

Product: WHEEL LOADER

Model: 980B WHEEL LOADER 89P

Configuration: 980B WHEEL LOADER 89P04784-UP (MACHINE) POWERED BY 3306 ENGINE

## **Disassembly and Assembly 980 WHEEL LOADER ENGINE**

Media Number -REG00991-00

Publication Date -01/06/1975

Date Updated -10/10/2001

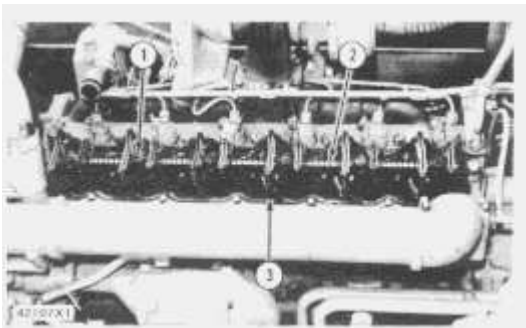
### **Rocker Shaft Assembly And Push Rods**

SMCS - 1102-11; 1102-12; 1208

### **Remove Rocker Shaft Assembly And Push Rods**

preparatory step:

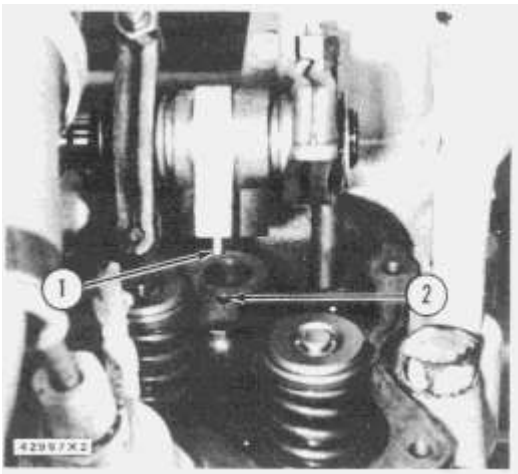
a) remove valve cover



1. Remove the six rocker shaft assembly mounting bolts (1).
2. Remove the rocker shaft assembly (2).
3. Remove the push rods (3).

### **Install Rocker Shaft Assembly And Push Rods**

1. Install the push rods.
2. Coat the rocker shaft assembly mounting bolt threads with 9M3710 Anti-Seize Compound.
3. Position the rocker shaft assembly on the engine, and install the mounting bolts and washers.

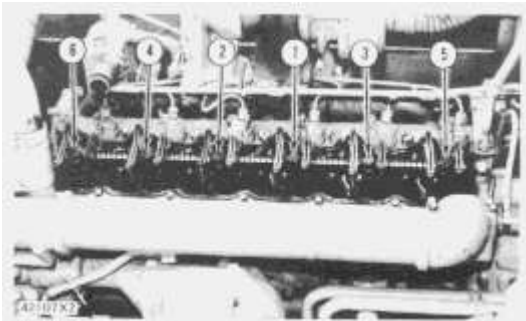


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### NOTICE

**The dowels pins (1) on each end of the rocker shaft assembly must align with the holes (2) in the cylinder head assembly. If the pins and holes are not aligned when tightening the rocker shaft assembly, damage to the rocker shaft assembly will result.**

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Tighten the bolts 1, 2, 3, 4, 5, and 6 in numerical order to 115 lb. ft. (15,9 mkg). Retighten the bolts in numerical order to  $175 \pm 5$  lb. ft. ( $24,2 \pm 0,7$  mkg). Finally, retighten again (hand torque only) in numerical order to  $175 \pm 5$  lb. ft. ( $24,2 \pm 0,7$  mkg).

