

4055, 4255, and 4455 Tractors Repair

For complete service information also see:

4055, 4255, and 4455 Tractors

Operation and Tests	TM1459
6076 Engine	CTM6
Radial Piston Pumps	CTM7
Engine Accessories	CTM11
MFWD Axles, 1100 Series	CTM17

John Deere Waterloo Works
TM1458 (09JUL01)

LITHO IN U.S.A.
ENGLISH

FOREWORD

This manual is written for an experienced technician. Essential tools required in performing certain service work are identified in this manual and are recommended for use.

Live with safety: Read the safety messages in the introduction of this manual and the cautions presented throughout the text of the manual.



This is the safety-alert symbol. When you see this symbol on the machine or in this manual, be alert to the potential for personal injury.

Technical manuals are divided in two parts: repair and diagnostics. Repair sections tell how to repair the components. Diagnostic sections help you identify the majority of routine failures quickly.

Information is organized in groups for the various components requiring service instruction. At the beginning of each group are summary listings of all applicable essential tools, service equipment and tools, other materials needed to do the job, service parts kits, specifications, wear tolerances, and torque values.

Binders, binder labels, and tab sets can be ordered by John Deere dealers direct from the John Deere Distribution Service Center.

This manual is part of a total product support program.

FOS MANUALS—REFERENCE

TECHNICAL MANUALS—MACHINE SERVICE

COMPONENT MANUALS—COMPONENT SERVICE

Fundamentals of Service (FOS) Manuals cover basic theory of operation, fundamentals of troubleshooting, general maintenance, and basic type of failures and their causes. FOS Manuals are for training new personnel and for reference by experienced technicians.

Technical Manuals are concise guides for specific machines. Technical manuals are on-the-job guides containing only the vital information needed for diagnosis, analysis, testing, and repair.

Component Technical Manuals are concise service guides for specific components. Component technical manuals are written as stand-alone manuals covering multiple machine applications.

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All information, illustrations and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

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A John Deere ILLUSTRATION™ Manual

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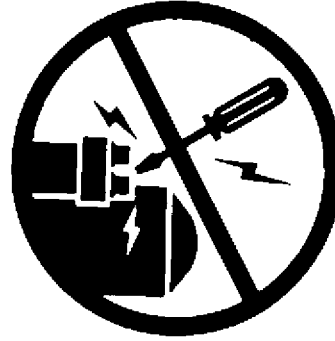
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PREVENT MACHINE RUNAWAY

Avoid possible injury or death from machinery runaway.

Do not start engine by shorting across starter terminals. Machine will start in gear if normal circuitry is bypassed.

NEVER start engine while standing on ground. Start engine only from operator's seat, with transmission in neutral or park.



DX,BYPAS1 -19-04JUN90

10-05-1
-UN-11JAN89
TS177

HANDLE FLUIDS SAFELY—AVOID FIRES

When you work around fuel, do not smoke or work near heaters or other fire hazards.

Store flammable fluids away from fire hazards. Do not incinerate or puncture pressurized containers.

Make sure machine is clean of trash, grease, and debris.

Do not store oily rags; they can ignite and burn spontaneously.



DX,FLAME -19-04JUN90

-UN-23AUG88
TS227

PREVENT BATTERY EXPLOSIONS

Keep sparks, lighted matches, and open flame away from the top of battery. Battery gas can explode.

Never check battery charge by placing a metal object across the posts. Use a volt-meter or hydrometer.

Do not charge a frozen battery; it may explode. Warm battery to 16°C (60°F).



DX,SPARKS -19-04JUN90

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TS204

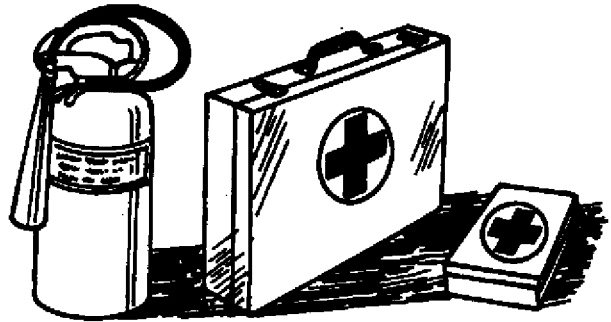
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PREPARE FOR EMERGENCIES

Be prepared if a fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.



DX,FIRE2 -19-04JUN90

TS291 -JUN-23AUG88

PREVENT ACID BURNS

Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into eyes.

Avoid the hazard by:

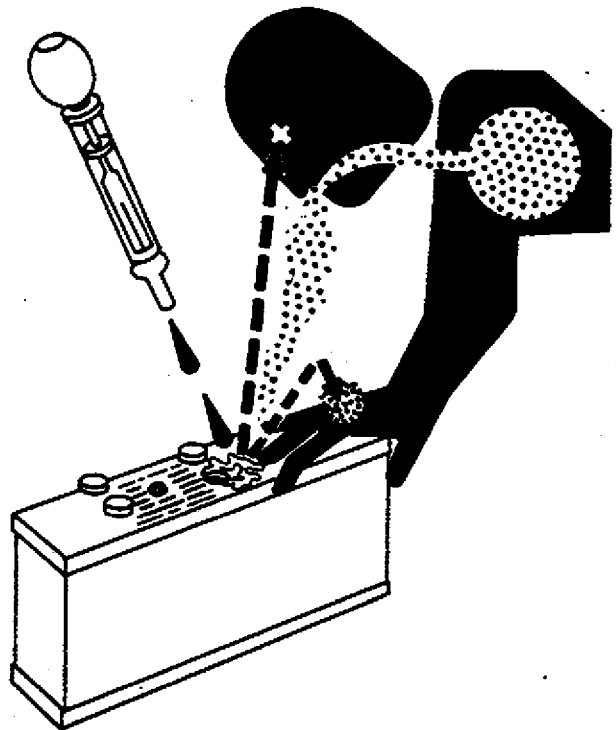
1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves.
3. Avoiding breathing fumes when electrolyte is added.
4. Avoiding spilling or dripping electrolyte.
5. Use proper jump start procedure.

If you spill acid on yourself:

1. Flush your skin with water.
2. Apply baking soda or lime to help neutralize the acid.
3. Flush your eyes with water for 10—15 minutes. Get medical attention immediately.

If acid is swallowed:

1. Drink large amounts of water or milk.
2. Then drink milk of magnesia, beaten eggs, or vegetable oil.
3. Get medical attention immediately.



