

Product: WHEEL TRACTOR

Model: 623G WHEEL TRACTOR ARW

Configuration: 623G Wheel Tractor ARW00001-UP (MACHINE) POWERED BY 3406E Engine

Disassembly and Assembly 3406E and 3456 Engines for Caterpillar Built Machines

Media Number -REN1364-06

Publication Date -01/05/2008

Date Updated -20/05/2008

i02489840

Cylinder Head - Remove

SMCS - 1100-011

Removal Procedure

Start By:

- A. Remove the water temperature regulator. Refer to Disassembly and Assembly, "Water Temperature Regulator - Remove and Install".
- B. Remove the exhaust manifold. Refer to Disassembly and Assembly, "Exhaust Manifold - Remove and Install".
- C. Remove the valve mechanism cover base. Refer to Disassembly and Assembly, "Valve Mechanism Cover Base - Remove and Install".
- D. Remove the electronic unit injectors. Refer to Disassembly and Assembly, "Electronic Unit Injector - Remove".
- E. Remove the camshaft gear. Refer to Disassembly and Assembly, "Camshaft Gear - Remove and Install".

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting and repair of the product. Be prepared to collect the fluid with suitable containers

before opening any compartment or disassembling any component containing fluids.

Refer to Special Publication, NENG2500, "Caterpillar Dealer Service Tool Catalog" for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

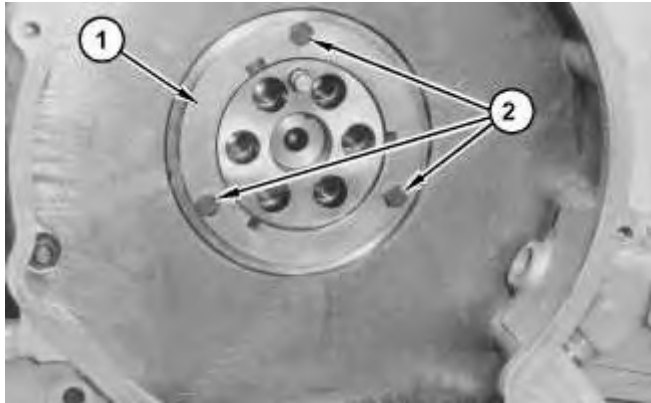


Illustration 1

g01028806

NOTICE

Do not turn the crankshaft or the camshaft while the camshaft gear is removed. If the front gear group is not correctly timed during installation, interference can occur between the pistons and the valves, resulting in damage to the engine.

