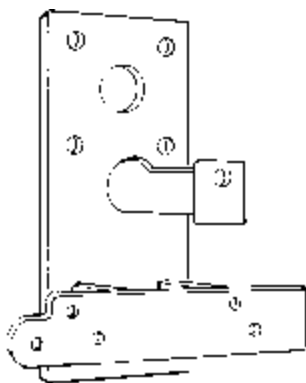


REPAIR

**FOR ENGINE REPAIR USE
CTM125—260 OR CTM104 AND
CTM207—270**

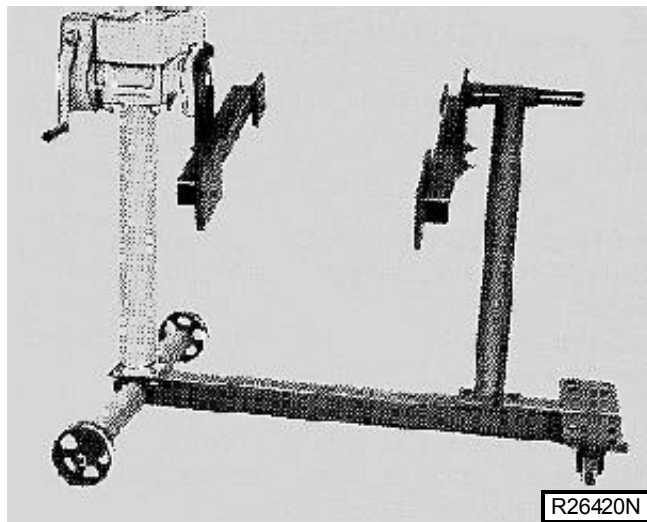
**FOR STARTER AND ALTERNATOR
REPAIR USE CTM77**

ENGINE REPAIR STAND



D05225ST

D05225ST Repair Stand Adapter



R26420N

D01003AA Engine Repair Stand

To facilitate engine repair, the D01003AA repair stand can be used in conjunction with D05225ST adapter.

**CAUTION**

This repair stand should be used only by qualified service technicians familiar with this equipment.

To maintain shear strength specifications, alloy steel SAE Grade 8 or higher cap screws must be used to mount adapters on engine.

For full thread engagement, be certain that tapped holes in adapters and engine blocks are clean and not damaged. A thread length engagement equal to 1-1/2 screw diameters minimum is required to maintain strength requirements.

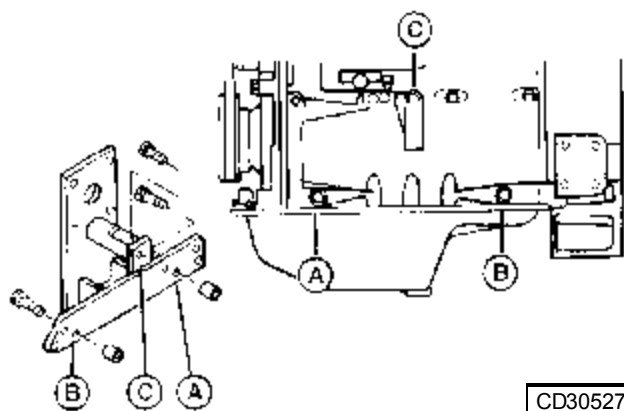
To avoid structural damage or personal injury, do not exceed the maximum weight capacity. When engine weight is more than 450 kg (992 lb), it is recommended to use additional support.

To prevent possible personal injury due to engine slippage, recheck to make sure engine is solidly mounted before releasing support from engine lifting device.

Never permit any part of the body to be positioned under a load being lifted or suspended. Accidental slippage may result in personal injury.

**MOUNT ENGINE ON REPAIR
STAND—260****CAUTION**

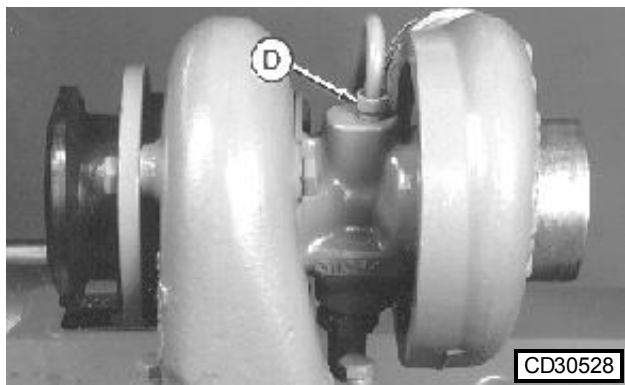
DO NOT remove the overhead lifting equipment until the engine is securely mounted onto the repair stand and all mounting hardware is tightened to specified torque.



CD30527

1. Use a 73 mm spacer at hole (A) and a 79 mm spacer at hole (B).
2. Mount engine to adapter using the cap screws listed below at the hole locations as shown:
 - Holes A and B, 114 mm (9/16-12 x 4-1/2 in.)
 - Hole C, 38 mm (9/16-12 x 1-1/12 in.)
3. Drain all engine oil and coolant.

IMPORTANT: Hydraulic lock occurs when trapped oil in the oil filter housing drains through the turbocharger, the exhaust and intake manifolds, and then into the cylinder head. After starting the engine, the trapped oil in the manifold and head is released into the cylinders, filling them with oil, causing hydraulic lock and severe engine damage.



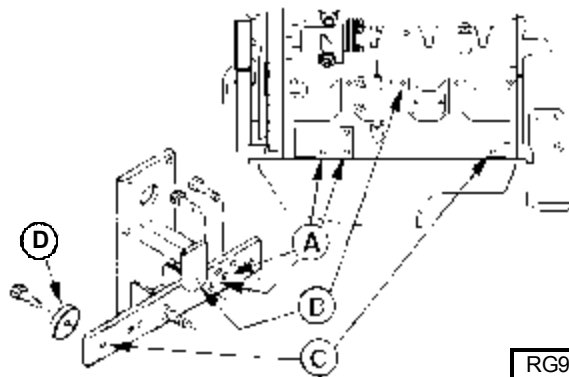
CD30528

4. Disconnect oil inlet line at turbocharger (D) to prevent hydraulic lock.

MOUNT ENGINE ON REPAIR STAND—270

CAUTION

DO NOT remove the overhead lifting equipment until the engine is securely mounted onto the repair stand and all mounting hardware is tightened to specified torque.