DX,POISON -19-04JUN90

TS203 -JUN-23AUG88

GENERAL SPECIFICATIONS

POWER:

PTO (Factory observed at 2200 rpm)

4055	105 hp (78.3 kW)
4255	120 hp (89.5 kW)
4455	140 hp (104.4 kW)

ENGINE:

Type	Diesel
Aspiration	Turbocharged
Cylinders	In-line 6
Slow idle speed	850 rpm
Governed speed range	800—2400 rpm
Operating speed range	1500—2200 rpm
Bore and stroke	4.56 x 4.765 in. (115.8 x 120.7 mm)
Compression ratio	16.0:1
Displacement	466 cu. in. (7.6 L)
Firing order	1-5-3-6-2-4
Valve clearance	
Intake	0.015 in. (0.38 mm)
Exhaust	0.020 in. (0.51 mm)
Lubrication system	Full Pressure-full Flow Filtration

HYDRAULIC SYSTEM:

Type	Closed-center, Pressure Compensating
Pump	8-Piston, Variable Displacement
Pump displacement	3 cu. in. (50 cm ³)
Standby pressure	2530 psi (17 500 kPa) (175 bar)

CAPACITIES:

Fuel tank	65 gal (246 L)
Cooling system	27 qt (25.6 L)
Crankcase with filter	18 qt (17.0 L)
Transmission-hydraulic system	
Power Shift	13.5 gal (51 L)
Power Shift with MFWD	15.9 gal (60 L)
QUAD-RANGE	16 gal (60.5 L)
QUAD-RANGE with MFWD	17.2 gal (65.1 L)
Mechanical-Front-Wheel-Drive	
Wheel Hubs	2 qt (1.9 L)
Axle Housing	12 qt (11.4 L)

RX14581010,1 -19-09OCT90

DIMENSIONS (Standard Tires):

WHEELBASE

Two-Wheel Drive	2710 mm (106.7 in.)
MFWD	2675 mm (105.3 in.)
Hi-Crop	2715 mm (107 in.)

LENGTH (less hitch and drawbar)

Two-Wheel Drive	4028 mm (158.6 in.)
MFWD	4023 mm (158.4 in.)
Hi-Crop	4034 mm (159 in.)

OVERALL WIDTH (axle length)

Regular axle—4055, 4255, 4455	2438 mm (96 in.)
Long axle—4055 and 4255	2870 mm (113 in.)
Long axle—4455	2769 mm (109 in.)
Extra Long axle—4455	3023 mm (119 in.)

OVERALL HEIGHT (top of SOUND-GARD body)

Two-Wheel Drive	2957 mm (116.4 in.)
MFWD	2959 mm (116.5 in.)
Hi-Crop	3282 mm (129.3 in.)

SHIPPING WEIGHT (average):

With QUAD-RANGE transmission and most popular wheel equipment, less SOUND-GARD

4055	5029 kg (11089 lb)
4255	5331 kg (11755 lb)
4455	5780 kg (12745 lb)

With Power Shift transmission and most popular wheel equipment, with SOUND-GARD

4055	5665 kg (12489 lb)
4255	5966 kg (13155 lb)
4455	6415 kg (14145 lb)
Hi-Crop with standard equipment	6063 kg (13369 lb)

ESSENTIAL TOOLS

NOTE: Order tools from your SERVICE-GARD™ Catalog. Some tools may be available from a local supplier.

DX,TOOLS -19-04JUN90

Flywheel Turning Tool JDE81-1

RG4950 -UN-23AUG88

Turn engine flywheel

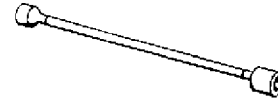


JDE81,1A -19-10APR90

Socket Extension JDG16A

RW18130 -UN-09OCT90

Remove and install clutch housing

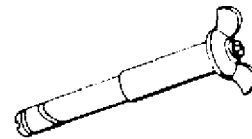


JDG16A -19-18SEP90

Filter Relief Valve Removal Tool JDG268

RW18148 -UN-20APR90

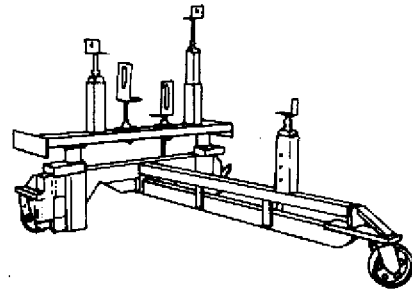
Remove and install clutch oil manifold tubes