**4.** Adjust the inlet valve clearance to .015 in. (0,38 mm) and exhaust valve clearance to .025 in. (0,64 mm).

concluding step:

**a)** install valve cover

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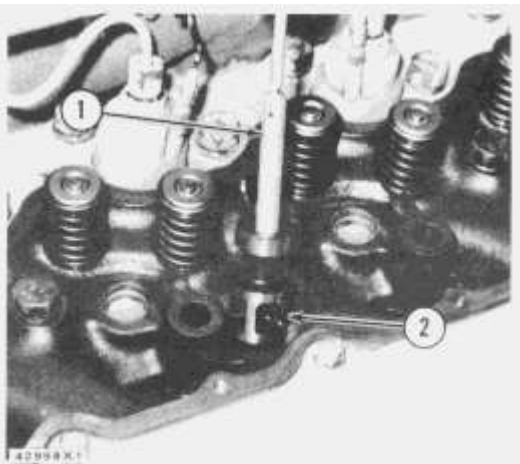
### Valve Lifters

SMCS - 1209-11; 1209-12

### Remove Valve Lifters

preparatory step:

a) remove rocker shaft assembly and push rods



1. Using magnet (1), remove the valve lifters (2).

### Install Valve Lifters

1. Thoroughly lubricate the valve lifters and camshaft lobes with clean SAE 30 engine oil.

2. Using a magnet, install the valve lifters in the cylinder block.

concluding step:

a) install rocker shaft assembly and push rods

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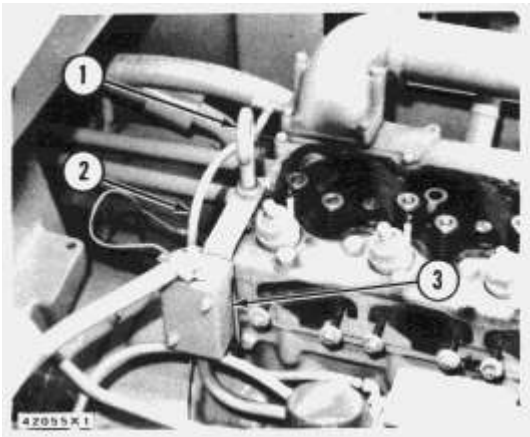
### Cylinder Head Assembly

SMCS - 1100-11; 1100-12

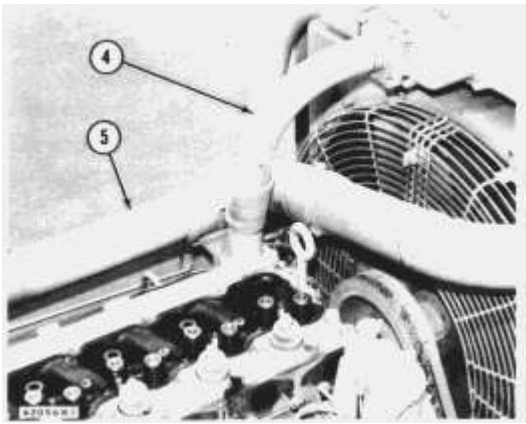
## Remove Cylinder Head Assembly

preparatory steps:

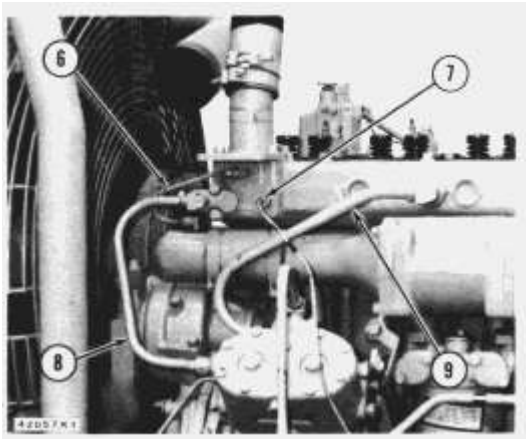
- a) remove turbocharger and exhaust manifold as a unit
  - b) remove rocker shaft assembly and push rods
1. Drain cooling system-capacity 13.5 U.S. Gal. (51 liter).
  2. Remove glow plug wiring harness.



3. Remove lifting eyebolt (1) and lay junction box (3) to the side. Reinstall the lifting eyebolt.
4. Disconnect fuel ratio sensing line (2) and remove sensing line clamp retaining bolt.



5. Remove cylinder head water outlet pipe (4) and cylinder head-to-aftercooler pipe (5).



6. Remove air compressor air inlet line (9).

7. Remove air compressor water inlet line (8).

8. Remove water pump-to-cylinder head vent line (6).

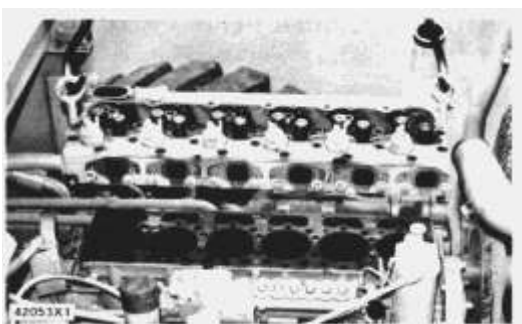
9. Disconnect water temperature sending unit (7).