1. Remove bolts (2) and thrust plate (1) .
-

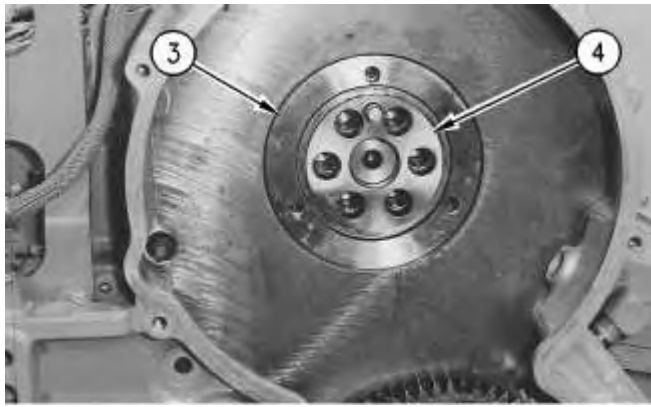


Illustration 2

g00576209

2. Remove seal assembly (3) and adapter (4) .

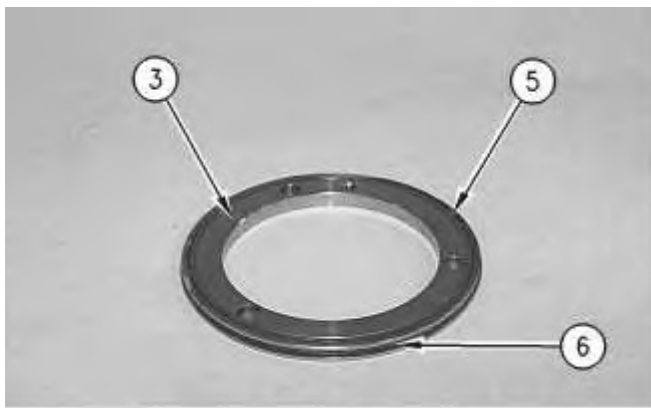


Illustration 3

g00576240

3. Remove O-ring seals (5) and (6) from seal assembly (3) .

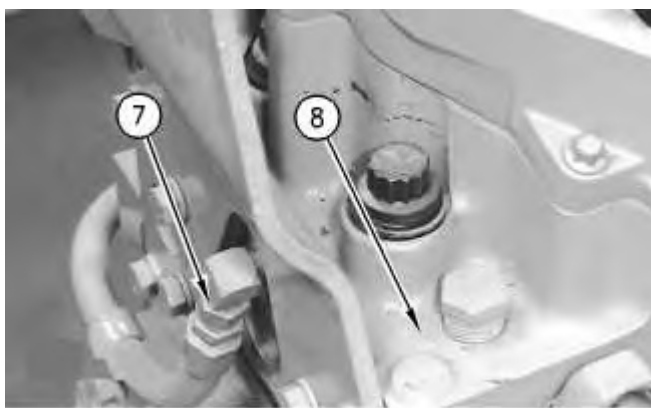


Illustration 4

g00580805

4. Disconnect hose assembly (7) from cylinder head (8) .

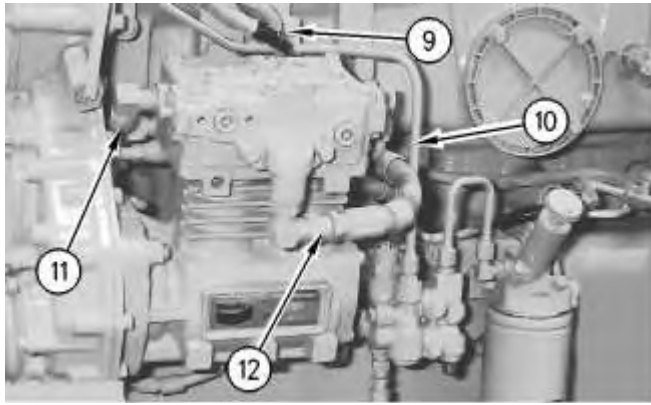


Illustration 5

g00580807

Note: If the engine is not equipped with an air compressor, skip Step 5.

5. Disconnect hose assemblies (11) and hose assemblies (12) from the air compressor.
6. Remove the bolt and clamp (9) from the hose assembly. Remove hose assembly (10) .

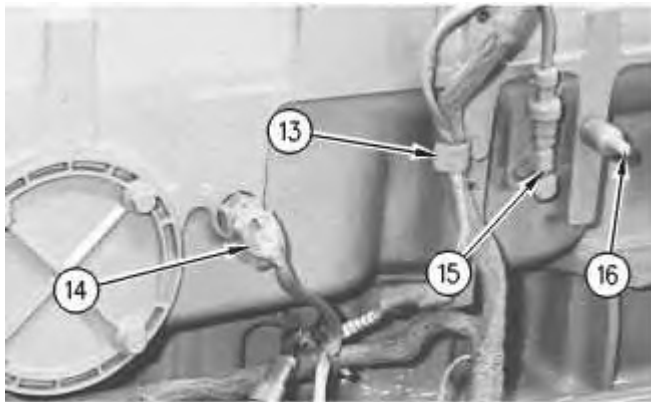


Illustration 6

g00580808

7. Remove the bolt and support clip (13) for the harness assembly.
 8. Disconnect the harness assembly from sensor (14) , sensor (15) , and ground stud (16) .
-