JDG268.A -19-19SEP90

Medium Duty Front Tractor Splitting Stand . . . JT05724

Support front end during splitting

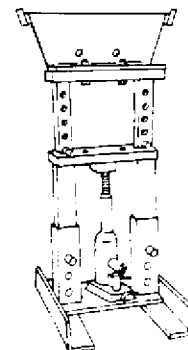


JT05724 -19-09AUG90

RW18156 -UN-20APR90

Universal Support Stand JT05725

Supports tractor during splitting



JT05725 -19-20JUL90

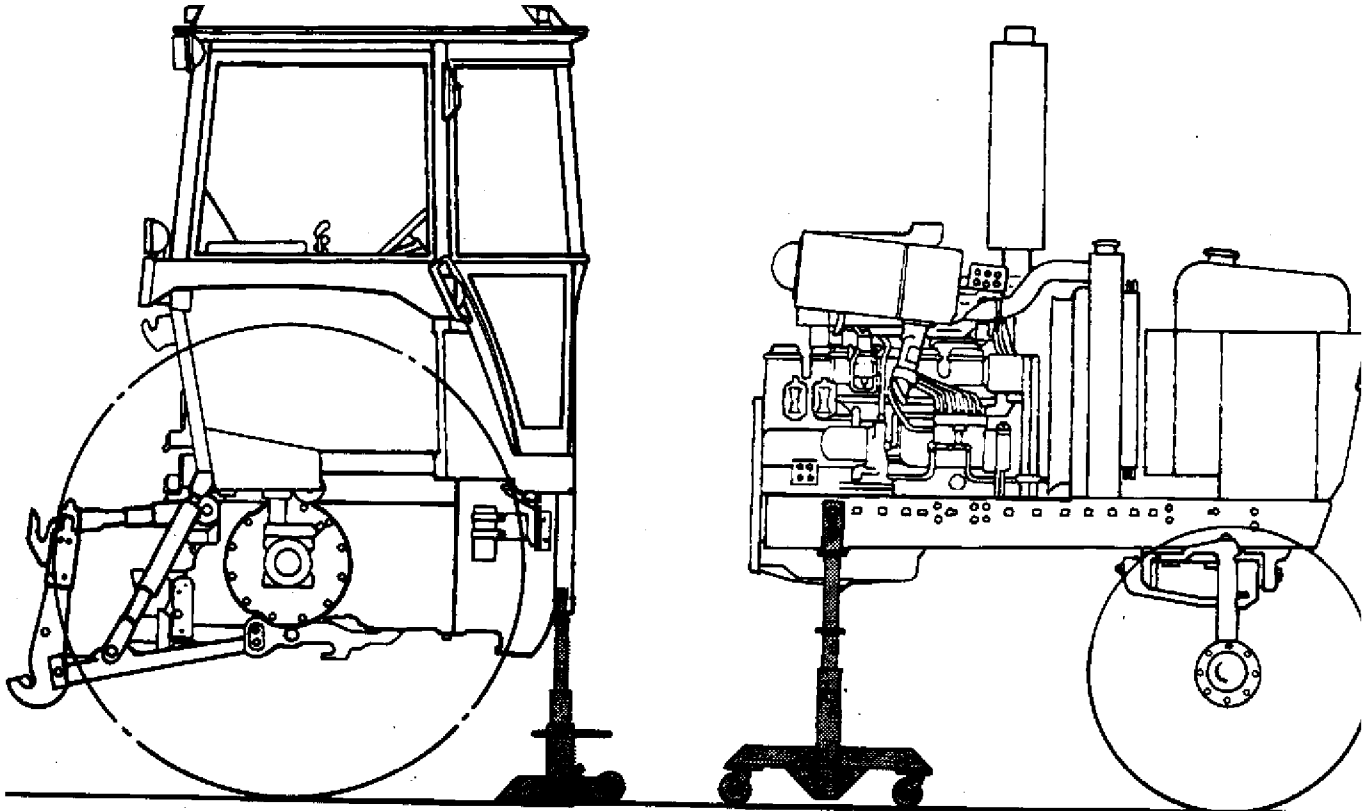
RW15663 -UN-30MAR89

SPECIFICATIONS

Item	Measurement	Specification
Clutch Housing-to-Engine	Torque	365 N·m (270 lb-ft)
Oil Pan-to-Clutch Housing	Torque	163 N·m (120 lb-ft)
Center Link Bracket-to-Transmission (QRT)	Torque	407 N·m (300 lb-ft)
Driveshaft-to-Front Axle Yoke (w/MFWD)	Torque	68 N·m (50 lb-ft)

RX14581515.1 -19-01OCT90

FRONT END AND ENGINE SEPARATION



RW6983L -JUN-17A PR89

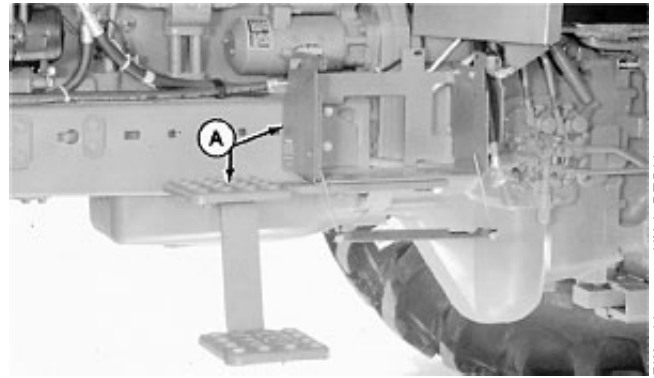
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REMOVE FRONT END AND ENGINE

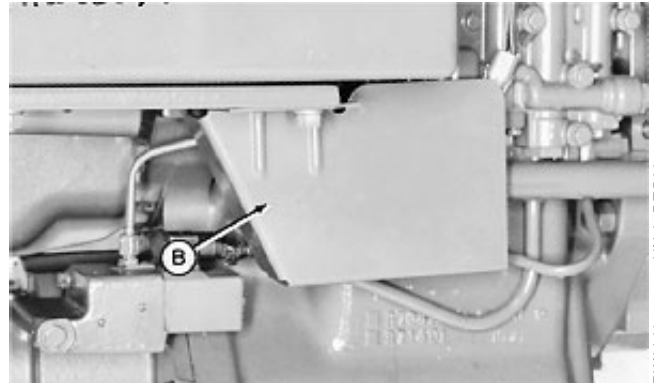
1. Disconnect battery ground cable.
2. Disconnect and remove batteries.
3. Remove right-hand battery box and left-hand battery box step assembly (A).

For tractor with MFWD, perform Step 3a.

- 3a. Remove clutch valve wiring shield (B) with battery box step assembly.
4. Remove side shields, screens, and hood.



FW5520 -UN-05DEC88



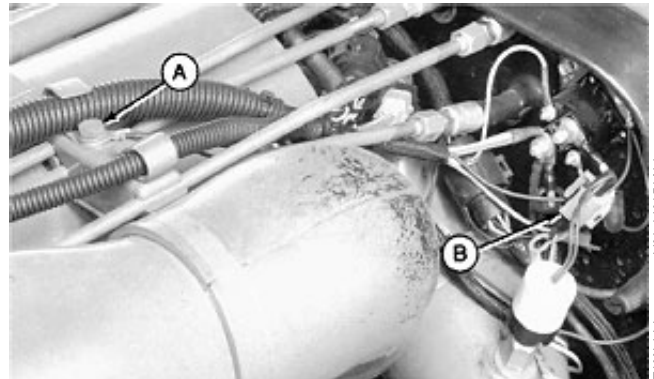
FW6940 -UN-05DEC88

RX14581515.3 -19-19SEP90

5. Drain cooling system at radiator and engine drain on left hand of cylinder block.

CAUTION: Care should be taken when servicing any refrigerant air conditioning system or handling refrigerant lines to avoid personal injury.

6. Disconnect air conditioning lines at couplers under left front corner of SOUND-GARD body.
7. Remove riser panel and pull lines forward to air conditioning compressor.
8. Disconnect air conditioning electrical connectors and move wiring rearward to SOUND-GARD body.
9. Disconnect starter electrical connections and move wiring rearward to SOUND-GARD body.
10. Disconnect heater hoses.
11. Disconnect wiring harness ground wires (A), air restriction indicator (B).

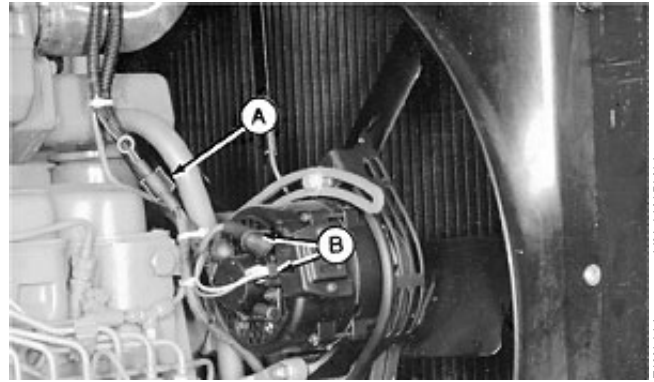


FW6188 -UN-10NOV88

RX14581515.4 -19-19SEP90

Front End and Engine/Remove Front End and Engine

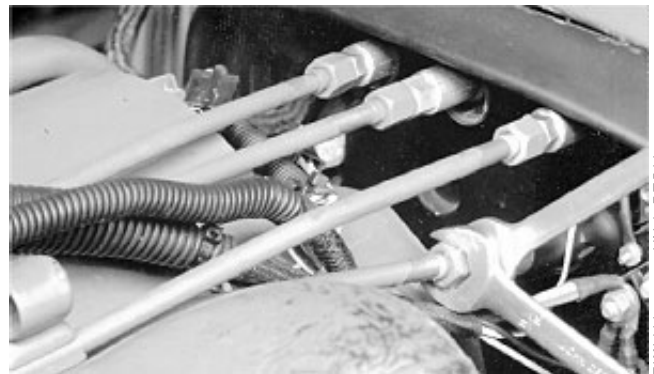
12. Disconnect tachometer sensor wiring connector (A).
13. Disconnect alternator electrical connectors (B), and route rearward to SOUND-GARD body.
14. Disconnect ether starting aid electrical connector.
15. Route steering motor bleed line from under left front of SOUND-GARD body to front of tractor.
16. Disconnect cooler return oil line at hose connection next to SOUND-GARD body.