RG9058

NOTE: Engine adapter, cap screws, and spacer are from JT07268 Engine Adapter Kit.

Mount the engine to 62835 Engine Adapter as described below.

NOTE: No. 221668 Spacer (D) is used on the outside of the engine adapter.

- Hole A—(2) No. 214490 (M12 x 1.75 x 35 mm)
- Hole B—(1) No. 221664 (M14 x 2.00 x 35 mm)
- Hole C—(1) No. 221665 (M14 x 2.00 x 60 mm) with No. 221668 Spacer

NOTE: Four threaded holes in engine mounting adapter are for storing mounting hardware.

Specifications:

Engine Repair Stand

- M12 Cap Screw Torque 140 N•m (105 lb-ft)
- M14 Cap Screw Torque 225 N•m (165 lb-ft)

ENGINE REMOVAL/INSTALLATION

NOTE: 270 shown throughout. 260 procedures are similar except where noted.

NOTE: Engine weigh approximately:

260 363 kg (800 lb)

270 454 kg (1000 lb)

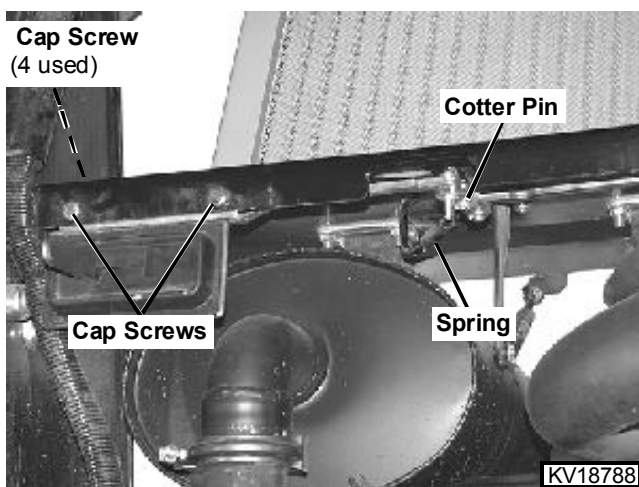
Be sure Engine Repair Stand and Engine Hoist have adequate capacity.

Equipment:

- Engine Hoist
- JDG23 Lifting Sling (270)
- JDG394 Lifting Sling(260)
- JT01748 Lifting Brackets
- JDG19 Lifting Bracket
- D01003AA Engine Repair Stand
- D05225ST Engine Repair Stand Adapter

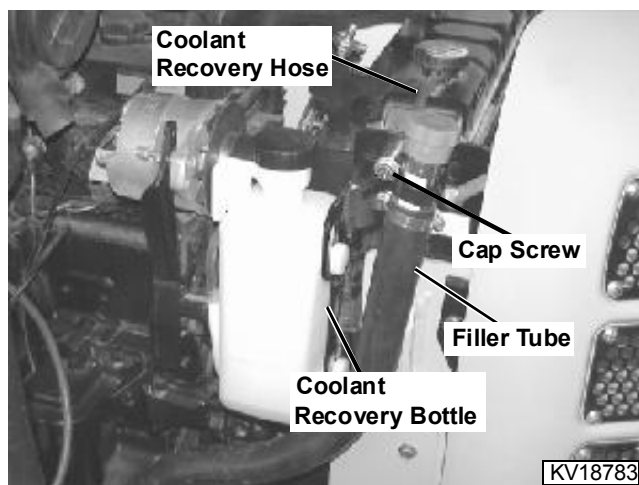
Removal:

1. Remove any attachments.
2. Park skid steer safely. Place blocks in front of and behind tires.
3. Raise boom to the fully raised position and engage boom locks. Lower boom onto boom locks.
4. Disconnect battery negative (–) cable.
5. Raise ROPS and ensure that it is safely in the locked position. (See RAISING ROPS [ROLL OVER PROTECTION STRUCTURE] in the MISCELLANEOUS section.)
6. Remove cover plates. (See COVER PLATE REMOVAL/INSTALLATION in the MISCELLANEOUS section.)
7. Remove side engine panels.



8. Remove cotter pin, spring, and two cap screws and nuts holding boom lock linkage to support plate.

9. Remove two cap screws and nuts from each side of support and remove support with top engine access panel.



10. Disconnect coolant recovery hose from radiator filler neck and remove hose and coolant recovery bottle.
11. Remove filler tube-to-radiator support cap screw. Position tube out of the way.

CAUTION

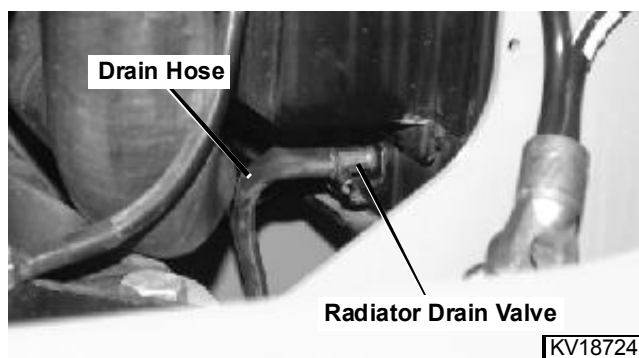
AVOID INJURY. Explosive release of fluids from pressurized cooling system can cause serious burns.

Shut off engine. Remove filler cap only when cool enough to touch with bare hands. Slowly loosen cap to first stop to relieve pressure before removing completely.