10. Remove the remaining cylinder head mounting bolts and washers.

11. Attach a hoist and remove the cylinder head assembly-weight 200 lbs. (91 kg).

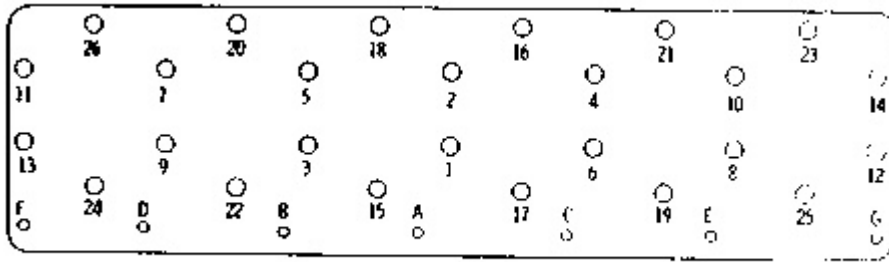
## **Install Cylinder Head Assembly**

1. Install a new and dry cylinder head gasket.



2. Attach a hoist and position the cylinder head assembly on the engine. Install the push rods, and position the rocker shaft assembly on the cylinder head.

3. Coat the threads of cylinder head mounting bolts with 9M3710 Anti-Seize Compound. Install the bolts and washers, and tighten bolts in the following Step sequence:



T9829-1X1

1 Tighten all numbered bolts in numerical order to 115 lb. ft. (15,9 mkg).

2 Retighten all numbered bolts in numerical order to 175 ± 5 lb. ft. (24,2 ± 0,7 mkg).

3 Finally, retighten all numbered bolts (hand torque only) in numerical order to 175 ± 5 lb. ft. (24,2 ± 0,7 mkg).

4 Tighten all lettered bolts in alphabetical order to 22 lb. ft. (3,0 mkg).

5 Retighten all lettered bolts in alphabetical order to 32 ± 5 lb. ft. (4,4 ± 0,7 mkg).

6 Finally, retighten all lettered bolts (hand torque only) in alphabetical order to 32 ± 5 lb. ft. (4,4 ± 0,7 mkg)



4. Adjust the inlet valve clearance to .015 in. (0,38 mm) and the exhaust valve clearance to .025 in. (0,64 mm).

5. Connect the water temperature sending unit.

6. Install water pump-to-cylinder head vent line.

7. Install the air compressor water inlet line.

8. Install the air compressor air inlet line.

9. Install cylinder head-to-aftercooler air pipe and cylinder head water outlet pipe.

**10.** Install fuel ratio control sensing line clamp retaining bolt and connect the fuel ratio control sensing line.

**11.** Remove the lifting eyebolt and position junction box on the engine. Reinstall lifting eyebolt.

**12.** Install the glow plug wiring harness.

**13.** Fill the cooling system.

concluding steps:

**a)** install valve cover

**b)** install turbocharger and exhaust manifold as a unit

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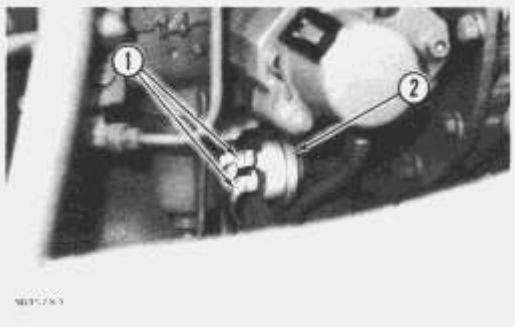
Publication Date -01/06/1975

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### Alternator

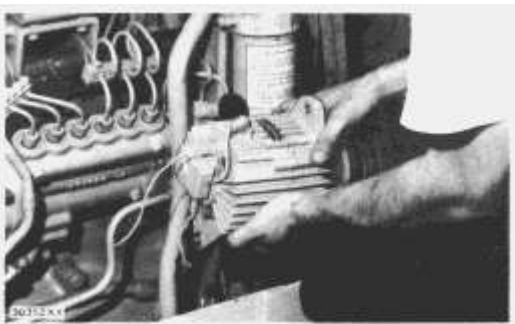
SMCS - 1405-11; 1405-12

### Remove Alternator



1. Disconnect wiring (1) from oil pressure sensing unit (2).
2. Remove the alternator drive belts from the alternator pulley.
3. Disconnect wiring from alternator.
4. Remove the alternator mounting bolts. Remove the alternator.