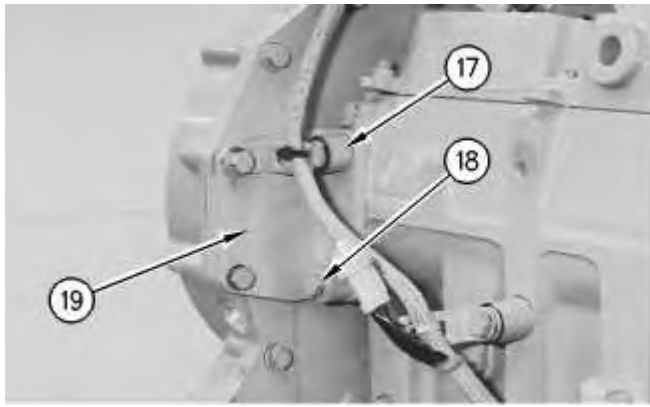


Illustration 7

g00580810

9. Remove bolts (18) and spacers (17) that fasten bracket (19) to the cylinder head.

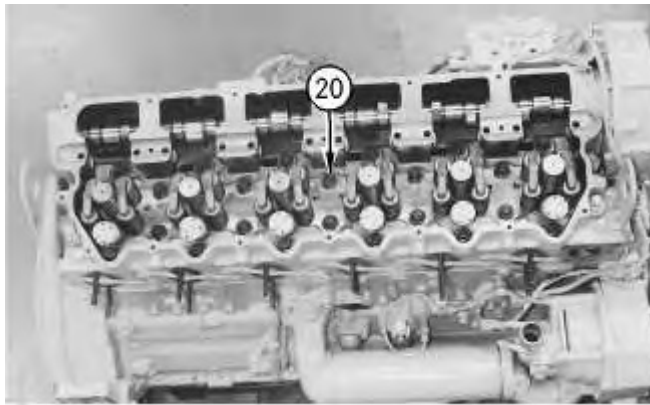


Illustration 8

g00580811

10. Remove cylinder head bolts (20) .

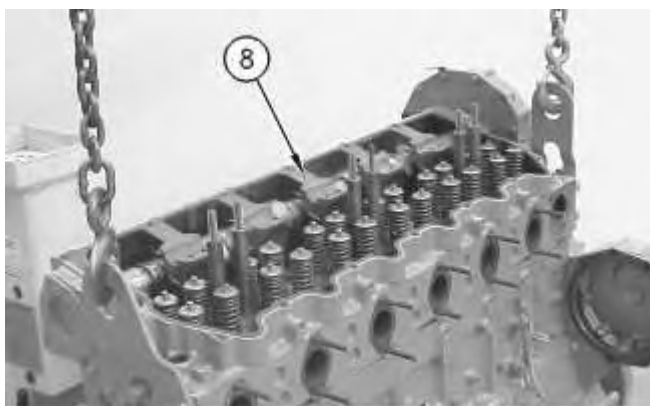


Illustration 9

g00580812

11. Attach a suitable lifting device to cylinder head (8) . Ensure that all of the following items are clear from the cylinder head: harness assemblies, tube assemblies and hose assemblies.
12. Carefully remove cylinder head (8) . The weight of the cylinder head is approximately 235 kg (518 lb).