NOTE: Approximate cooling system capacity is:

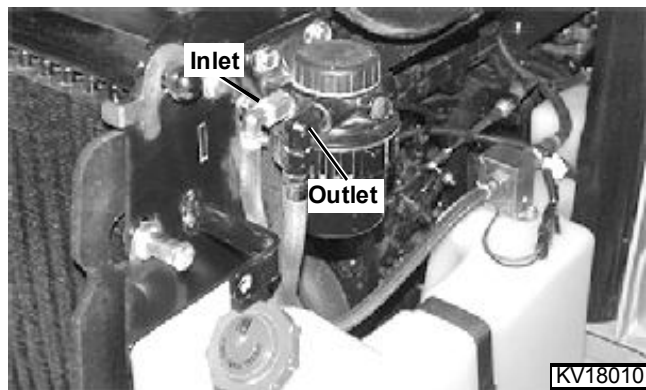
260—10.6 L (11 qt)

270—13.4 L (14 qt)



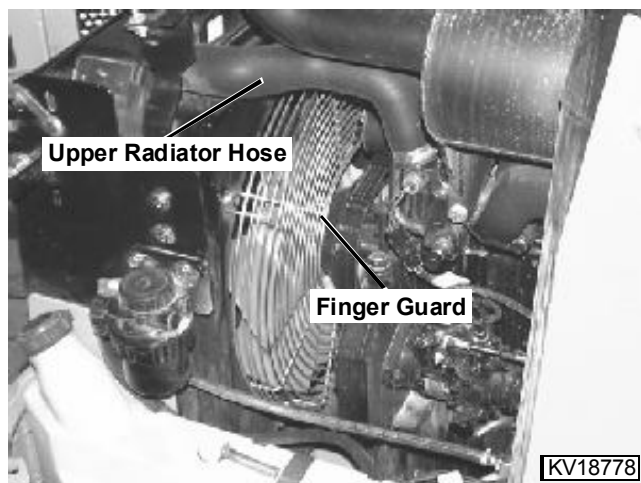
12. Loosen radiator cap to first stop to relieve pressure. Route radiator drain hose out access panel on left side of frame. Open radiator drain valve and drain coolant through drain hose into proper container.

13. Remove cab heater hoses (if equipped).

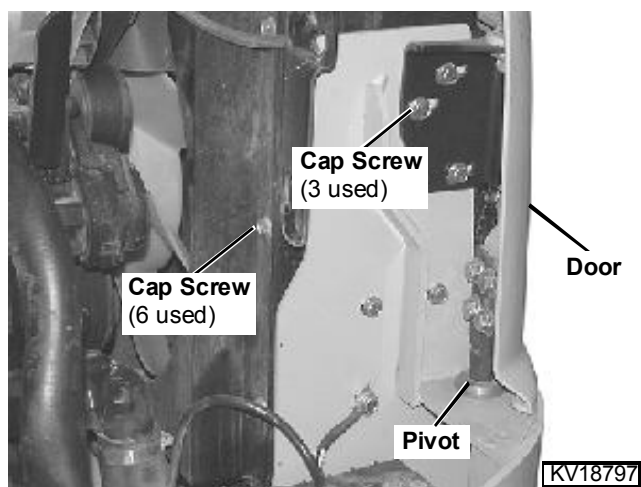


NOTE: Close all openings using caps or plugs to prevent contamination of fuel system.

14. Disconnect inlet line from fuel filter. Remove filter base and attach to engine using wire or plastic tie.

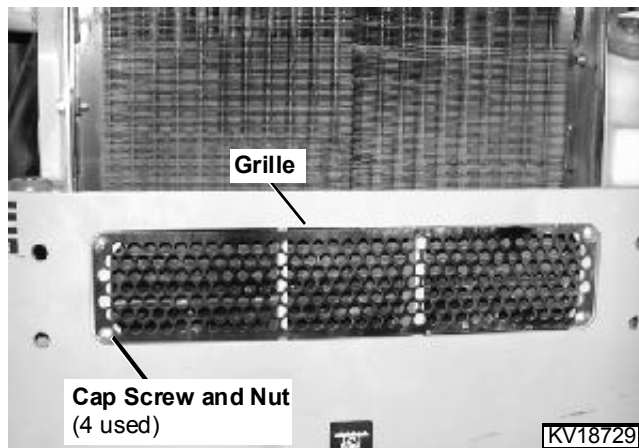


15. Disconnect upper radiator hose from radiator and remove finger guard.

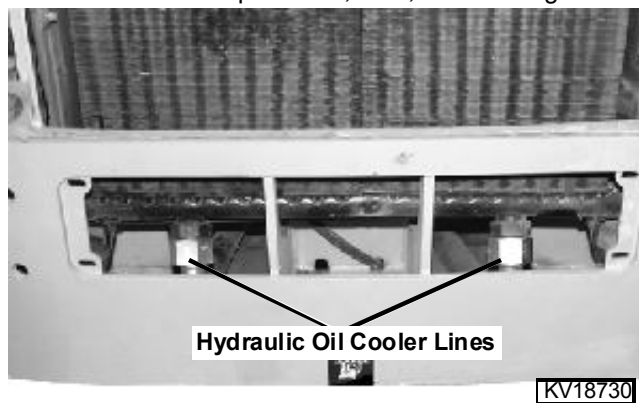


16. Remove six cap screws from fan shroud. Move shroud toward engine away from radiator.
17. Disconnect lower radiator hose from radiator.

18. Remove three cap screws and shims. Lift door up and out of pivot.

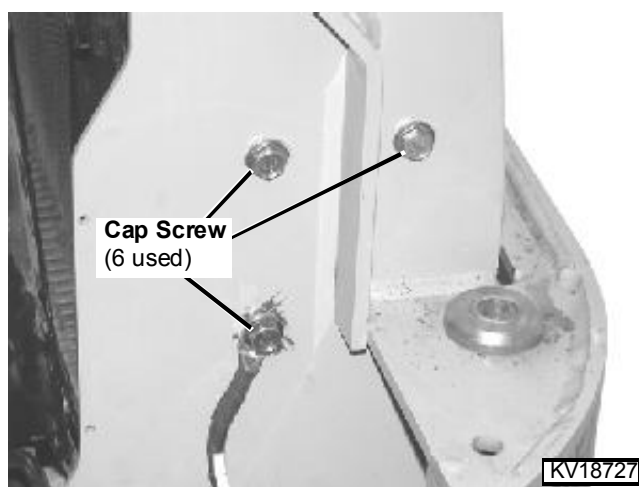


19. Remove four cap screws, nuts, and lower grille.



NOTE: Use caps and plugs to close all openings to avoid hydraulic system contamination.