### Install Alternator



1. Position the alternator on engine, and install alternator mounting bolts.
2. Connect wiring to alternator.



**3.** Connect wiring to oil pressure sensing unit.

**4.** Position the alternator drive belts on pulley, and adjust belt tension.

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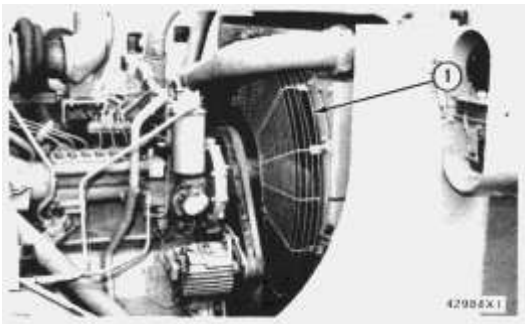
Date Updated -10/10/2001

### Fan Assembly

SMCS - 1356-11; 1356-12

### Remove Fan Assembly

1. Remove hood assembly.



2. Remove fan guard (1) from left side of radiator.
3. Remove six fan retaining bolts and remove fan assembly.

### Install Fan Assembly



1. Position fan assembly on the fan drive and install fan retaining bolts.
2. Install the fan guard.
3. Install hood assembly.

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### Fan Drive Assembly

SMCS - 1359-11; 1359-12; 1359-15; 1359-16

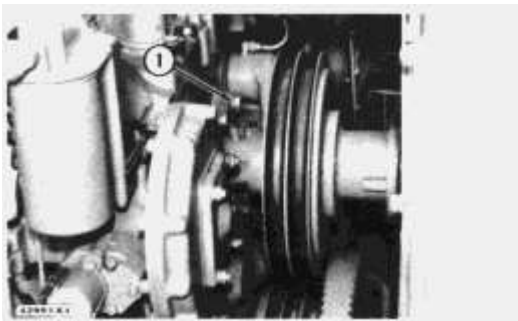
### Remove Fan Drive Assembly

preparatory step:

a) remove fan assembly

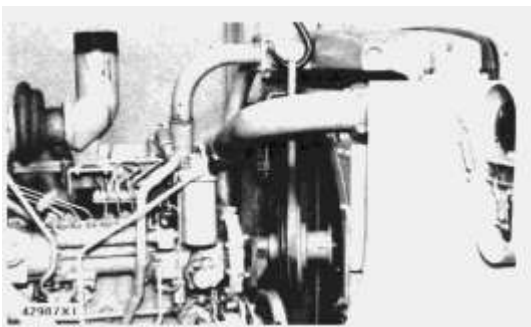
1. Remove both fan belts.

**NOTE:** It may be necessary to loosen the damper retaining bolts to allow enough clearance for fan belt removal.



2. Attach a hoist and remove four fan drive retaining bolts (1). Remove fan drive assembly.

### Install Fan Drive Assembly



1. Attach a hoist and position the fan drive assembly on the engine. Tighten fan drive retaining bolts.
2. Install both fan belts. Adjust belt tension to allow 7/8 in. (22 mm) deflection. If new belts are installed adjust to allow 3/4 in. (19 mm) deflection.

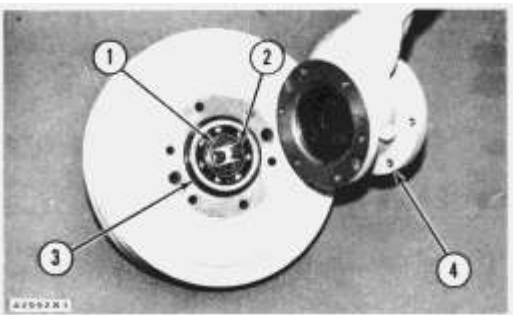
concluding step:

- a) install fan assembly

## Disassemble Fan Drive Assembly

preparatory step:

- a) remove fan drive assembly



1. Remove six adapter retaining bolts. Remove adapter (4) and O-ring seal (3).
2. Remove bearing retaining bolts (2), lock and retainer (1).