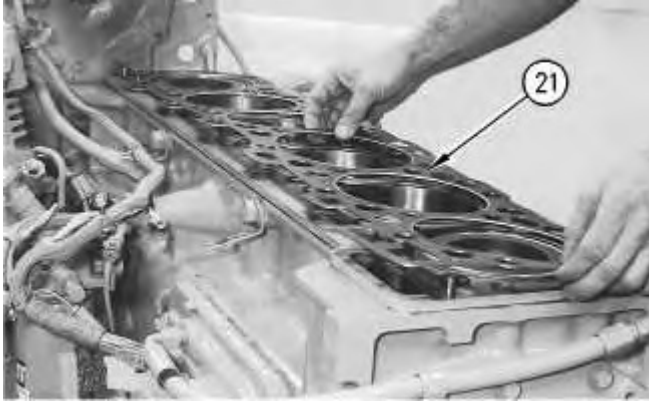


Illustration 10

g00580833

13. Remove cylinder head gasket (21) .

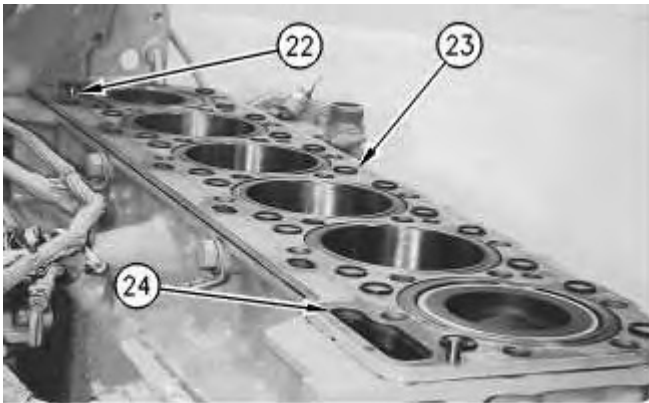


Illustration 11

g00632047

14. Remove O-ring seal (22) and water seals (23) . Remove seal (24) .
 15. Remove the spacer plate from the engine.
-



Illustration 12

g00632048

16. Remove spacer plate gasket (25) .

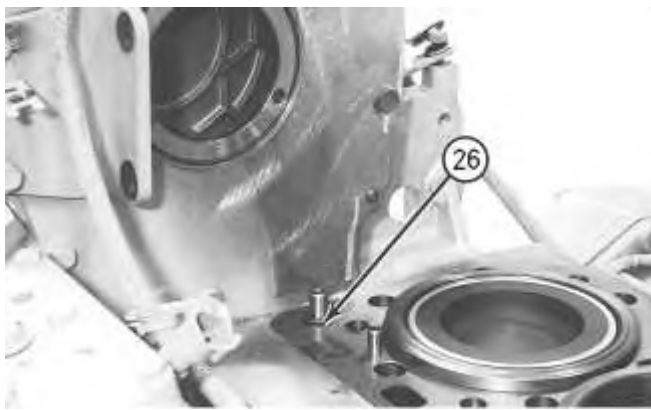


Illustration 13

g00632049

17. Remove O-ring seal (26) .

Note: If the cylinder head was removed from the cylinder block as a result of a failed head gasket, refer to Special Instruction, SEHS9564, "3400 Cylinder Head Joint Repair Procedure" for additional information.

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Disassembly and Assembly

3406E and 3456 Engines for Caterpillar Built Machines

Media Number -REN1364-06

Publication Date -01/05/2008

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i07498909

Cylinder Head - Install

SMCS - 1100-012

Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	-	Loctite Graphite 50 Anti-Seize	-
B	8T-2998	Lubricant	1
C	9S-3263	Thread Lock Compound	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

Note: Thoroughly clean the spacer plate and the bottom surface of the cylinder head. A new spacer plate gasket must be installed when the cylinder head is removed.