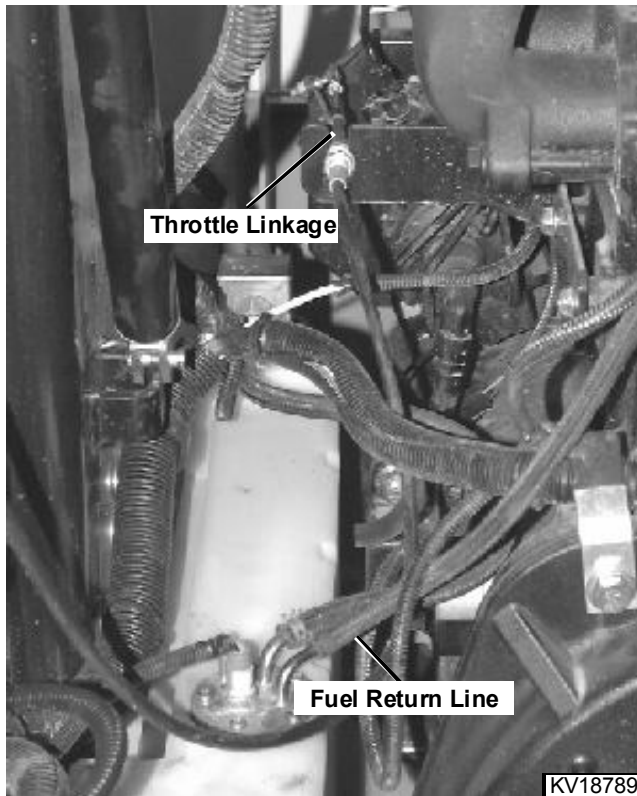
20. Disconnect two hydraulic lines to oil cooler.



21. Remove three cap screws from each side of radiator support.
22. Remove radiator and oil cooler assembly using a lifting strap and hoist.
23. Machines equipped with air conditioning: remove compressor from its mounting bracket. Slide out

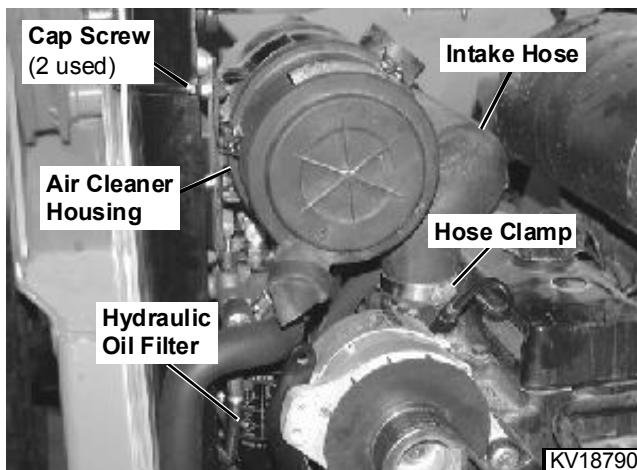
condenser and hang compressor and condenser on right side of machine.

24. Remove compressor mounting bracket.



25. Disconnect throttle linkage from injection pump and bracket.

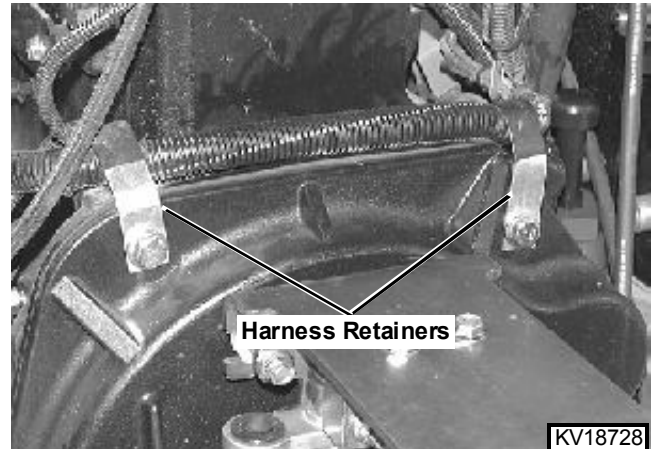
26. Disconnect fuel return line.



NOTE: Tag or label all wires and connectors to aid installation.

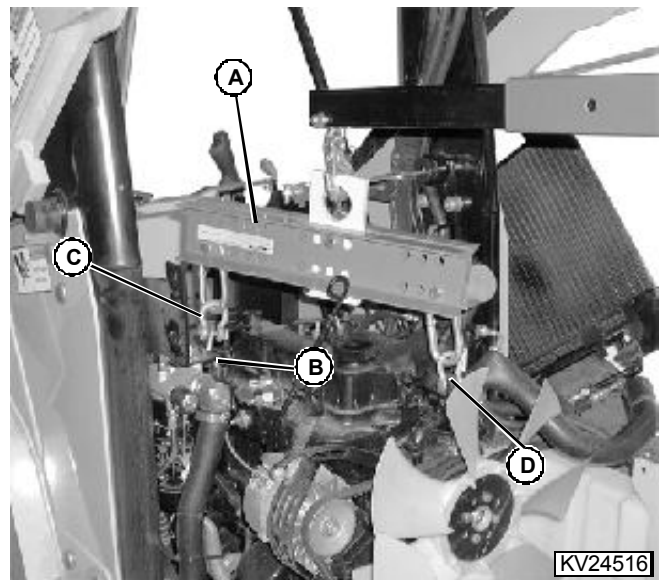
27. Disconnect air filter restriction switch connector.
Remove two cap screws, hose clamp, air cleaner housing, and intake hose.
28. Remove muffler.

29. Disconnect all wiring leads or connectors from starting motor, starter solenoid, alternator, manifold preheater, oil pressure sending unit, coolant temperature sending unit, and fuel shut-off solenoid.