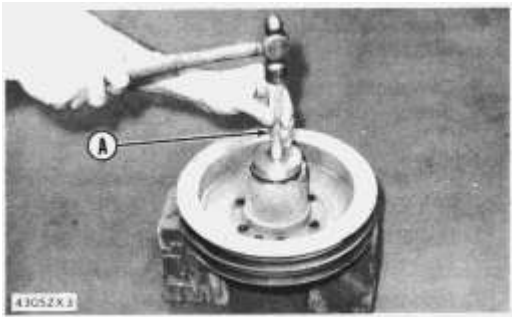


3. Using a hammer and brass punch drive out bracket and shaft assembly (5). Remove seal spacer (6) from the shaft.
4. Remove seal, bearings, and spacer from pulley.

## Assemble Fan Drive Assembly

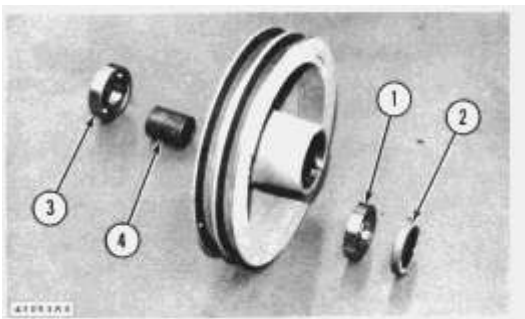
Tools Required		A
1P492	Drive Plate	1
1P529	Handle	1

1. Pack both bearings with multipurpose type grease.



2. Install bearing (1) in pulley. Using tool (A), install seal (2) with spring side of seal facing out. Lubricate seal lip with multipurpose type grease.

3. Install the seal spacer on bracket assembly. Install pulley assembly on the bracket.



4. Install spacer (4) and bearing (3). Install bearing retainer, lock and retaining bolts.

5. Install the O-ring seal around bearing and install adapter.

concluding step:

a) install fan drive assembly

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### Radiator And Guard Assembly

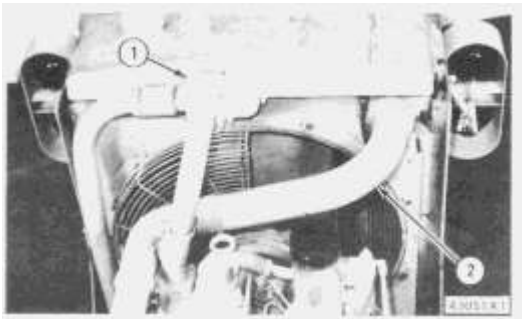
SMCS - 1381-15; 1381-16; 1381-11; 1381-12

### Remove Radiator And Guard Assembly

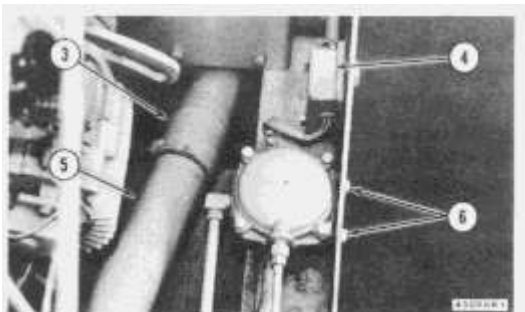
preparatory step:

a) remove fan

1. Drain engine cooling system-capacity 13.5 U.S. Gal. (51 liter).
2. Drain hydraulic tank-capacity 38 U.S. Gal (144 liter).
3. Remove aftercooler-to-intake manifold pipe (2).

