

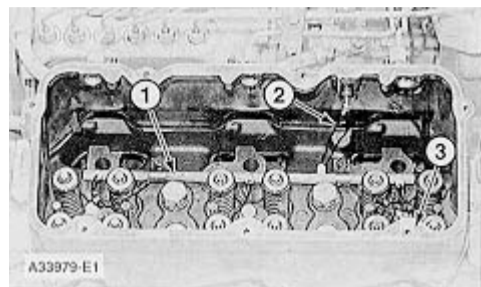
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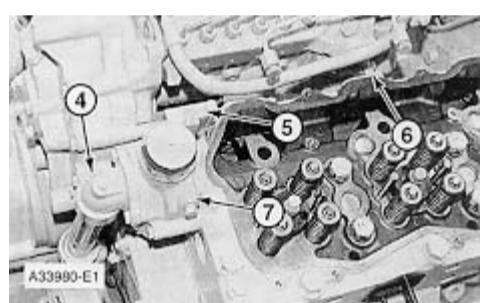
Remove Cylinder Head Assemblies

Start By:

- a. remove rocker shaft assembly
- b. remove exhaust manifold



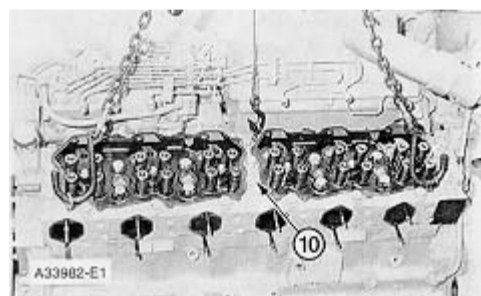
1. Disconnect wires (2) from the valve cover base. Remove glow plug harnesses (1).
2. Remove valve cover bases (3).



3. Disconnect elbow (4) to temperature regulator housing (7).

4. Remove bracket (5) and bracket (6). Remove bracket (8). Remove the remainder of the 3/8" head bolts. Remove lifting bracket (9).

5. Install three 5/16" -18 NC forged eyebolts in the cylinder head. Fasten a hoist to the cylinder head.



6. Remove cylinder head bolts (10). Remove the cylinder head. The weight of the cylinder head is **135 kg (300 lb.)**.

NOTICE

Do not put the cylinder head down on a flat surface. Direct injection nozzles extend out from the bottom surface of the cylinder head and will be damaged by the weight of the head.

A new spacer plate gasket must be installed when the cylinder head is removed. See Remove & Install Spacer Plate.

Install Cylinder Head Assemblies

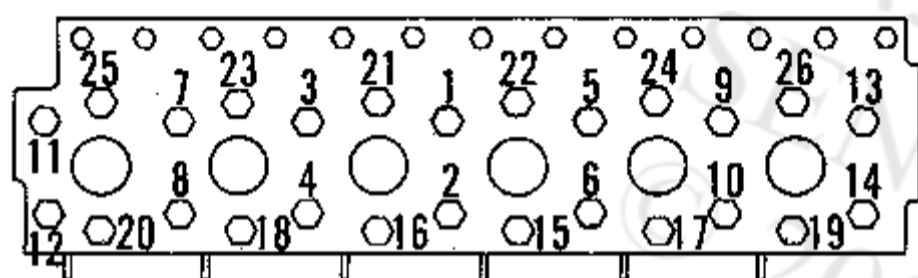
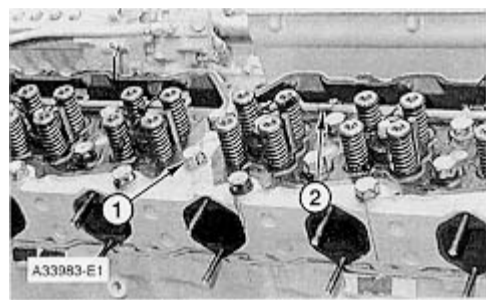
Tools Needed		A	B
FT1322	Lever Assembly	1	
5P0144	Socket		1

1. Thoroughly clean the spacer plate and bottom surface of the cylinder head. Install a new head gasket and water seals. Do not use any adhesives.

NOTE: A new spacer plate gasket must be used when the cylinder head is installed. See Remove & Install Spacer Plate.



2. Put the cylinder head into position on the spacer plate. Be careful not to damage the head gasket or water seals.

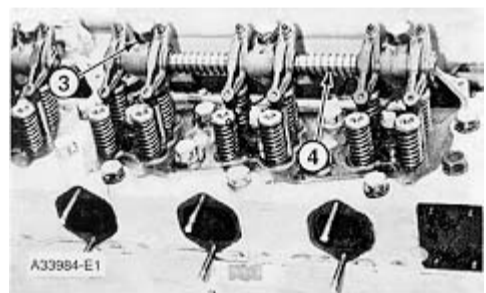


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3. Put **5P3931 Anti-Seize Compound** on the threads of head bolts (1). Install the cylinder head bolts and washers and tighten them as follows:

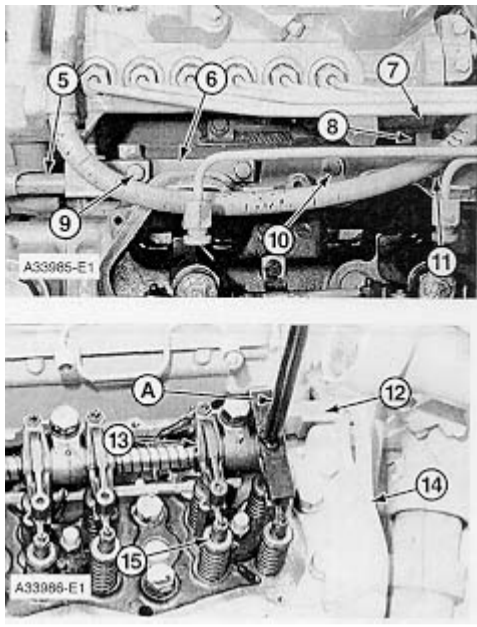
- Tighten bolts 1 through 20 in number sequence to **270 ± 25 N·m (200 ± 20 lb ft)**.
- Tighten bolts 1 through 20 in number sequence to **447 ± 20 N·m (330 ± 15 lb.ft.)**.
- Tighten bolts 1 through 20 in number sequence again to **447 ± 20 N·m (330 ± 15 lb.ft.)**.

4. Install glow plug harness (2).



5. Put rocker shaft assembly (4) into position on the cylinder head. Put **5P3931 Anti-Seize Compound** on bolts (3). Install rocker shaft assembly bolts and washers. Tighten the bolts as follows:

- Tighten bolts 21 through 26 in number sequence to **270 ± 25 N·m (200 ± 20 lb ft)**.
- Tighten bolts 21 through 26 in number sequence to **447 ± 20 N·m (330 ± 15 lb.ft.)**.
- Tighten bolts 21 through 26 in number sequence again to **447 ± 20 N·m (330 ± 15 lb.ft.)**.



6. Install bracket (6) and spacer (5) on the cylinder head. Tighten bolts (9) finger tight. Install the bolt that holds bracket (6) to the automatic timing advance housing and tighten to standard torque. Tighten bolts (9) to **43 ± 7 N·m (32 ± 5 lb ft)**.

7. Install bracket (8). Tighten bolts (11) finger tight. Tighten bolts (7) to standard torque. Tighten bolts (11) to **43 ± 7 N·m (32 ± 5 lb ft)**.

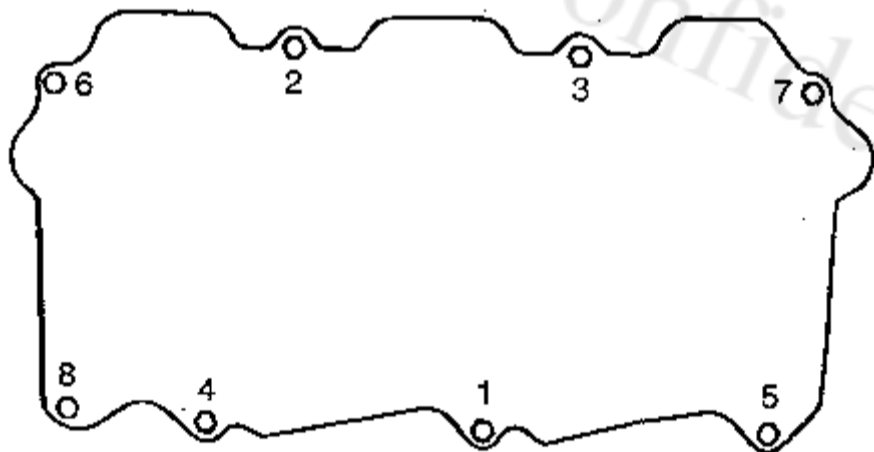
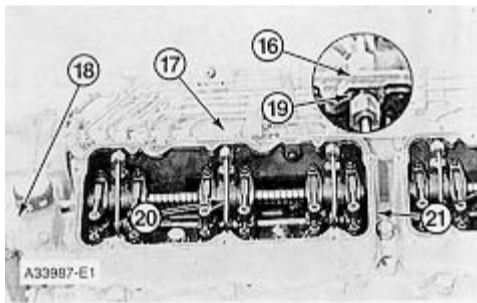
8. Follow Step 6 for bracket (12).

9. Put **5P3931 Anti-Seize Compound** on the remainder of 3/8" head bolts (10) and tighten to **43 ± 7 N·m (32 ± 5 lb ft)**.

10. Install lifting bracket (14).

11. Put clean engine oil on the bridge dowels and on valve bridges (15). Install the valve bridges in their correct locations on the cylinder head.

12. Make a connection between rocker arms (13) and the push rods with Tool (A). Make an adjustment of the valves to have a clearance of **0.38 mm (.015 in)** for intake and **0.76 mm (.030 in)** for exhaust. See Valve Clearance Setting in Testing & Adjusting.



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13. Install valve cover base (21) on the cylinder head. Tighten the bolts in the sequence shown.

14. Put clean engine oil or glycerin on the O-ring seal for adapter (19). Install adapter (19) and lock (16).

15. Connect fuel line (17) to adapter (19). Tighten the fuel line nut to **40 ± 7 N·m (30 ± 5 lb ft)** with Tool (B).

16. Install fuel line (20). Tighten the fuel line nuts to **40 ± 7 N·m (30 ± 5 lb ft)** with Tool (B).

17. Connect elbow (18) to the temperature regulator housing.

End By:

- a. install exhaust manifold
- b. install rocker shaft assembly

16:30:05-03:00

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