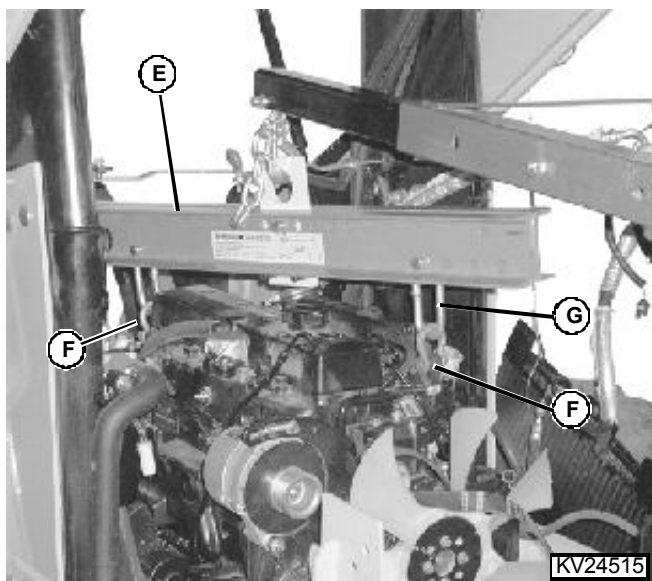
30. Bend harness retainers away from engine and remove harness.

31. Disconnect backup alarm (if equipped).

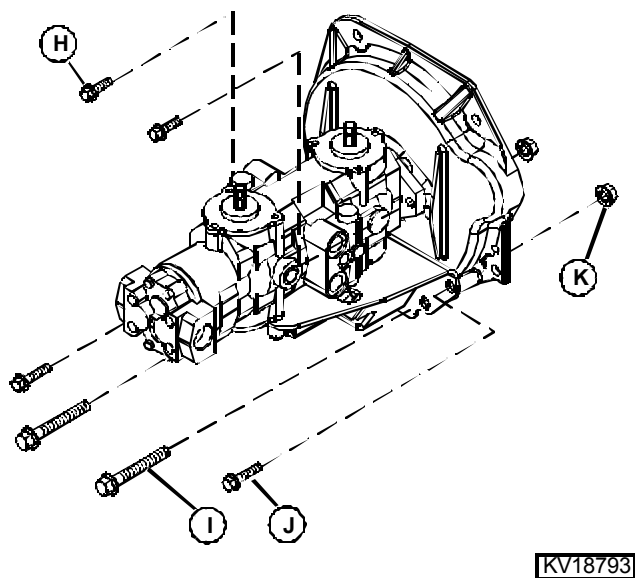


260 Models

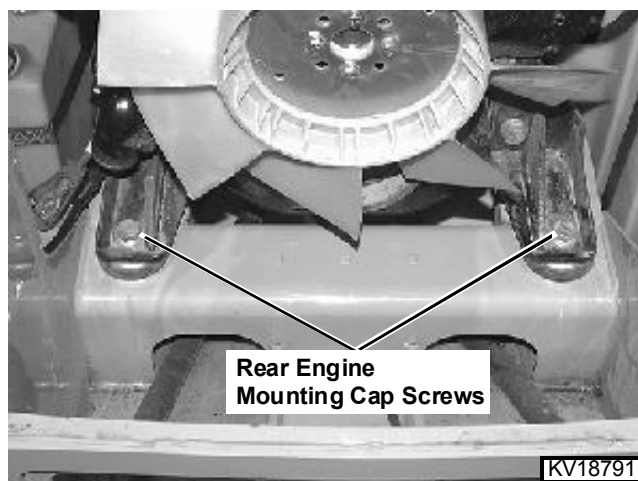
32. For 260 models attach JDG394 lifting sling (A) to a suitable hoist. Attach JDG19 lifting bracket (B) to rear of cylinder head and JT01748 Lifting bracket (D) to front of cylinder head.
33. Attach JDG19 to lifting sling using a clevis (C).
Raise hoist slightly to tension lifting brackets.

**270 Models**

34. For 270 models attach JDG23 lifting sling (E) to a suitable hoist. Attach JT01748 lifting brackets (F) to the front and rear of cylinder head.
35. Attach lifting sling to lifting brackets using closed rings (G) from JDG394 lifting sling.
36. Raise hoist slightly to tension lifting brackets.



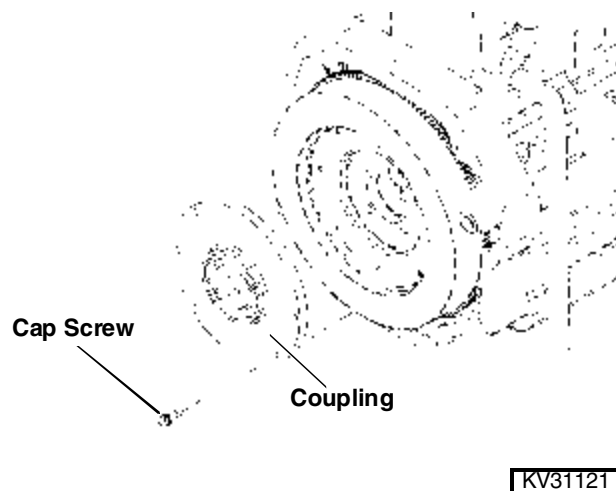
37. Remove pump flange mounting cap screws (H).
38. Remove cap screws and nuts (I and K) and cap screws (J) from front engine mount/pump mounting plate.



39. Remove rear engine mounting cap screws.

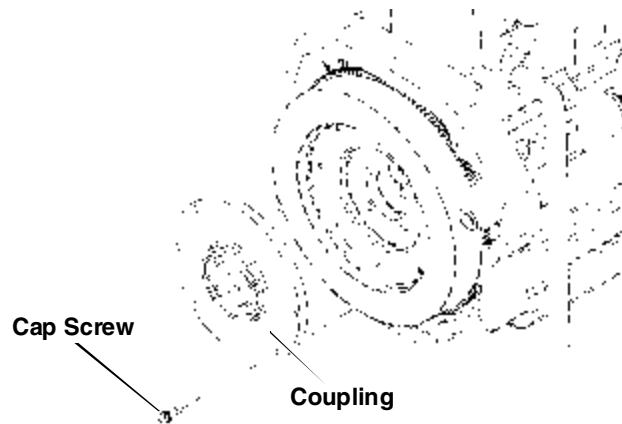
NOTE: Make sure all electrical wiring, lines, and hoses are disconnected from engine before removal.