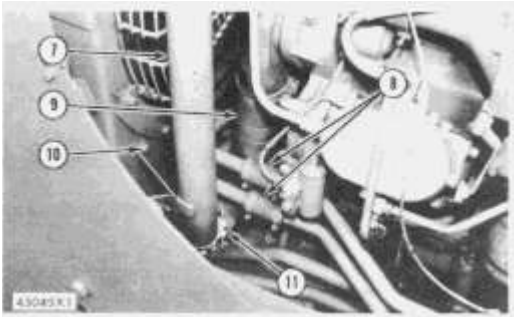


4. Remove water temperature regulator housing and elbow assembly (1).



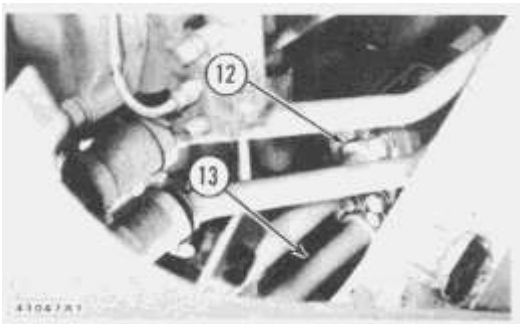
5. Loosen both hose clamps and slide hose (3) onto pipe (5) to disconnect aftercooler-to-turbocharger pipe.

6. Remove wiring box cover (4) and disconnect wiring harness. Remove quick release valve retaining bolts (6).



7. Remove bracket mounting bolt (10). Remove two elbow retaining bolts (11) and remove water bypass pipe (7). Loosen hose clamps and slide hose (9) down on elbow assembly.

8. Disconnect hydraulic oil cooler lines at hoses (8).



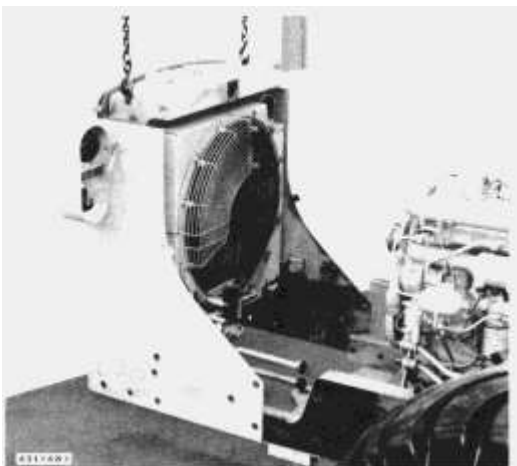
9. Disconnect torque converter oil cooler-to-torque converter relief valve lines (12) and (13).

10. Remove the radiator front guards and hitch pin.

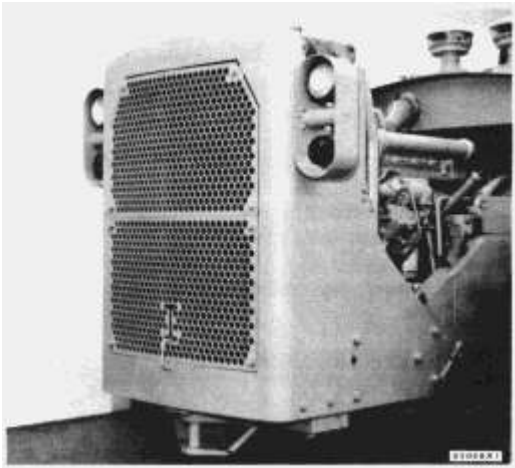
11. Install two 1/2"-13NC forged eyebolts in the top radiator tank and attach a hoist.

12. Remove radiator guard retaining bolts and nuts. Remove radiator and guard assembly-weight 1300 lbs. (589,7 kg).

## Install Radiator And Guard Assembly



1. Attach a hoist and position radiator and guard assembly on the machine.



2. Install radiator and guard assembly retaining bolts and nuts.

3. Install the radiator front guards and hitch pin.

4. Connect torque converter oil cooler-to-torque converter relief valve lines.

5. Connect hydraulic oil cooler lines.

6. Install the water bypass pipe and elbow retaining bolts. Install bypass pipe bracket retaining bolt.

7. Install the quick release valve retaining bolts. Connect the wiring harness and install wiring box cover.

8. Slide the aftercooler-to-turbocharger pipe hose back into position and tighten hose clamps.

9. Install the water temperature regulator housing and elbow assembly.

10. Install aftercooler-to-intake manifold pipe.

11. Fill the hydraulic tank to specified level.

12. Fill the cooling system.

**NOTE:** After installing the fan, open hydraulic oil cooler bleed valve. Start the machine and run at 1/2 engine speed until hydraulic oil flows free of air bubbles. Stop the engine and close the bleed valve, tighten to  $8 \pm 2$  lb. ft. ( $3,6 \pm 0,9$  mkg). Check the hydraulic oil level.