-UN-10NOV88
RW6190

RX14581515.5 -19-19SEP90

17. Disconnect steering lines at SOUND-GARD body.
18. Disconnect engine oil pressure sensor.
19. Disconnect throttle control linkage.
20. Disconnect fuel shut-off cable.



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RW6193

RX14581515.6 -19-19SEP90

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21. Remove MFWD drive shaft if equipped.

CAUTION: DO NOT apply excessive lifting force to support tractor. Binding could occur during separation.

22. Attach JT05724 Splitting Stand to side frames and support tractor.

NOTE: Remove front weights from tractor if equipped.

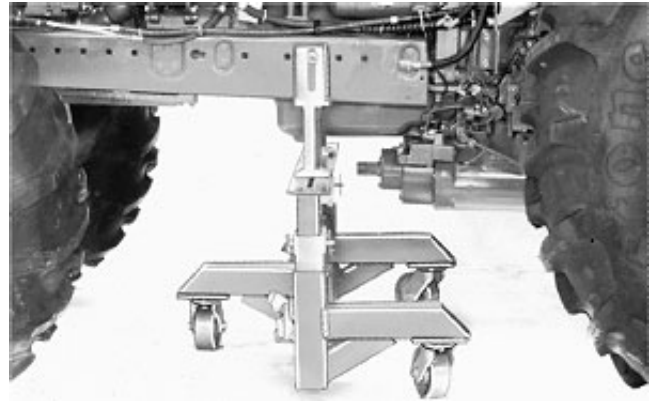
23. Support tractor at clutch housing with JT05725 Universal Support Stand.

NOTE: For tractor with QRT, use DFRW31 Support Stand Adapter (A). (See Dealer Fabricated Tools, Section 99.)

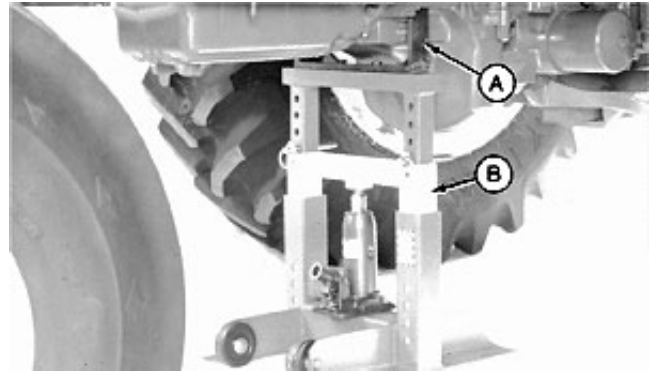
24. Disconnect main pump charge line from pressure regulating valve housing.

25. Disconnect main pump pressure line from pressure control valve.

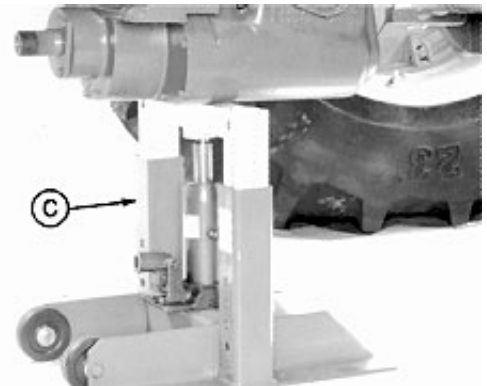
**A—Support Stand Adapter
B—QUAD-RANGE Tractor
C—MFWD Tractors**



RW7504 -UN-25JAN89



RW7409 -UN-05JAN89



RW7410 -UN-05JAN89

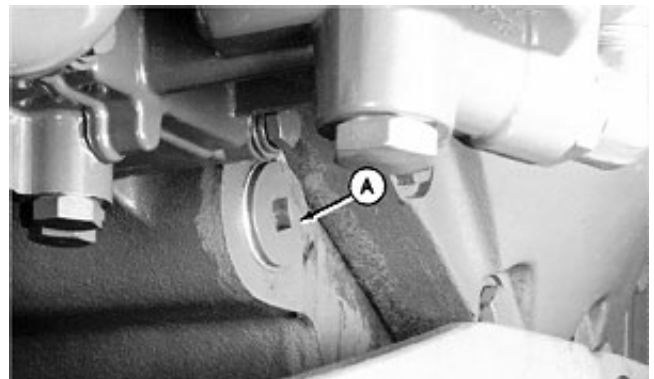
RX14581515.7 -19-19SEP90

For tractor with QRT, perform Steps 26a, 27a, 28a, and 29a.

26a. Remove plug (A) from transmission and drain hydraulic oil.

27a. Remove center link of hitch.

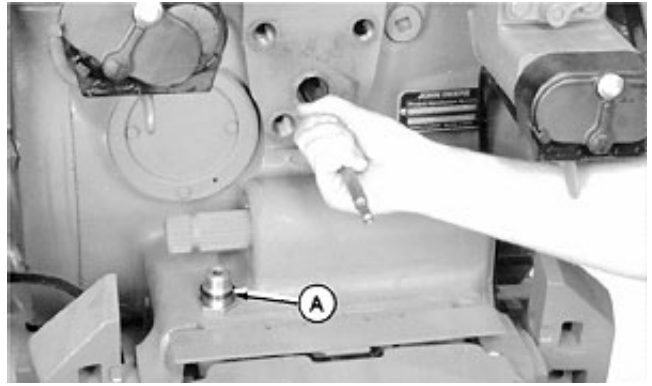
28a. Remove center link attaching bracket.



RW7505 -UN-05JAN89

RX14581515.8 -19-19SEP90

29a. Remove transmission oil pump drive shaft plug (A), and pull pump drive shaft from transmission case.



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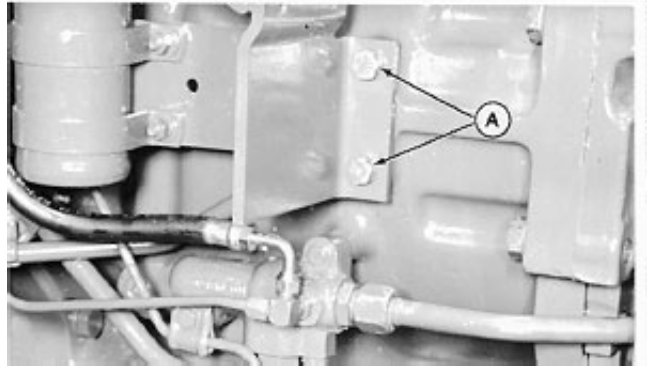
RW7508 -UN-05JAN89

For tractor with PST, perform Steps 26b, 27b, 28b, 29b, 30b and 31b.

26b. Drain hydraulic oil from clutch housing.

27b. Loosen right-hand front SOUND-GARD body mounting bolt.

28b. Remove SOUND-GARD body mounting bracket cap screws (A) and swing mounting bracket away from clutch housing.