40. Lift engine slightly and move engine rearward to slide pump coupler out of flywheel housing.
41. Remove engine.
42. Lower engine onto floor and support with blocks.
43. Remove remaining flywheel cover cap screws. Remove flywheel cover.



44. Remove eight coupling-to-flywheel cap screws. Remove coupling.
45. Install engine on repair stand. (See MOUNT ENGINE ON REPAIR STAND—260 or MOUNT ENGINE ON REPAIR STAND—270.)

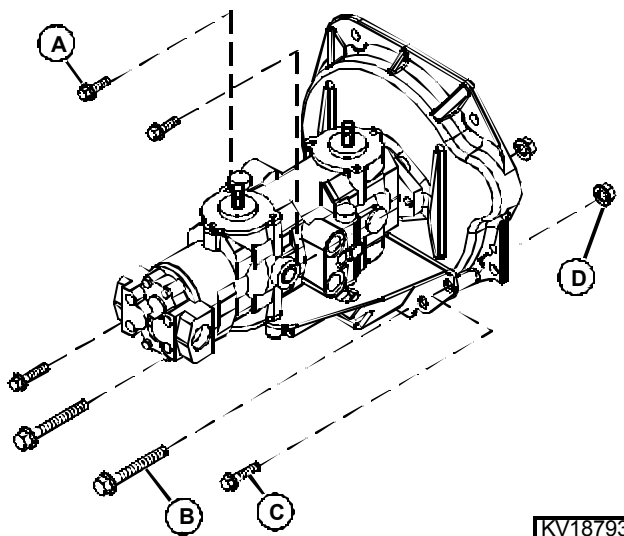
Installation:



KV31121

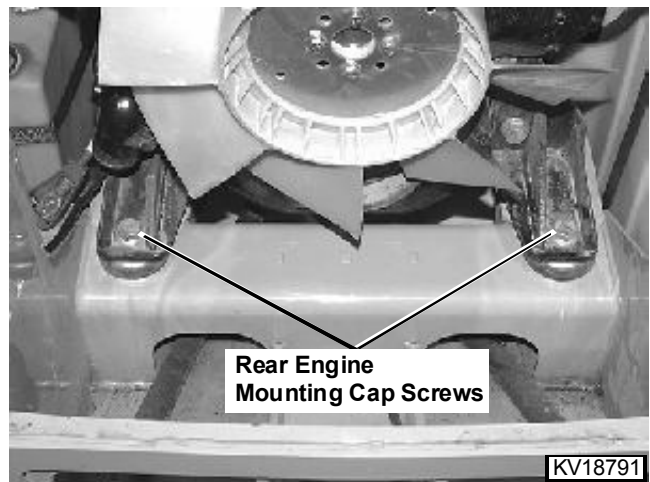
1. Place coupling on flywheel and install eight coupling-to-flywheel cap screws. Tighten to **39 N•m (29 lb-ft)**.
2. Attach engine to hoist and lower into position.

IMPORTANT: Before installing engine, make sure all electrical wiring, lines, and hoses are moved away from engine.



KV18793

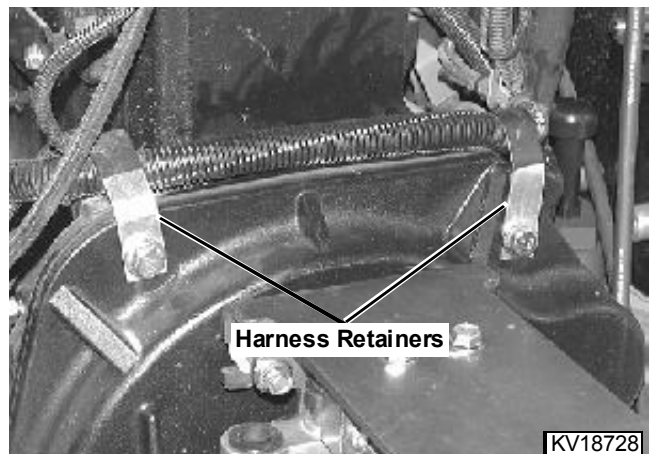
3. Move engine into place so coupler on pumps will slide into coupling on flywheel. It may be necessary to loosen front engine mount and rotate engine to obtain proper alignment. If front mount is loosened tighten to **305 N•m (225 lb-ft)**.
4. Install cap screws (B and C), and nuts (D). Tighten cap screws (B) with nuts (D) to **305 N•m (255 lb-ft)**. Tighten remaining cap screws (C) to **140 N•m (105 lb-ft)**.



KV18791

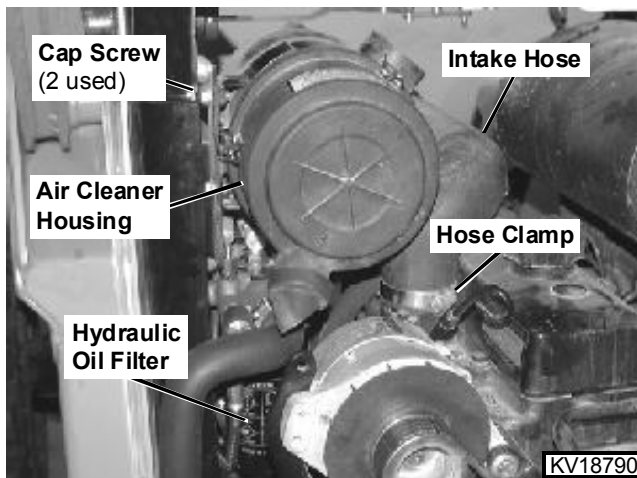
IMPORTANT: If bushings have flat sides, flat side should be parallel to machine sides. **DO NOT ROTATE** while tightening mounting hardware.

5. Install lower grommets, lower washers, nuts, and bolts of rear engine mounting hardware. Tighten to **305 N•m (225 lb-ft)**.



