

670, 770, 790, 870, 970, 1070 Compact Utility Tractors

TECHNICAL MANUAL

**John Deere
Worldwide Commercial and
Consumer Equipment Division**

**TM1470 (15MAR99)
Replaces TM1470 (15MAR94)**

Introduction

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.

N 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.

Contents

SECTION 10—GENERAL INFORMATION

- Group 05—Safety
- Group 10—General Specifications
- Group 15—Repair Specifications
- Group 20—Fuel and Lubricants
- Group 25—Serial Number Locations

SECTION 20—ENGINE REPAIR

- Group 05—670/770
- Group 06—870/970/1070
- Group 07—790
- Group 10—Cooling System
- Group 15—Throttle and Governor Control Linkage
- Group 20—Fuel System

SECTION 40—ELECTRICAL SYSTEM

- Group 05—Alternator
- Group 10—Starter
- Group 15—Sender, Switches and Gauges

SECTION 50—POWER TRAIN REPAIR—670/770/790

- Group 05—Clutch Housing
- Group 06—Single Stage Clutch
- Group 07—Dual Stage Clutch
- Group 10—Transmission
- Group 15—Rear PTO Drive Shaft
- Group 20—Differential
- Group 25—Final Drive
- Group 30—Mechanical Front Wheel Drive
- Group 35—Throttle and Governor Control Linkage

Section 55—POWER TRAIN REPAIR —870/970/1070

- Group 05—Clutch Housing
- Group 06—Dual Stage Clutch
- Group 10—Transmission
- Group 15—Rear PTO Drive Shaft
- Group 20—Differential
- Group 25—Final Drive
- Group 30—Mechanical Front Wheel Drive—870
- Group 35—Mechanical Front Wheel Drive
—970/1070
- Group 40—Mid Mount PTO

SECTION 60—STEERING AND BRAKE REPAIR

- Group 05—Manual Steering
- Group 10—Power Steering
- Group 15—Brake Repair—670/770/790
- Group 20—Brake Repair—870/970/1070

SECTION 70—HYDRAULIC REPAIR

- Group 05—Hydraulic Pump and Filter
- Group 10—Rockshaft—670/770/790
- Group 11—Rockshaft—870/970/1070
- Group 15—Selective Control Valve
- Group 20—Rear Auxiliary Hydraulic Lines

SECTION 80—MISCELLANEOUS REPAIR

- Group 05—Wheels
- Group 10—Front Axle
- Group 15—Hood
- Group 20—3-Point Hitch
- Group 25—Seat and Support
- Group 30—Roll-Gard
- Group 35—Mower Spindles
- Group 40—Mower Gearbox

SECTION 210—OPERATIONAL CHECKOUT PROCEDURE AND SPECIFICATIONS

- Group 05—Test and Adjustment Specifications
- Group 10—Operational Checkout Procedures

SECTION 220—ENGINE OPERATION, TESTS, AND ADJUSTMENTS

- Group 05—Component Locations
- Group 10—Theory of Operation
- Group 15—Engine System Diagnosis

SECTION 240—ELECTRICAL SYSTEM OPERATION AND TESTS

- Group 05—Component Location
- Group 10—Theory of Operation
- Group 15—Diagnosis and Test
- Group 20—Schematic

Continued on next page

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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SECTION 250—POWER TRAIN—670/770/790

Group 05—Component Location
Group 10—Theory of Operation
Group 15—Diagnosis and Test

SECTION 255—POWER TRAIN—870/970/1070

Group 05—Component Location
Group 10—Theory of Operation
Group 15—Diagnosis and Test

SECTION 260—STEERING AND BRAKES

Group 05—Component Location
Group 10—Theory of Operation
Group 15—Diagnosis and Test

SECTION 270—HYDRAULIC SYSTEM

Group 05—Component Location
Group 10—Theory of Operation
Group 15—Diagnosis and Test
Group 20—Schematic

Section 10

GENERAL INFORMATION

Contents

	Page	
Group 05—Safety	10-05-1	
 Group 10—General Specifications		
Machine Specifications		
670/770/790.	10-10-1	
870/970/1070.	10-10-4	
 Group 15—Repair Specifications		
Repair Specifications	10-15-1	
Metric Series Torque Chart	10-15-10	
Inch Series Torque Chart	10-15-11	
 Group 20—Fuel and Lubricants		
Fuel Specifications	10-20-1	
Fuel Storage.	10-20-1	
Filling the Fuel Tank	10-20-2	
Diesel Engine Oil	10-20-3	
Engine Coolant.	10-20-4	
Anti-Chatter Transmission/Hydraulic Oil.	10-20-4	
Gear Oil	10-20-5	
Extreme Pressure Grease	10-20-5	
Alternative Lubricants	10-20-6	
Lubricant Storage.	10-20-6	
 Group 25—Serial Number Locations		10-25-1

RECOGNIZE SAFETY INFORMATION

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

Follow recommended precautions and safe operating practices.