concluding step:

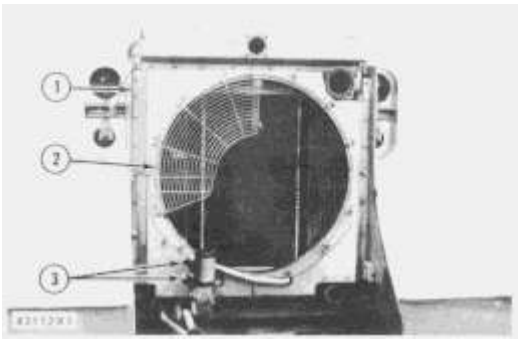
a) install fan

## **Disassemble Radiator And Guard Assembly**

preparatory step:

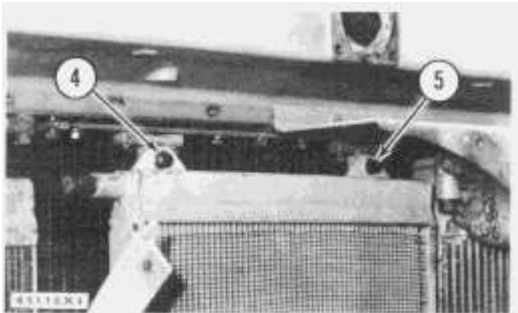
a) remove radiator and guard assembly



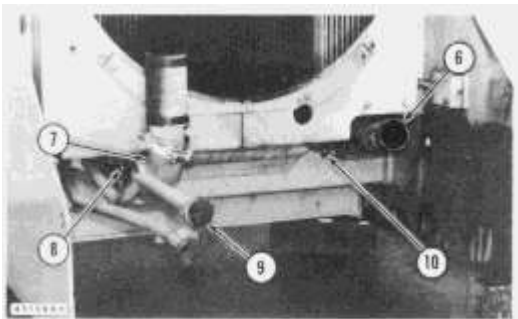


1. Remove fan guard (2) and shield (1).

2. Remove hydraulic oil cooler oil inlet and outlet lines (3). Remove the hydraulic oil cooler bottom mounting bolts.



3. Remove mounting bolts (4) and (5). Remove hydraulic oil cooler-weight 40 lbs. (18 kg).

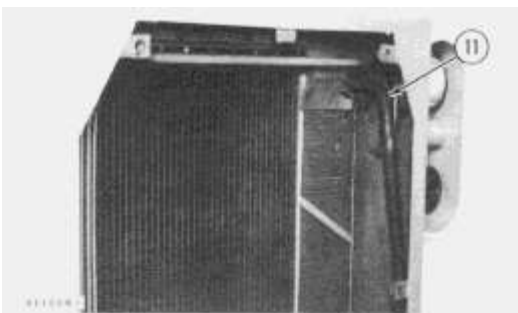


4. Remove radiator elbow (7) and aftercooler elbow (6).

5. Remove torque converter oil cooler line (9).

6. Remove radiator lower mounting bolts and clamps (8) and (10).

7. Remove two shield-to-top tank retaining bolts.



8. Disconnect torque converter oil cooler oil outlet line (11).
9. Remove radiator top tank-to-guard assembly mounting bolts.
10. Install two 1/2"-13NC forged eyebolts. Attach a hoist and remove radiator core, aftercooler, and torque converter oil cooler assembly as a unit-weight 700 lbs. (317 kg).



11. Remove two aftercooler core mounting bolts (13) and remove baffle assembly (12).
12. Position radiator assembly as shown in photo.
13. Install two 3/8"-16NC forged eyebolts and attach a hoist.