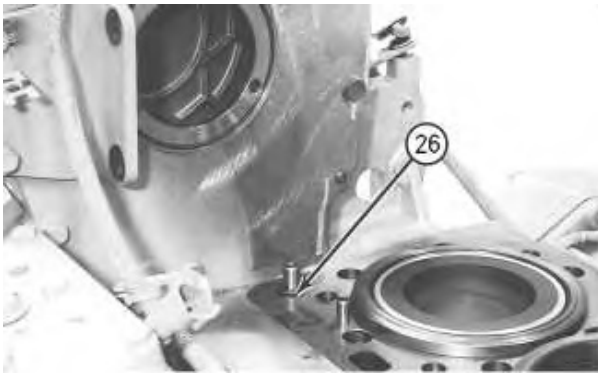


Illustration 1

g00632049

1. Apply a thin film of clean engine oil to O-ring seal (26). Install O-ring seal (26).



Illustration 2

g00632048

2. Install a new spacer plate gasket (25).
3. Install the spacer plate on the engine.

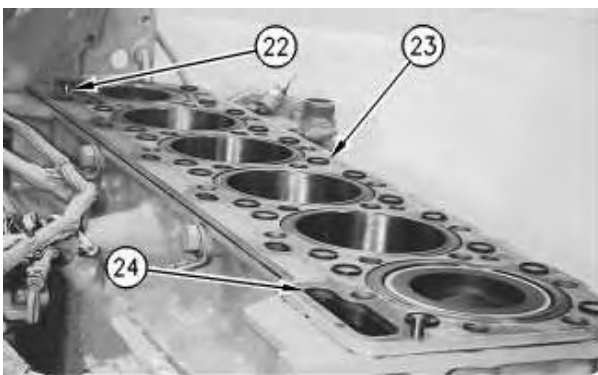


Illustration 3

g00632047

4. Apply a thin film of clean engine oil to O-ring seal (22). Install O-ring seal (22).
5. Install water seals (23) dry.
6. Install seal (24) in the spacer plate.

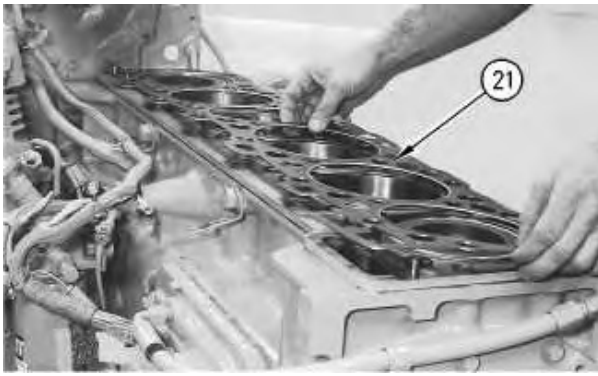


Illustration 4

g00580833

7. Install a new cylinder head gasket (21).

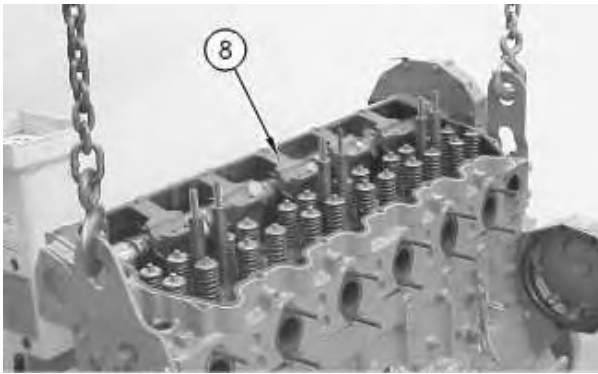


Illustration 5

g00580812

8. Attach a suitable lifting device to cylinder head (8). Carefully position cylinder head (8) on the spacer plate. The weight of the cylinder head is approximately 235 kg (518 lb).

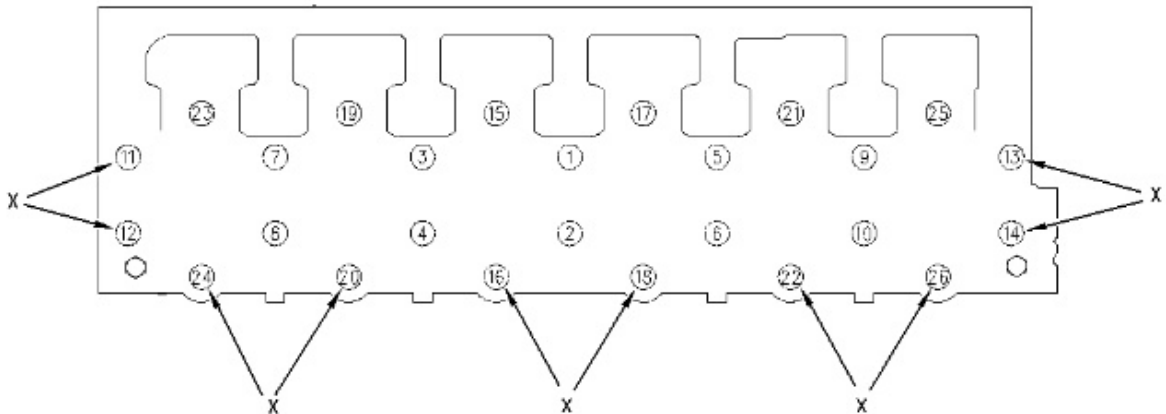


Illustration 6

g00513934

Note: The bolts that are Marked “X” are 216 mm (8.5 inch) long. The remainders of the bolts are 194 mm (7.6 inch) in length.