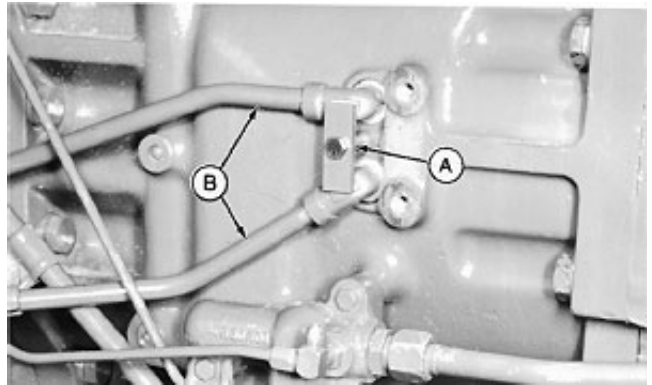


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29b. Remove clutch oil manifold line clamp (A).

30b. Remove C₁ and C₂ oil lines (B) from tractor.

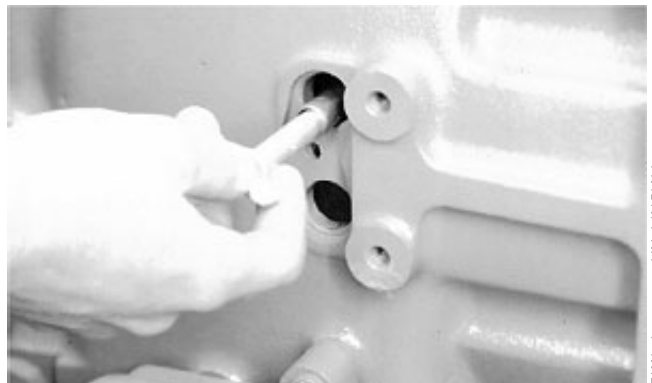


RX14581515,11 -19-19SEP90

RW15589 -UN-02MAR89

NOTE: Use care in removing clutch oil manifold tubes to avoid dropping tubes into clutch housing.

31b. Remove clutch oil manifold tubes from clutch housing using a JDG268 Filter Relief Valve Removal Tool.



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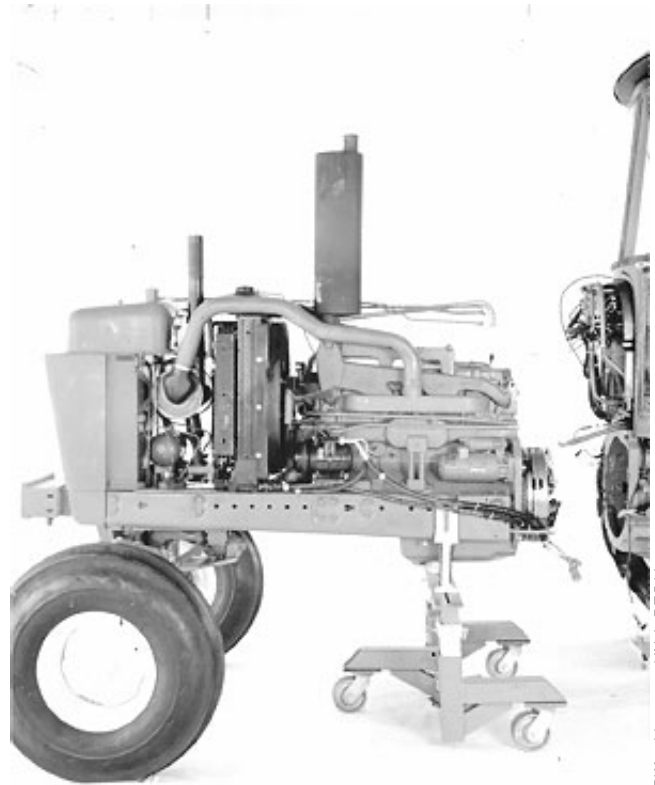
RW6787 -UN-14NOV88

SEPARATE FRONT-END AND ENGINE FROM CLUTCH HOUSING

1. Remove floor mat and control support cover.
2. Remove top two clutch housing-to-engine cap screws located under control support using a JDG16A Special Torque Wrench Extension.
3. Remove six oil pan-to-clutch housing cap screws and six remaining clutch housing-to-engine cap screws.

IMPORTANT: During separation, clutch shafts can become disengaged and fall out. Take precautions to insure shafts stay with clutch housing.

4. Carefully roll front end and engine away from clutch housing.



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RW7511 -JUN-05DEC88

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INSTALL FRONT-END AND ENGINE

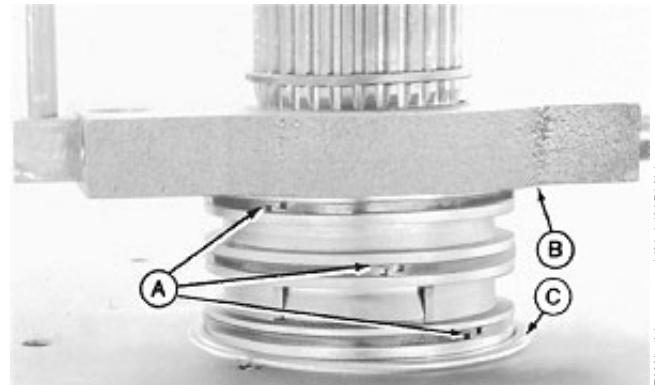
Install front end and engine assembly in reverse order of removal noting the following special instructions:

For tractor with PST, perform Steps 1a and 1b.

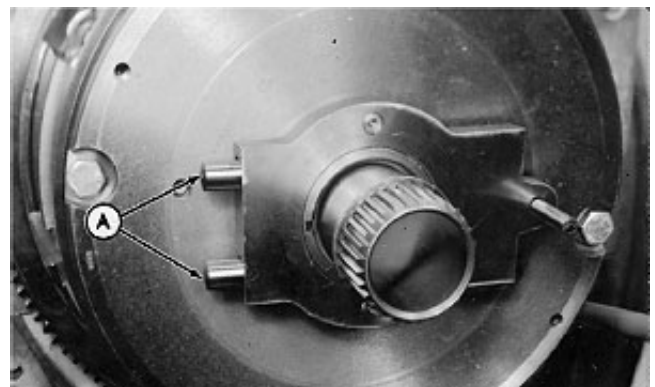
IMPORTANT: Sealing rings (A) must be interlocked and clutch oil manifold (B) fully seated against traction clutch assembly (C) to prevent damage to rings during clutch housing to engine assembly.

- 1a. Install clutch oil manifold in traction clutch assembly.

NOTE: Check clutch oil manifold pistons (A) to be sure they are fully seated in manifold.