O53,ALERT -19-16JUN87

T81389 -UN-07DEC88

UNDERSTAND SIGNAL WORDS

A signal word—DANGER, WARNING, or CAUTION—is used with the safety-alert symbol. DANGER identifies the most serious hazards.

Safety signs with signal word DANGER or WARNING are typically near specific hazards.

General precautions are listed on CAUTION safety signs. CAUTION also calls attention to safety messages in this manual.



⚠ WARNING

⚠ CAUTION

O53,SIGNAL -19-07OCT85

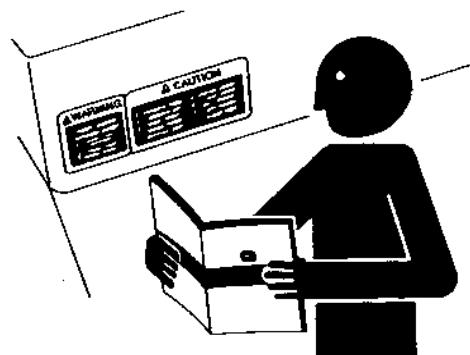
TS187 -19-30SEP88

FOLLOW SAFETY INSTRUCTIONS

Carefully read all safety messages in this manual and on your machine safety signs. Keep safety signs in good condition. Replace missing or damaged safety signs.

Learn how to operate the machine and how to use controls properly. Do not let anyone operate without instruction.

Keep your machine in proper working condition. Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.



O53,READ -19-23APR87

TS201 -UN-23AUG88

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.



O53,FLAME -19-05JAN88

TS227 -UN-23AUG88

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).



O53,SPARKS -19-05JAN88

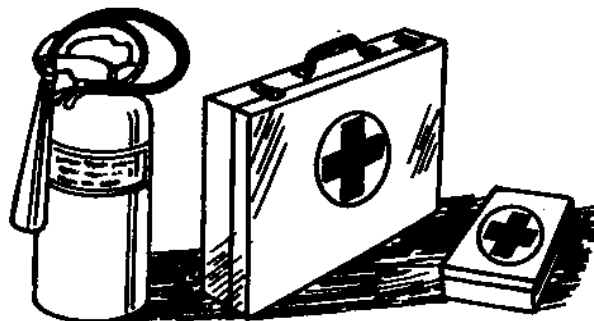
TS204 -UN-23AUG88

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.



O53,FIRE2 -19-03MAR88

TS291 -UN-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:

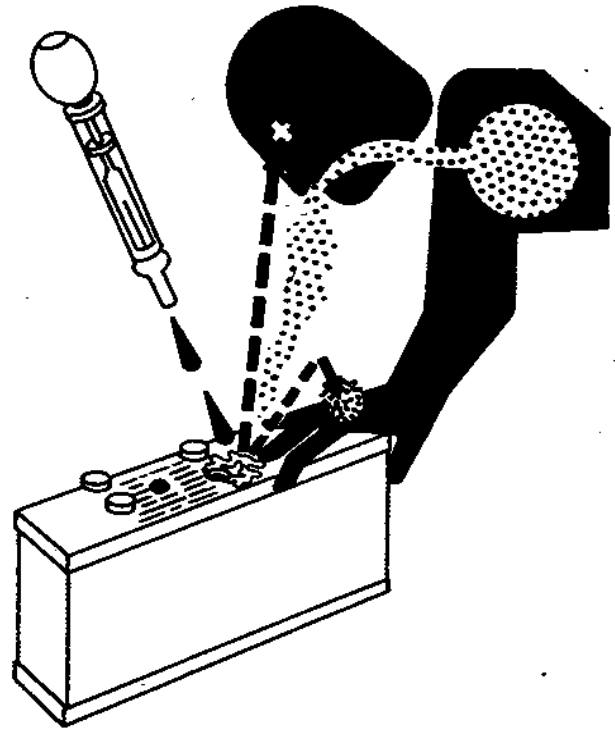
1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves.
3. Avoiding breathing fumes when electrolyte is added.
4. Avoiding spilling or dripping electrolyte.
5. Use proper jump start procedure.

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.



