

# TM2356 - 27D Excavator Repair Engine Remove and Install

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## Engine Remove and Install



1. TS281-UN: Avoid High-Pressure Fluids  
Disconnect negative battery cable.
2. Remove counterweight. [See Counterweight Remove and Install](#) . (Group 1749.)
3. 

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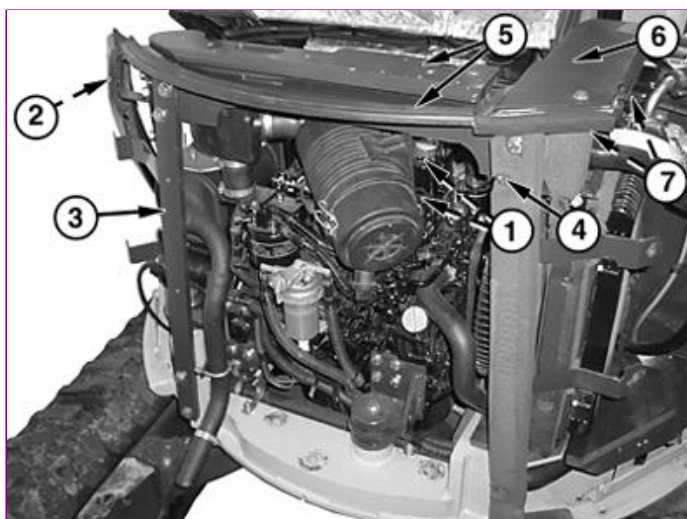
***Explosive release of fluids from pressurized cooling system can cause serious burns.***

***Shut off engine. Remove filler cap when cool to touch. Slowly loosen filler cap to first stop to relieve pressure, then remove.***

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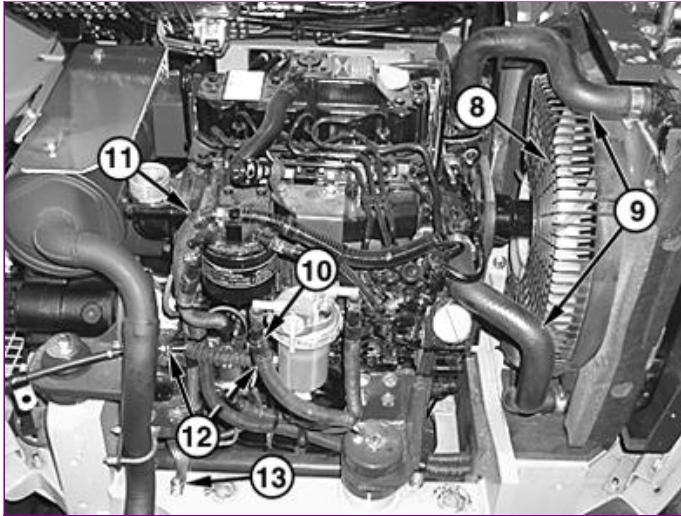
Drain coolant. [See Draining Cooling System](#) . (Operator's Manual.)

4. Drain hydraulic fluid. [See Changing Hydraulic Tank Oil and Cleaning Suction Screen](#) . (Operator's Manual.)
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- 5.

## T207062A-UN: Engine Frame



T207063A-UN: Coolant hoses

### LEGEND:

- 1 - Cap Screw (2 used)
- 2 - Left-Side Frame Bracket
- 3 - Left-Rear Frame Bracket
- 4 - Right-Rear Frame Bracket
- 5 - Frame Cover
- 6 - Frame Cover
- 7 - Right-Side Frame Bracket
- 8 - Fan Guard
- 9 - Coolant Hoses
- 10 - Inlet Fuel Line
- 11 - Return Fuel Line
- 12 - Speed Control Cable
- 13 - Ground Strap

Remove two cap screws (1) holding air cleaner housing.

6. **NOTE:**

*Note any shims that may accompany frame brackets for installation.*

Remove frame brackets (2-4) and frame cover (5).