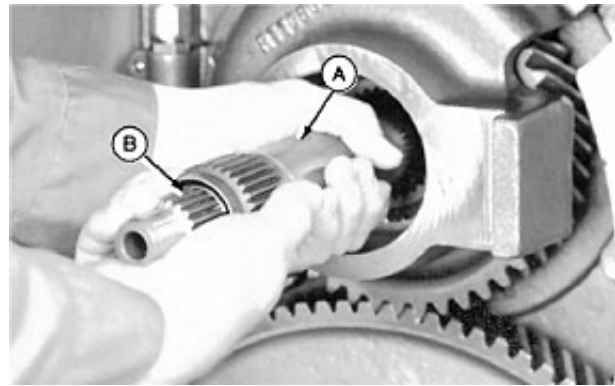
RW6788 -JUN-14NOV88



RW15594 -JUN-02MAR89

RX14581515,14 -19-19SEP90

1b. Check high (A) and low (B) range shafts to make sure they are properly installed in transmission, by measuring from clutch housing face to end of each shaft with shafts pushed rearward. Low range shaft should be 20.5—23.0 mm (0.80—0.90 in.) from clutch housing face. High range shaft should be 68.8—71.5 mm (2.71—2.82 in.) from clutch housing face.



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R36438

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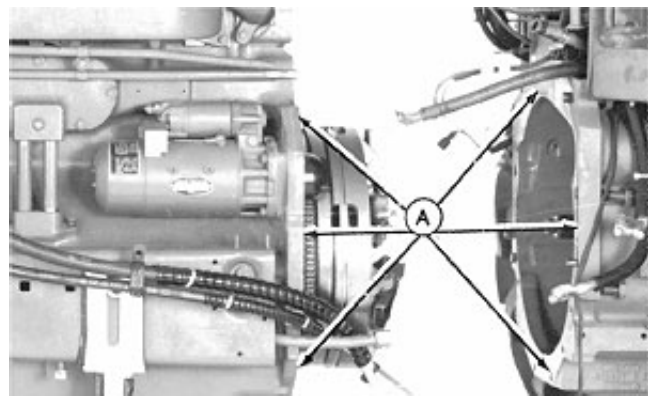
For ALL tractors, perform the following steps:

2. Roll front end and engine assembly toward clutch housing.

3. Measure distance between clutch housing and engine surfaces (A). Adjust tractor support stands for perfect alignment.

IMPORTANT: DO NOT “rock” tractor to install engine to clutch housing. Clutch oil manifold sealing ring damage can result.

4. Carefully roll front end and engine assembly into position with clutch housing using steady rearward pressure.



-UN-05DEC88

RW7512

RX14581515.16 -19-19SEP90

IMPORTANT: For tractor with PST, be sure clutch oil manifold pin is engaged in PTO drive gear support hole before rotating engine.

5. Align clutch drive shaft splines with clutch assembly using a JDE81-1 Engine Rotation Tool.

IMPORTANT: Do not use mechanical force to draw engine and clutch housing together. When properly aligned, the unit will slide together.

6. Tighten clutch housing-to-engine cap screws to 365 N-m (270 lb-ft).

7. Tighten oil pan-to-clutch housing cap screws to 163 N-m (120 lb-ft).

IMPORTANT: Be careful not to drop clutch oil manifold tubes in clutch housing. Tractor must be separated again if this occurs.

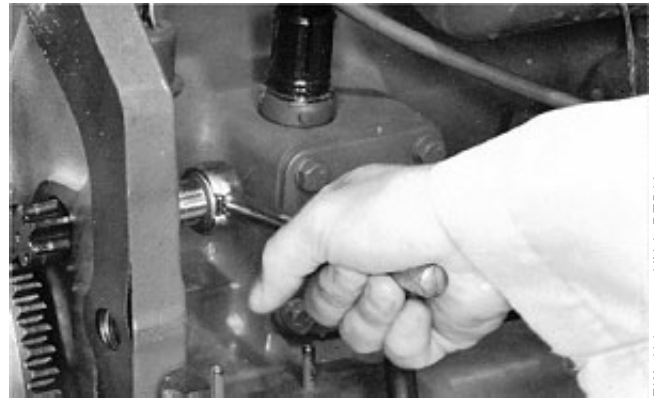
8. For tractor with PST, use long blade screw driver as guide tool to install clutch oil manifold tubes.

9. For tractor with QRT, tighten center link attaching bracket-to-transmission case cap screws to 407 N-m (300 lb-ft).

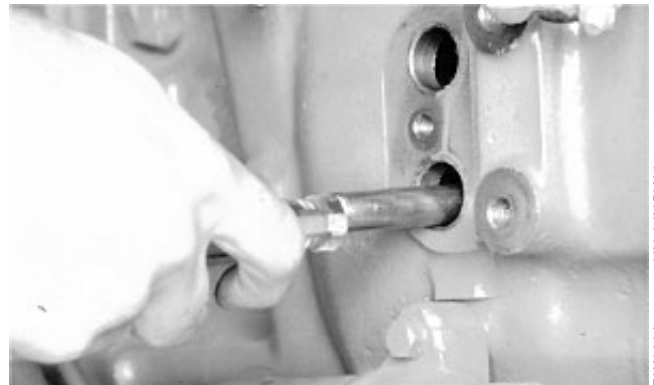
10. For tractor with MFWD, tighten driveshaft-to-front axle yoke cap screws to 68 N-m (50 lb-ft).

11. Check all hydraulic connections and all fluid levels.

12. Test tractor operation.



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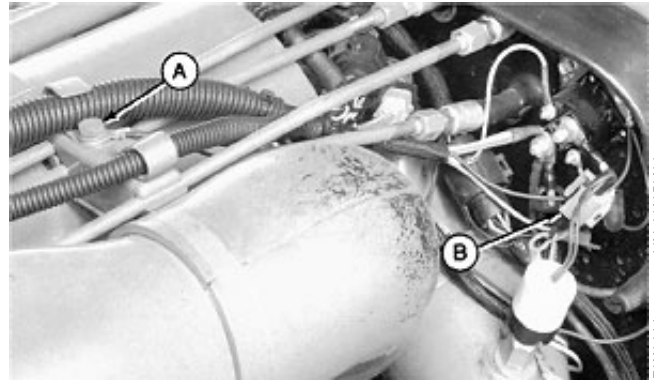


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RX14581515,17 -19-01OCT90

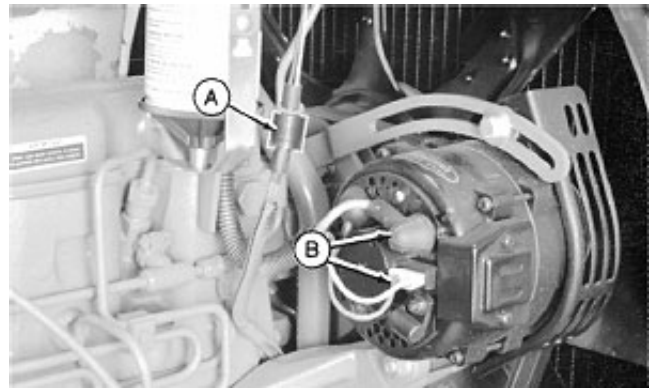
REMOVE ENGINE

1. Remove front end. (See Remove Front End, Group 10.)
2. Drain hydraulic oil at clutch housing.
3. Disconnect starter electrical connections and move wiring rearward to SOUND-GARD body.
4. Disconnect heater hoses at engine.
5. Disconnect wiring harness ground wires (A), air restriction indicator (B).