9. Apply a small amount of Tooling (A) to the bolt threads and both sides of the washers. Install the cylinder head bolts. Tighten the cylinder head bolts, as follows.
 - a. In a numerical sequence, tighten bolts 1 through 26 to a torque of $270 \pm 15 \text{ N}\cdot\text{m}$ ($200 \pm 11 \text{ lb ft}$).
 - b. In a numerical sequence, tighten bolts 1 through 26 to a torque of $450 \pm 15 \text{ N}\cdot\text{m}$ ($330 \pm 11 \text{ lb ft}$).
 - c. In a numerical sequence, again tighten bolts 1 through 26 to a torque of $450 \pm 15 \text{ N}\cdot\text{m}$ ($330 \pm 11 \text{ lb ft}$).

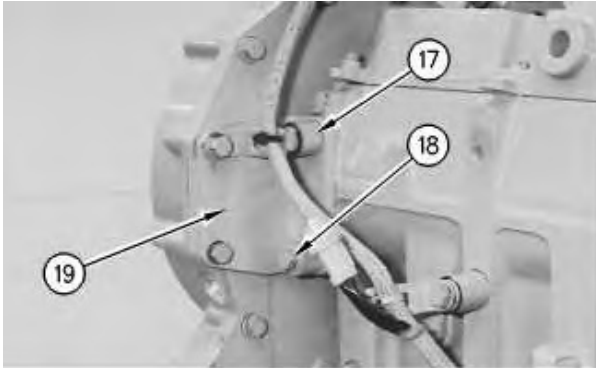


Illustration 7

g00580810

10. Install spacers (17) and bolts (18) that fasten bracket (19) to the cylinder head.

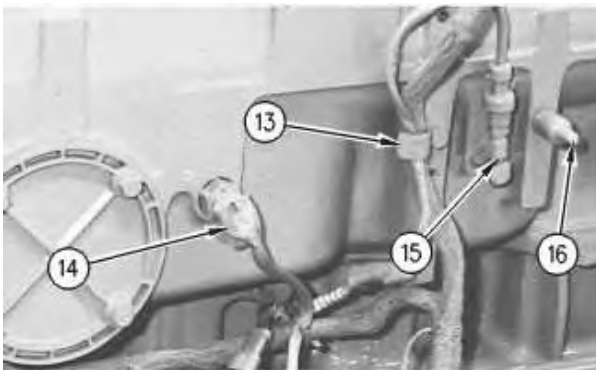


Illustration 8

g00580808

11. Connect the harness assembly to sensor (14), sensor (15), and ground stud (16).
12. Install the bolt and support clip (13) for the harness assembly.

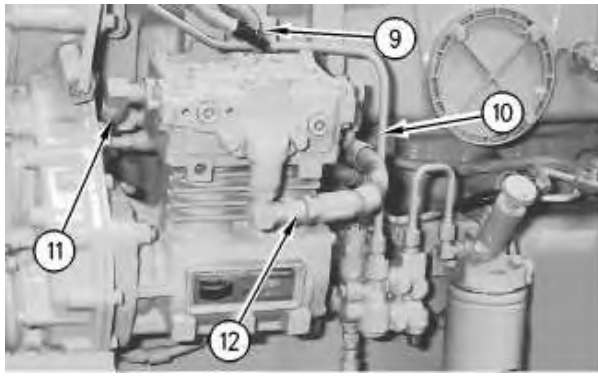


Illustration 9

g00580807

13. Install hose assemblies (10). Install the bolt and clamp (9).

Note: If the engine is not equipped with an air compressor, skip Step 14.

