1980

Date Updated -12/10/2001

Pistons

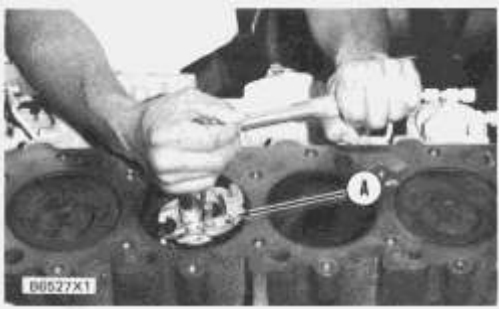
SMCS - 1214-11; 1214-12; 1214-15; 1214-16

Remove Pistons

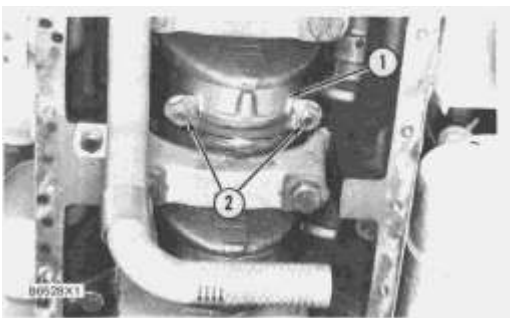
Tools Needed		A
8S2269	Ridge Reamer	1

start by:

- a) remove cylinder head
- b) remove oil pan



1. Remove the carbon ridge from the top inside surface of the cylinders with tool (A).
2. Turn the crankshaft until two pistons are at bottom center position.



3. Remove nuts (2). Remove rod cap (1). Put pieces of rubber hose or tape on the threads of the connecting rod bolts as protection for the crankshaft.
4. Push the piston and connecting rod away from the crankshaft until the piston rings are above the cylinder block.



5. Remove piston (3) and the connecting rod. Keep each connecting rod with its respective connecting rod and piston.

NOTICE

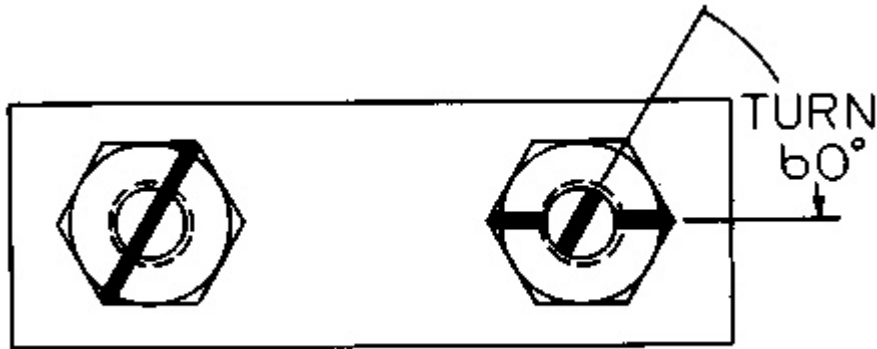
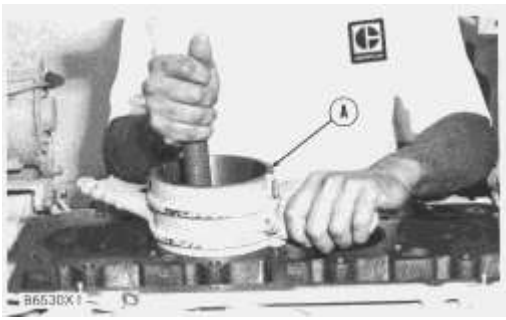
Do not turn the crankshaft while any of the connecting rods are in the engine without the caps installed.

6. Do Steps 2 through 5 for the remainder of the pistons.

Install Pistons

	Tools Needed	A	B
5P3524	Ring Compressor	1	
	Plastigage		*

1. Put clean engine oil on the piston rings, connecting rod bearings, cylinder walls and crankshaft bearing journals.
2. Turn the crankshaft until the bearing journal for the piston to be installed is at bottom center.
3. Make sure the piston ring gaps are at least 120° apart on the piston.



93833X1

4. Use tool (A) and install the piston in the engine in the same cylinder bore from which it was removed. The hole (crater) in the top of the piston must be toward the camshaft side of the engine.

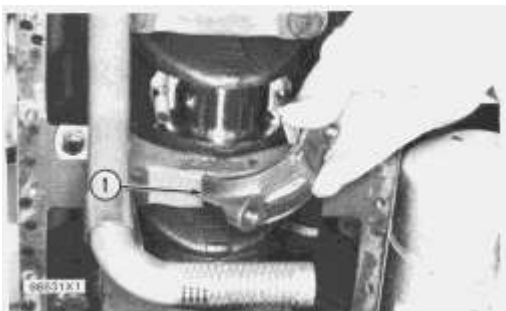
NOTE: For more detail about the installation of connecting rod bearings, see REMOVE AND INSTALL CONNECTING ROD BEARINGS.

5. Check the bearing clearances with tool (B).

6. Put clean engine oil on the threads of the bolts and contact surfaces of the nuts for the connecting rod caps.

NOTICE

When the connecting rod caps are installed, make sure that the number on the side of the cap is next to and respective with the number on the side of the connecting rod.



7. Put the cap (1) in position on the connecting rod and install the nuts. Tighten the nuts to a torque of 30 ± 3 lb.ft. (40 ± 4 N·m). Put a mark on each nut and the end of each bolt. Tighten the nuts $60 \pm 5^\circ$ more.

8. Do Steps 1 through 7 for the remainder of the pistons.

end by:

a) install cylinder head

Disassemble Pistons

	Tools Needed	A	B
5F9059	Ring Expander	1	
5P8639	Press Group		1
8F24	Hose Assembly		1
1P2375	Coupler Assembly		1
1P2376	Coupler Assembly		1
5P8719	Hand Pump		1
5P8652	Tool Group		1

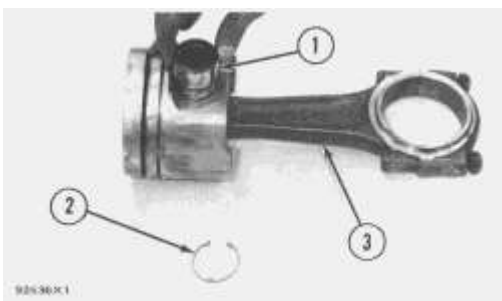
start by:

a) remove pistons



1. Remove the rings from the piston with tool (A).

2. Remove the bearings from the connecting rod and connecting rod cap.



Thank you so much for reading.
Please click the “Buy Now!”
button below to download the
complete manual.



After you pay.

You can download the most
perfect and complete manual in
the world immediately.

Our support email:

ebooklibonline@outlook.com