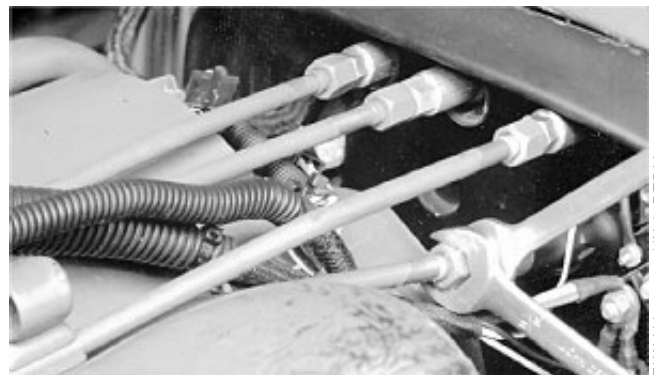
RX14581520,4 -19-12OCT90

6. Disconnect tachometer sensor wiring connector (A).
7. Disconnect alternator electrical connectors (B).
8. Disconnect ether starting air electrical connector and move all wiring harnesses rearward to SOUND-GARD body.



RX14581520,5 -19-02MAY90

9. Disconnect steering lines at SOUND-GARD body.
10. Disconnect engine oil pressure sensor.
11. Disconnect throttle control linkage.
12. Disconnect fuel shut-off cable.



RX14581520,6 -19-02MAY90

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For tractor with QRT, perform Steps 13a, 14a, and 15a.

13a. Disconnect center link of hitch from center link attaching bracket.

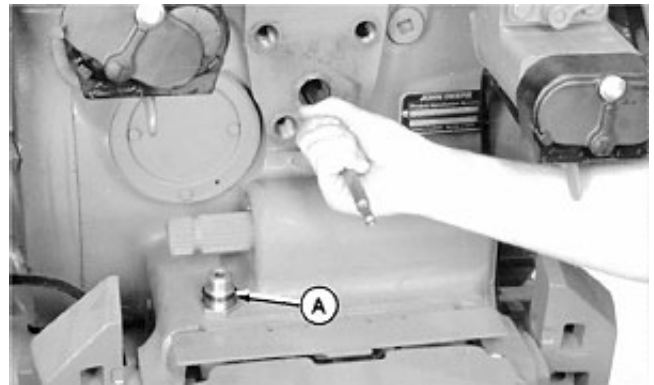
14a. Remove center link attaching bracket from transmission case.



RX14581520,7 -19-02MAY90

RW7507
-UN-05JAN89

15a. Remove transmission oil pump drive shaft plug (A), and pull pump drive shaft from transmission case.



RX14581520,8 -19-02MAY90

RW7508
-UN-05JAN89

For tractor with PST, perform Steps 13b, 14b, 15b, 15c, 15d, and 15e.

13b. Loosen right-hand front SOUND-GARD body mounting bolt.

14b. Remove SOUND-GARD body mounting bracket cap screws (A) and swing mounting bracket away from clutch housing.

15b. Disconnect C_1 and C_2 oil lines from power shift control valve.



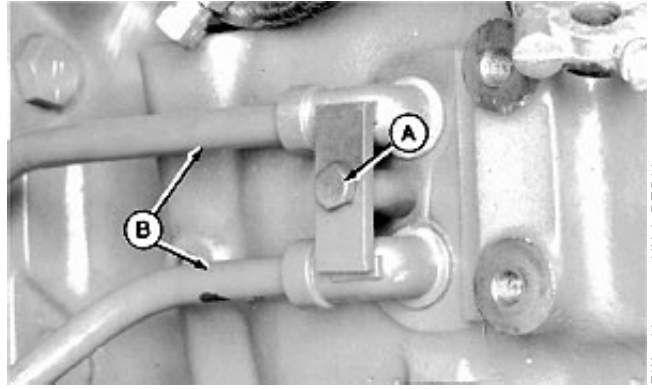
RX14581520,9 -19-19SEP90

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-UN-05DEC88

Engine/Remove Engine

15c. Remove clutch oil manifold line clamp (A).

15d. Remove C₁ and C₂ oil lines (B) from tractor.



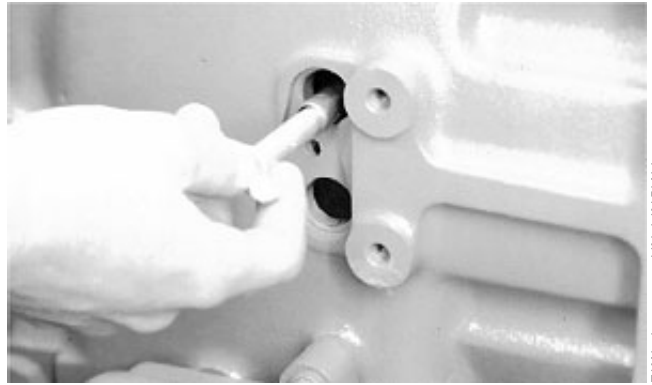
RX14581520,10 -19-19SEP90

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NOTE: Use care in removing clutch oil manifold tubes to avoid dropping tubes into clutch housing.

15e. Remove clutch oil manifold tubes from clutch housing using a JDG268 Filter Relief Valve Removal Tool.