14. Remove aftercooler retaining bolts (14) and (15). Remove aftercooler assembly-weight 120 lbs. (54 kg).

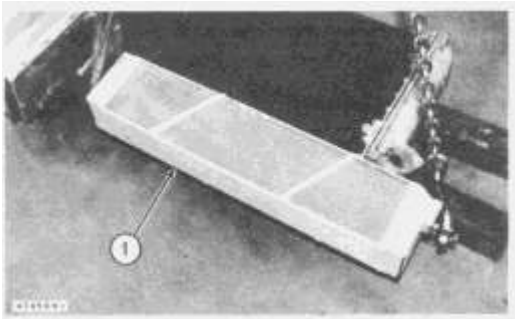


15. Remove torque converter oil cooler retaining bolts (16).

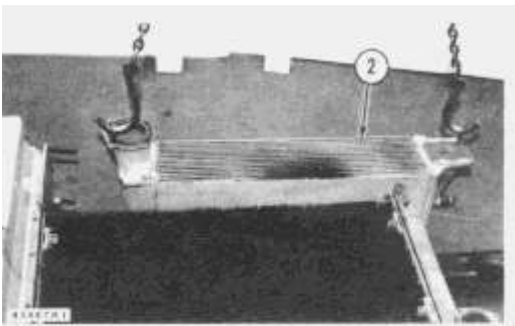


**16.** Install one 3/8"-16NC forged eyebolt. Attach a nylon sling and hoist. Remove torque converter cooler retaining bolts (17) and (18). Remove torque converter oil cooler-weight 120 lbs. (54 kg).

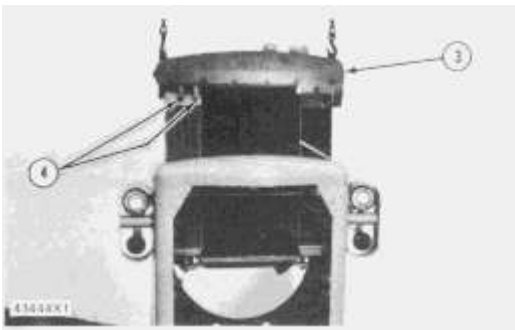
## **Assemble Radiator And Guard Assembly**



- 1.** Attach a hoist and position the torque converter oil cooler (1) on the radiator assembly.
- 2.** Install the torque converter oil cooler retaining bolts.

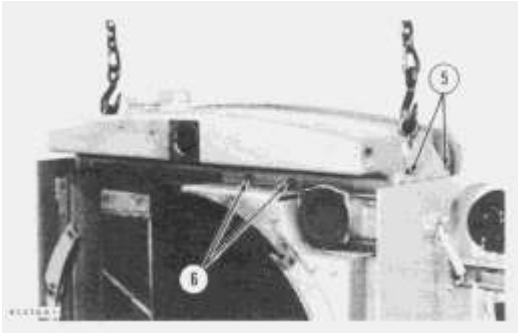


**3.** Attach a hoist and position aftercooler assembly (2) on the radiator assembly. Install aftercooler retaining bolts.



**4.** Install baffle assembly (3) and aftercooler core mounting bolts (4).

5. Lower the radiator core, aftercooler, and torque converter oil cooler assembly into the radiator guard.

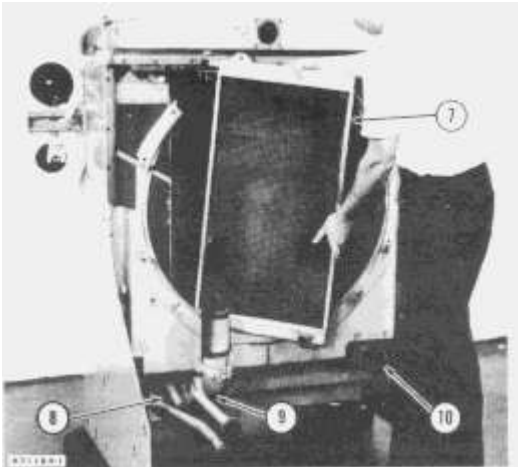


6. Install four radiator top tank-to-guard retaining bolts (5).

7. Install two shield-to-top tank retaining bolts (6).

8. Connect torque converter oil cooler oil outlet line.

9. Install radiator lower mounting bolts and clamps.



10. Install torque converter oil cooler line (8).

11. Install aftercooler elbow (10) and radiator elbow (9).

12. Position hydraulic oil cooler (7) on the radiator and install hydraulic oil cooler mounting bolts.

13. Install hydraulic oil cooler oil inlet and oil outlet lines.

14. Install shield and fan guard.

concluding step:

a) install radiator and guard assembly

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