14. Connect hose assemblies (11) and hose assemblies (12) to the air compressor.

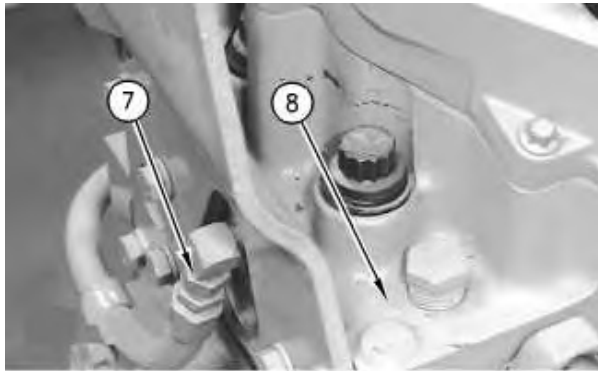


Illustration 10

g00580805

15. Connect hose assembly (7) to cylinder head (8).

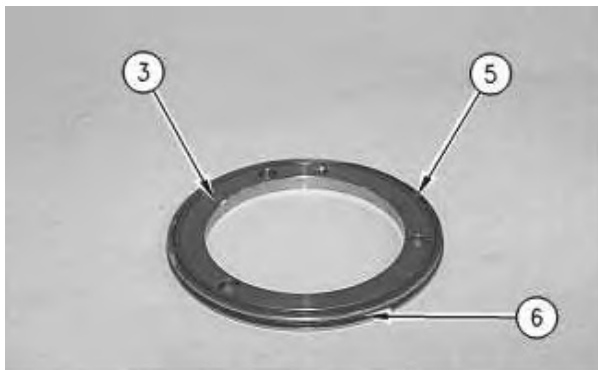


Illustration 11

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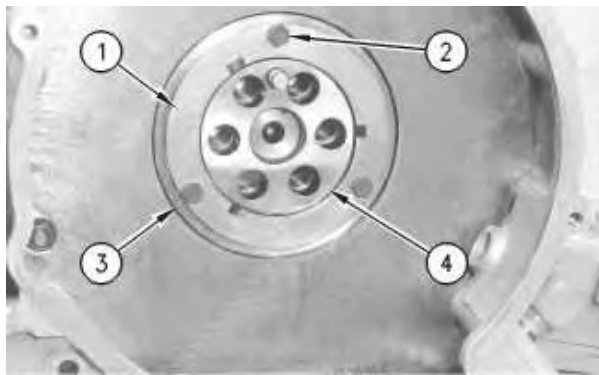


Illustration 12

g00576839

16. Install O-ring seals (5) and (6) in seal assembly (3). Lubricate seal (6) with Tooling (B).
17. Assemble thrust plate (1) and seal assembly (3). Apply Tooling (C) to bolts (2). Hold the assembly in position and install bolts (2). Evenly tighten bolts (2) until seal assembly (3) and O-ring seal (5) are seated against the cylinder head.

Note: Be careful to ensure that O-ring seal (5) stays in the groove in seal assembly (3).

18. Install adapter (4). Ensure that the dowel in adapter (4) engages the hole in the camshaft.

End By:

- a. Install the camshaft gear. Refer to Disassembly and Assembly, "Camshaft Gear - Remove and Install".
 - b. Install the electronic unit injectors. Refer to Disassembly and Assembly, "Electronic Unit Injector - Install".
 - c. Install the valve mechanism cover base. Refer to Disassembly and Assembly, "Valve Mechanism Cover Base - Remove and Install".
 - d. Install the exhaust manifold. Refer to Disassembly and Assembly, "Exhaust Manifold - Remove and Install".
 - e. Install the water temperature regulator. Refer to Disassembly and Assembly, "Water Temperature Regulator - Remove and Install".
-

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Disassembly and Assembly 3406E and 3456 Engines for Caterpillar Built Machines

Media Number -REN1364-06

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i02110801

Camshaft - Remove

SMCS - 1210-011

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	9U-7257	Cradle	1
B	9U-7256	Guide	1
C	9U-7225	Camshaft Pilot	2
D	9U-7240	Camshaft Hook	2

Start By:

- A. Remove the camshaft gear. Refer to Disassembly and Assembly, "Camshaft Gear - Remove and Install".
- B. Remove the rocker arms and the rocker shafts. Refer to Disassembly and Assembly, "Rocker Arm and Shaft - Remove".

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

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