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RW6787 -UN-14NOV88

16. Disconnect air cleaner canister cap screw (A).

17. Loosen clamp (A) and remove muffler.



RX14581520,12 -19-02MAY90

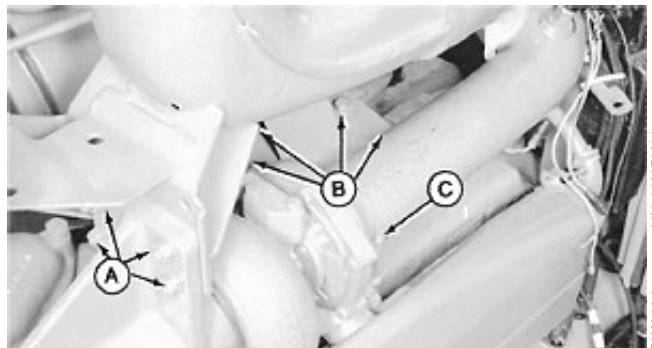
RW6222 -UN-10NOV88

18. Remove air intake and steering valve bracket-to-exhaust elbow bolts (A).

19. Remove air cleaner bracket-to-water manifold fold cap screws (B).

20. Disconnect air intake hose (C) from turbocharger.

21. Remove air intake and steering valve assembly from engine.

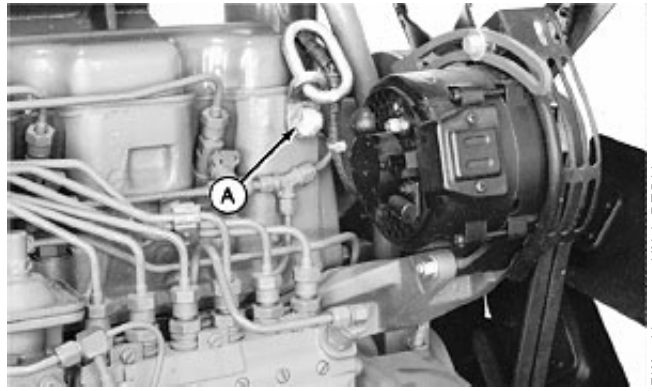


RX14581520,13 -19-02MAY90

RW6224 -UN-10NOV88

Engine/Remove Engine

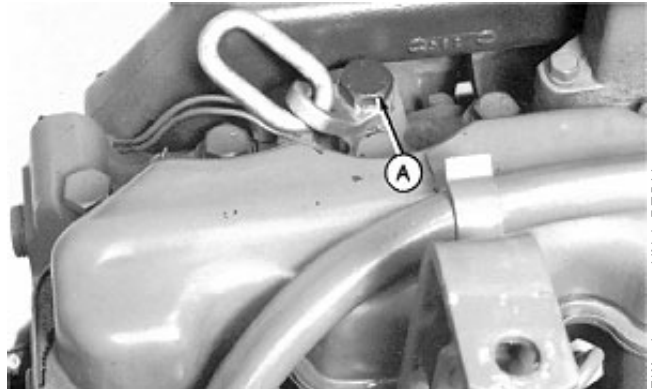
22. Remove injection pump leak-off line clamp and attach JDG19 Special Mounting Bracket (A) to cylinder head with 5/8 in. x 1-1/2 in. cap screw.



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FW7516
-UN-05DEC88

23. Attach JDG19 Special Mounting Bracket (A) with 5/8 in. x 1-1/2 in. cap screw.

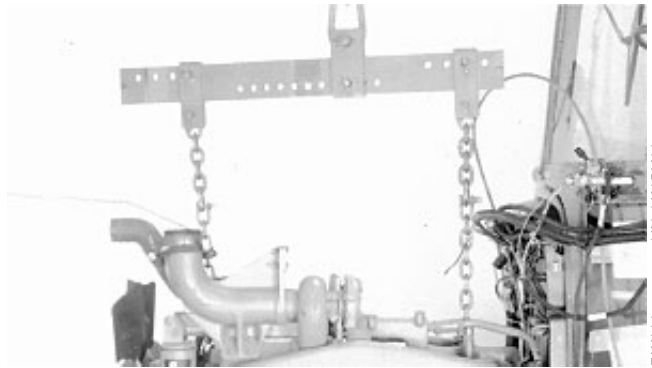


RX14581520,15 -19-04MAY90

FW7517
-UN-05DEC88

IMPORTANT: DO NOT apply excessive lifting force to support engine. Binding could occur during separation.

24. Connect JDG23 Lift Sling to engine lift brackets and support engine with overhead hoist.



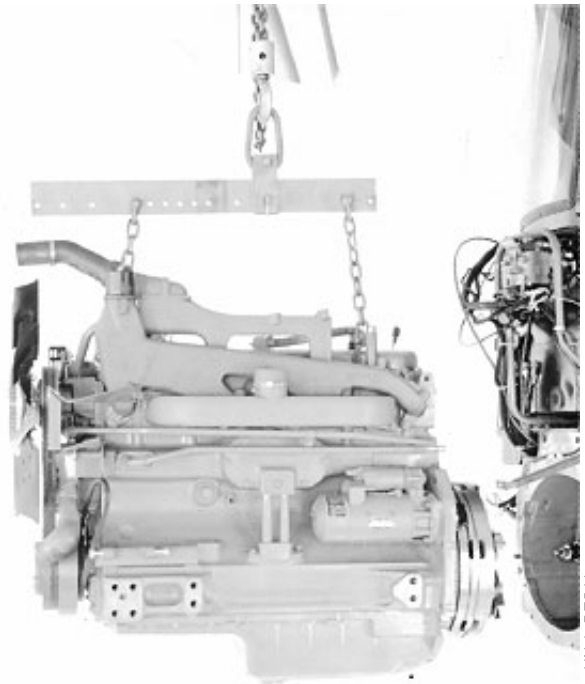
RX14581520,16 -19-04MAY90

FW6227
-UN-10NOV88

25. Remove floor mat and control support cover.
26. Remove top two clutch housing-to-engine cap screws located under control support using a JDG16A Special Torque Wrench extension.
27. Remove six oil pan-to-clutch housing cap screws and six remaining clutch housing-to-engine cap screws.

IMPORTANT: During separation, clutch shafts can become disengaged and fall out. Take precautions to insure shafts stay with clutch housing.

28. Carefully move engine away from clutch housing.



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RX14581520,17 -19-04MAY90

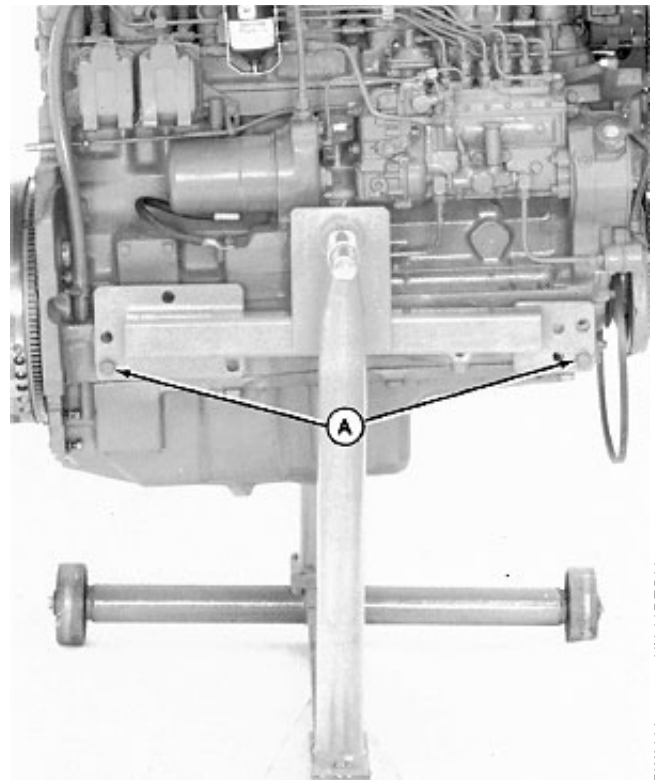
INSTALL ENGINE ON REPAIR STAND

NOTE: D05001ST Adapter Plate Set must be modified by drilling lower mounting bolt hole out to 19 mm (3/4 in.).

1. Carefully move engine into D01003AA Repair Stand and use four (two each side) side frame-to-engine special cap screws (A) to secure D05001ST Adapter Plate Set to engine.
2. Tighten special cap screws to 578 N·m (426 lb-ft).

⚠ CAUTION: Never remove the overhead lifting equipment from the engine until the engine is securely mounted to the stand and all mounting hardware is torqued to specified values. Always release the overhead lifting equipment slowly!

3. Carefully remove lift sling from engine.



RW6229
-UN-09DEC88

RX14581520,18 -19-28SEP90