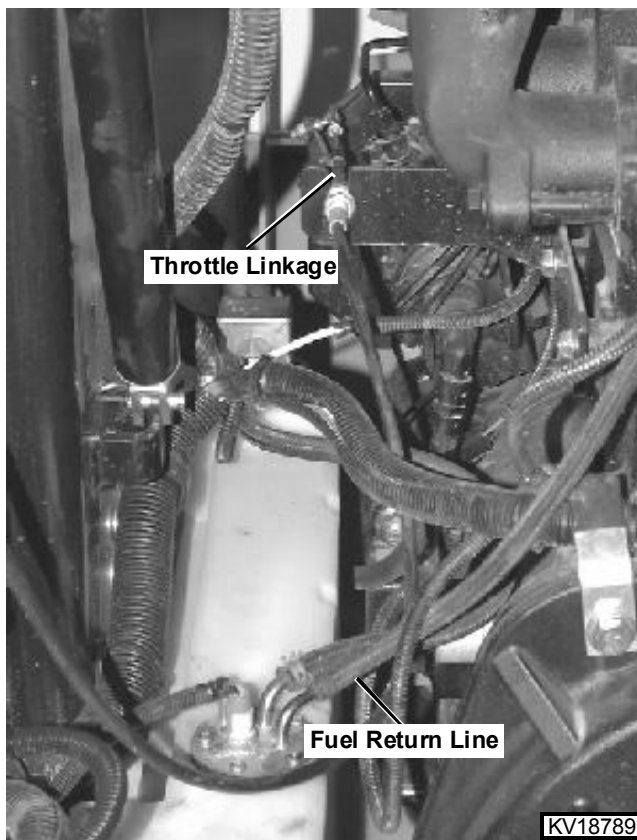
KV18728

6. Install wiring harness into retainers and bend retainers back toward engine.
7. Connect all wiring leads as tagged from removal to starting motor, starter solenoid, alternator, manifold pre heater, oil pressure sending unit, coolant temperature sending unit, and fuel shut-off solenoid.



8. Install air cleaner/intake hose assembly to mounting bracket. Connect air filter restriction switch connector.

9. Install muffler.



10. Connect fuel return line.

11. Connect throttle linkage to bracket and injection pump.

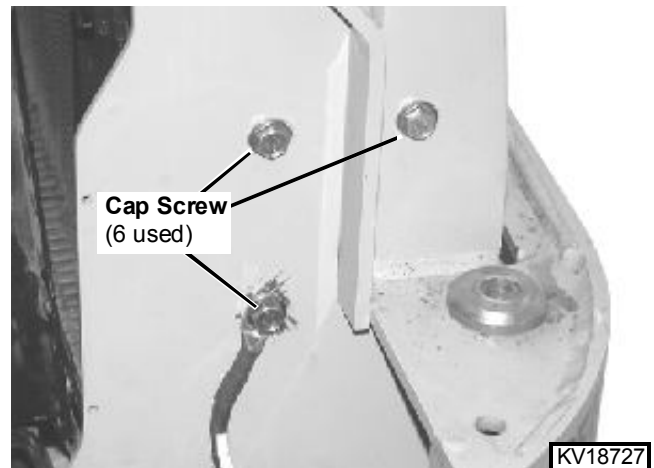
12. Install air conditioning compressor mounting bracket if equipped.

13. Install compressor if equipped.

NOTE: Notches on fan shroud lip fit around hose connections on radiator.

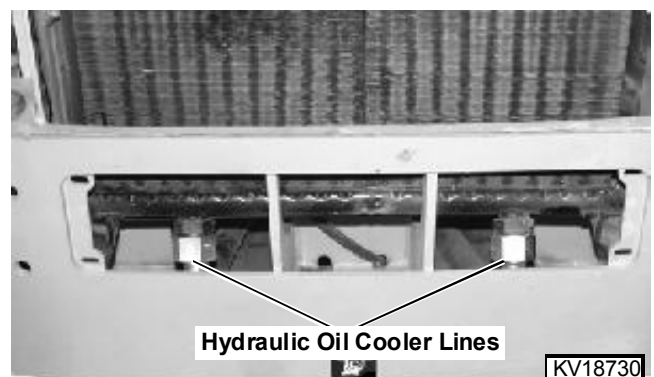
14. Place fan shroud over fan and set condenser if equipped, against shroud.

15. Install radiator and oil cooler assembly using lifting strap and hoist.

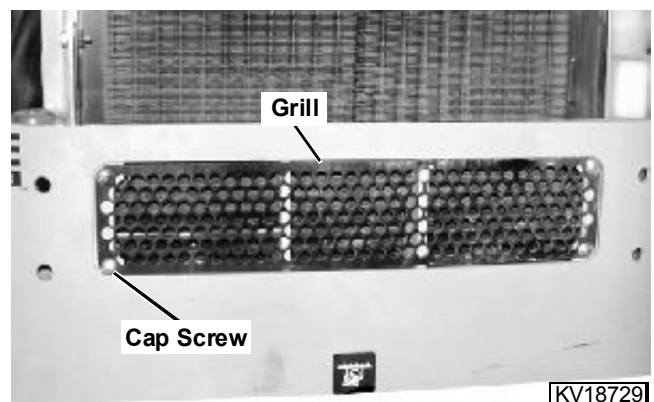


NOTE: Make sure ground cable is installed under cap screw.

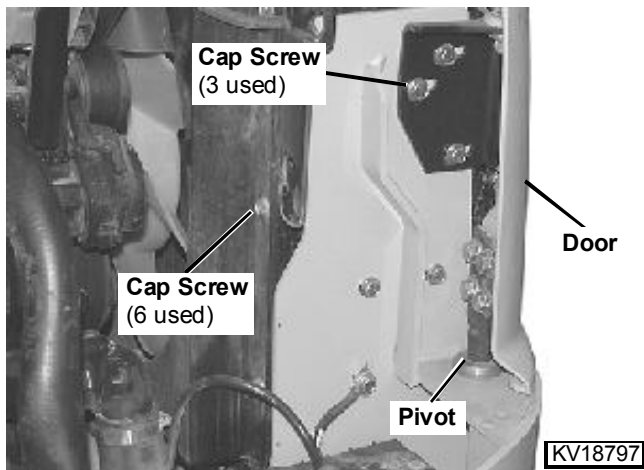
16. Apply thread lock and sealer (medium strength) to threads of mounting cap screws. Install three cap screws on each side of radiator support. Tighten to **29 N•m (21 lb-ft)**.