O53,POISON -19-21DEC87

SERVICE COOLING SYSTEM SAFELY

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

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



O53,RCAP -19-29NOV88

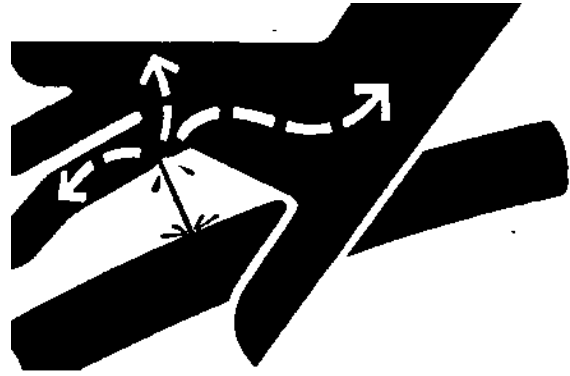
AVOID HIGH-PRESSURE FLUIDS

Escaping fluid under pressure can penetrate the skin causing serious injury.

Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.

Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury may call the Deere & Company Medical Department in Moline, Illinois, or other knowledgeable medical source.



-UN-23AUG88

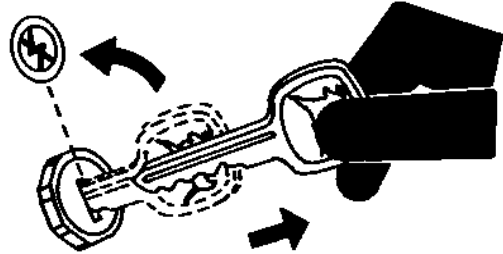
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O53,FLUID -19-01DEC88

PARK MACHINE SAFELY

Before working on the machine:

- Lower all equipment to the ground.
- Stop the engine and remove the key.
- Disconnect the battery ground strap.
- Hang a "DO NOT OPERATE" tag in operator station.



-UN-24MAY89

TS230

O53,PARK -19-05JAN88

Section 20

ENGINE REPAIR

Contents

	Page		Page
Group 05–Engine–670/770			
Engine Repair–Use CTM-3	20-05-1	Piston Pin	20-07-30
Other Materials	20-05-1	Piston Pin Bore.	20-07-31
Remove and Install Engine	20-05-2	Piston Pin Bushing	20-07-31
		Piston Diameter	20-07-32
		Cylinder Bore	20-07-32
		Deglazing	20-07-33
		Reboring.	20-07-33
		Crankshaft Rear Oil Seal	20-07-34
		Crankshaft Front Oil Seal	20-07-35
		Crankshaft and Main Bearings.	20-07-35
		Flywheel	20-07-39
		Camshaft	20-07-40
		Camshaft Followers	20-07-43
		Timing Gear Cover	20-07-44
		Idler Gear	20-07-45
		Timing Gear Cover Mounting Plate	20-07-46
		Oil Pan and Strainer	20-07-46
		Oil Pump.	20-07-46
		Fuel Filter Assembly.	20-07-48
		Thermostat and Water Pump	20-07-49
		Component location–Fuel Supply	20-07-50
		Starting Motor Removal and Installation	20-07-52
		Starting Motor Disassembly	
		and Assembly.	20-07-53
		Starting Motor Inspection/Test	20-07-56
		Starting Motor Gear Train.	20-07-58
		Starting Motor Solenoid	20-07-60
		Alternator Removal And Installation. . . .	20-07-61
		Alternator Disassembly	20-07-62
		Alternator Components	20-07-65
Group 06–Engine–870/970/1070			
Engine Repair–Use CTM-3	20-06-1		
Other Materials	20-06-1		
Remove and Install Engine	20-06-2		
Group 07–Engine–790			
Specifications			
General Specifications.	20-07-1		
Repair Specifications.	20-07-1		
Tests and Adjustment Specifications. . . .	20-07-4		
Operational Tests	20-07-4		
Torque Values, Non-Standard			
Fasteners.	20-07-4		
Special Tools	20-07-5		
Other Materials	20-07-5		
Remove and Install Engine	20-07-7		
Engine Repair	20-07-14		
Rocker Cover Removal/Installation	20-07-14		
Rocker Arm Assembly.	20-07-14		
Rocker Arm Components	20-07-15		
Cylinder Head And Valves			
Removal And Installation.	20-07-17		
Cylinder Head And Valves			
Disassembly And Assembly	20-07-18		
Valve Seats	20-07-19		
Intake and Exhaust Valves	20-07-20		
Valve Recession	20-07-21		
Valve Guides	20-07-21		
Valve Springs.	20-07-22		
Exhaust Manifold	20-07-23		
Intake Manifold	20-07-23		
Grind Valve Seats	20-07-23		
Lap Valves.	20-07-24		
Measure Piston-to-Cylinder			
Head Clearance.	20-07-24		
Piston and Connecting Rod.	20-07-25		
Connecting Rod Bearing	20-07-29		
Piston Ring Groove	20-07-29		
Piston Ring End Gap.	20-07-30		
		Group 10–Cooling System	
		Radiator	
		670/770/790/870/970/1070	
		Remove, Inspect and Install	20-10-1
		Group 15–Throttle and Governor	
		Control Linkage	
		Throttle Control Linkage	
		670/770/790/870/970/1070	
		Inspect and Repair	20-15-1