7. Remove right-side frame bracket (7).

8. Remove air cleaner assembly.

9. Remove coolant fan guard (8) and coolant hoses (9).

10. Remove radiator. [See Radiator Remove and Install \(S.N. —254999\)](#) or [see Radiator Remove and Install \(S.N. 255000—\)](#) . (Group 0510.)

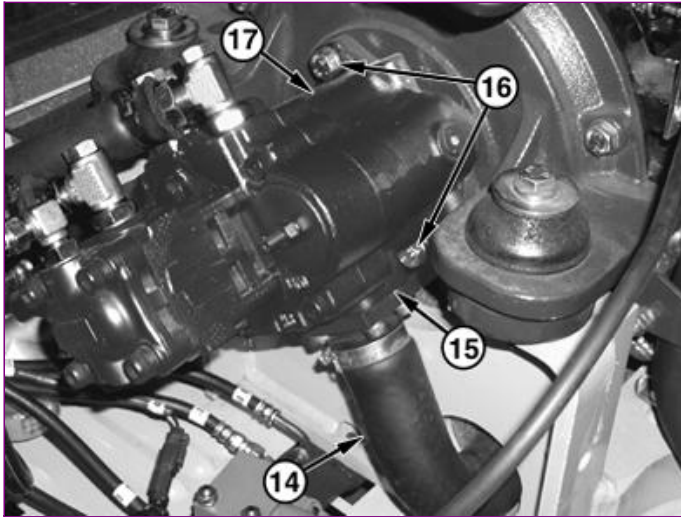
11. Remove fan belt and fan.

12. Disconnect the inlet (10) and return (11) fuel lines.

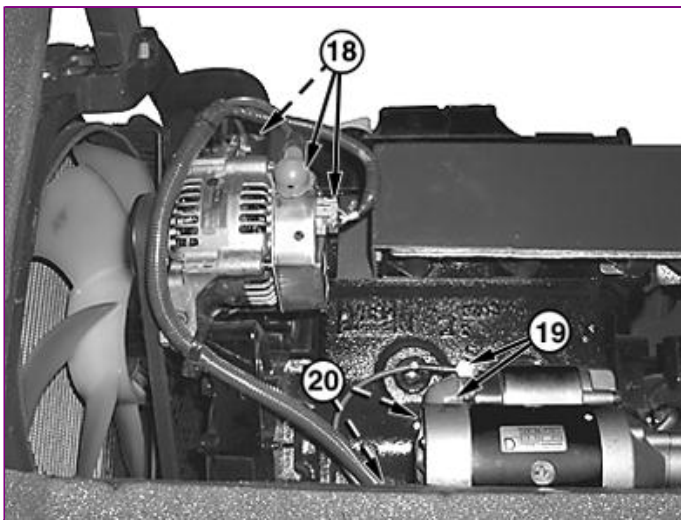
13. Disconnect speed control cable (12) from engine.

14. Disconnect ground strap (13).

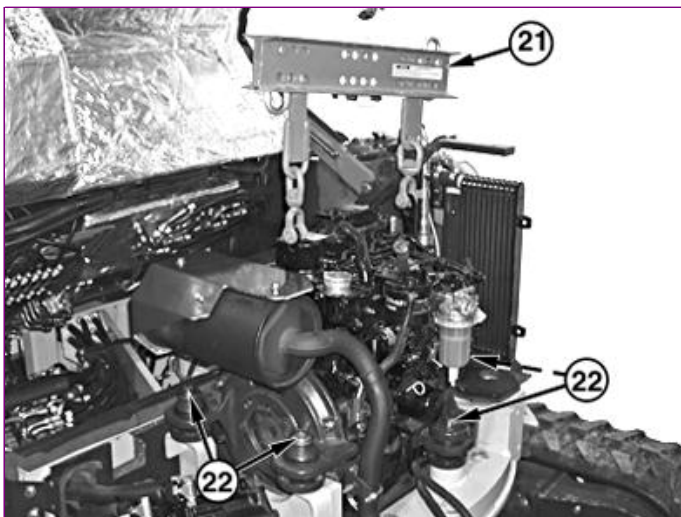
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15. T207064A-UN: Hydraulic pump



T207070A-UN: Starter



T207122A-UN: Sling and motor mounts

LEGEND:

- 14 - Hydraulic Pump Hose
- 15 - Inlet Flange
- 16 - Cap Screw (2 used)
- 17 - Hydraulic Pump
- 18 - Wire Harness-to-Alternator
- 19 - Wire Harness-to-Starter Motor
- 20 - Wire Harness Cap Screw (2 used)
- 21 - JDG23 Lifting Sling

22 - Engine Mount Cap Screw and Washer (4 used)

Disconnect hydraulic pump hose (14) and inlet flange (15).