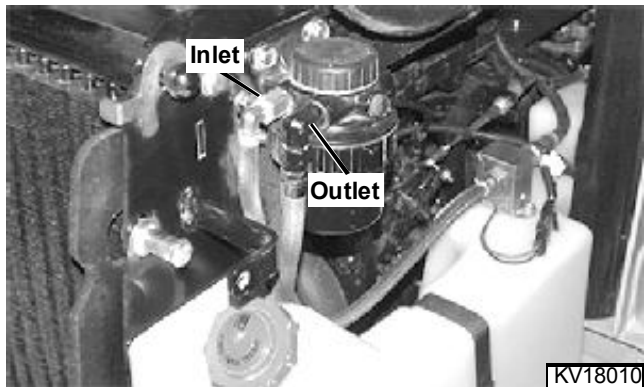
17. Using new O-rings, connect two hydraulic lines to oil cooler.



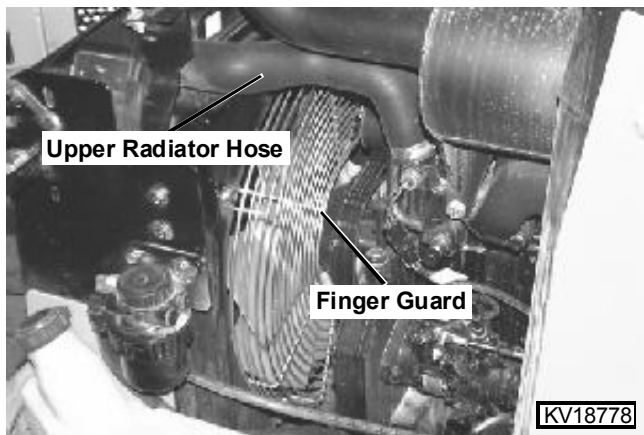
18. Install lower grill using four cap screws and nuts.



19. Install door into pivot. Secure and adjust using cap screws and shims.
20. Connect lower radiator hose to radiator.
21. Install fan shroud and condenser, if equipped, to radiator using six cap screws.
22. Check fan tip clearance. Fan tip should have clearance of $10 \pm 1.0 \text{ mm}$ ($0.40 \pm 0.04 \text{ in.}$) to fan shroud cutout.

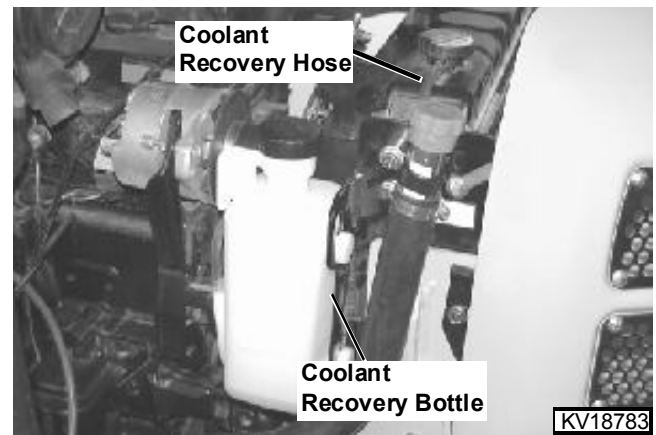


23. Install fuel filter base with filter. Connect inlet line to filter base.
24. Install hydraulic oil reservoir drain plug and tighten securely.
25. Install bottom engine access cover.

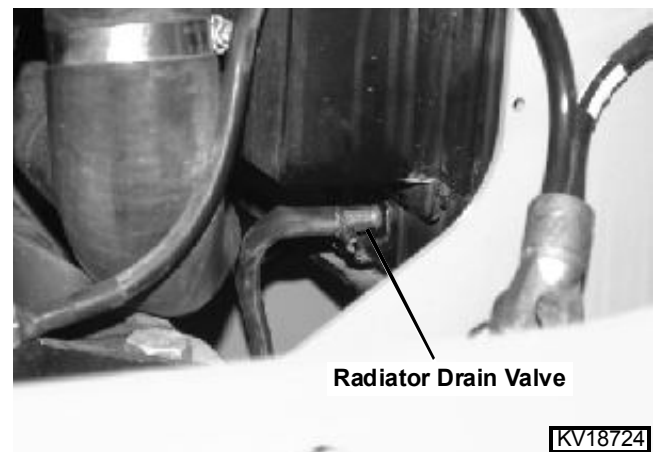


26. Install finger guard with cap screws. Tighten to $26 \text{ N}\cdot\text{m}$ (19 lb-ft).

27. Connect upper radiator hose.
28. Connect cab heater hoses (if equipped).

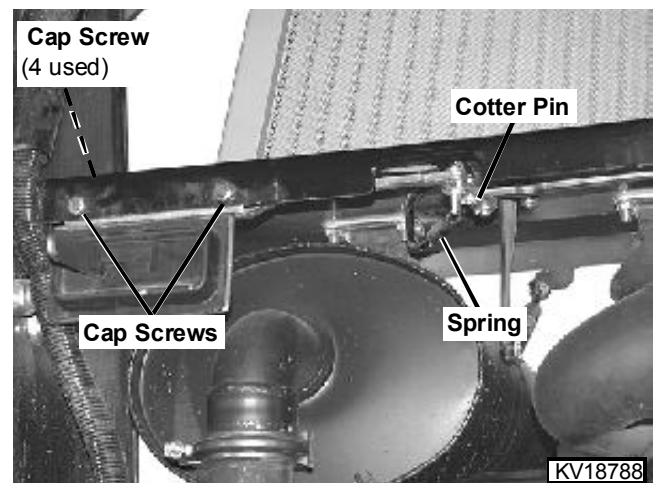


29. Install coolant recovery hose to radiator filler neck and install coolant recovery bottle to radiator support.



NOTE: Approximate cooling system capacity is:
260—10.6 L (11 qt)
270—13.4 L (14 qt)

30. Close radiator drain valve and fill radiator with proper coolant to bottom of filler neck.
31. Install and tighten hydraulic oil filler hose cap screw.





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