- 16. Remove two cap screws (16) and pull hydraulic pump (17) away from engine until drive coupler is disengaged from flywheel and housing.
- 17. Disconnect wire harnesses from alternator (18) and starter motor (19).
- 18. Remove starter motor.
- 19. Remove two cap screws (20) and fasteners under starter motor securing wiring harness to engine block.
- 20. Disconnect wiring harnesses from fuel shut-off solenoid, switches, and sensors. Attach identification tags to wiring to aid installation. [See Engine Harness \(W10\) Component Location](#) . (Group 9015.)
- 21. \_\_\_\_\_



**CAUTION:**

*Prevent possible injury from crushing. Heavy component, use appropriate lifting device.*

| Item   | Measurement | Specification    |
|--------|-------------|------------------|
| Engine | Weight      | 199 kg<br>440 lb |

**IMPORTANT:**

**The recommended method for lifting the engine is using the JDG23 Lifting Sling. The lifting force must be at 90° to the lifting points.**

Attach engine to a hoist using the JDG23 Lifting Sling (21).

- 22. Remove engine mount cap screws and washers (22).
- 23. Repair or replace parts as necessary.
- 24. Install engine using JDG23 Lifting Sling (21).
- 25. Install four engine mounts and cap screws (22). Tighten to specifications.

| Item                               | Measurement | Specification      |
|------------------------------------|-------------|--------------------|
| Engine Mount-to-Isolator Cap Screw | Torque      | 88 N·m<br>65 lb-ft |

- 26. Align hydraulic pump splines to engine coupler. Tighten to specifications.

| Item  | Measurement | Specification      |
|---|-------------|--------------------|
| Hydraulic Pump-to-Flywheel Housing Cover Cap Screws | Torque      | 88 N·m<br>65 lb-ft |

- 27. Connect inlet flange and hydraulic hose to pump. Tighten to specifications.

| Item                           | Measurement | Specification      |
|--------------------------------|-------------|--------------------|
| Inlet Flange-to-Hydraulic Pump | Torque      | 48 N·m<br>36 lb-ft |

- 28. Fill hydraulic system.
- 29. Bleed hydraulic system. [See Bleed Hydraulic System](#) . (Operator's Manual.)

- 30. **NOTE:**

*Before installing starter motor, install two cap screws and fasteners under starter, securing wiring harness to engine block.*

Install starter motor.

31. Connect engine wire harness. [See Engine Harness \(W10\) Component Location](#) . (Group 9015.)
32. Connect speed control cable to engine.
33. Install ground strap to frame.
34. Install fan and fan belt.
35. Adjust fan belt tension. [See Inspect Fan Belt, Check and Adjust Tension](#) . (Operator's Manual.)
36. Install radiator. [See Radiator Remove and Install \(S.N. —254999\)](#) or [see Radiator Remove and Install \(S.N. 255000—\)](#) . (Group 0510.)
37. Fill radiator and reservoir with coolant. [See Cooling System Fill and Deaeration](#) . (Operator's Manual.)
38. Install air cleaner assembly.

39. **NOTE:**

*Make note of any shims that were removed in the disassembly process, and place in same location of removal.*

Attach frame brackets to frame.

40. Attach two cap screws from the upper frame bracket-to-air cleaner.
41. Bleed fuel system. [See Bleed Fuel System](#) . (Group 0560.)
42. Install counterweight. [See Counterweight Remove and Install](#) . (Group 1749.)
43. Connect the negative battery cable.

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