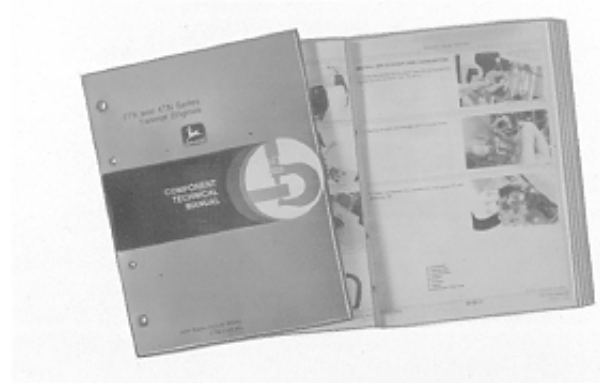
Group 20–Fuel System

Injection Pump, Nozzle, and Governor Repair–	
770/870/970/1070–Use CTM-3	20-20-1
Fuel Injection Pump—790	20-20-1
Fuel Injection Nozzles—790	20-20-3
Remove, Inspect, and Install Fuel Tank	
670/770/790	20-20-6
870/970/1070	20-20-7
Replace	
Fuel Supply Pump	20-20-3
Fuel Shut-Off Solenoid.	20-20-3
Intake Air Heater—770/790/870/970/1070	20-20-4

YANMAR ENGINE REPAIR—USE CTM-3

For complete repair information the component technical manual (CTM) is also required.

Use the component manual in conjunction with this machine manual.



MX,2005DG,A1 -19-09JUN89

TS225

20
05

OTHER MATERIAL

Number	Name	Use
T43512	Thread Lock and Sealer (Medium Strength)	Apply to threads of front frame mounting cap screws.

MX,2005DG,A2 -19-20OCT89

REMOVE ENGINE

1. Remove fuel tank. (See procedure in Group 20.)
2. Remove starter. (See procedure in Section 40, Group 10.)
3. MFWD: Remove drive shaft. (See procedure in Section 50, Group 30.)
4. Remove fuel shut-off solenoid. (See procedure in Group 20.)

N CAUTION: Explosive release of fluids from pressurized cooling system can cause serious burns.

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

NOTE: Approximate coolant capacity is:
 670.....3.8 L (4.0 qt)
 770.....4.8 L (5.1 qt)

5. Drain coolant.
6. Remove radiator and air cleaner hoses. Close all openings using caps and plugs.

N CAUTION: Muffler may be hot. Allow muffler to cool before removing.

7. Remove muffler and gasket.



-UN-23AUG88

TS281

-UN-23AUG88

TS271

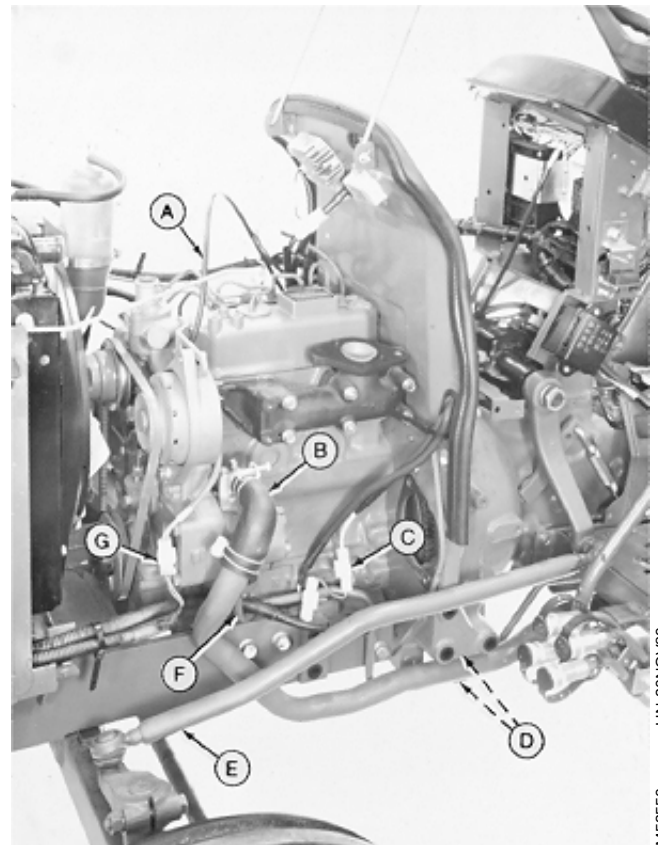
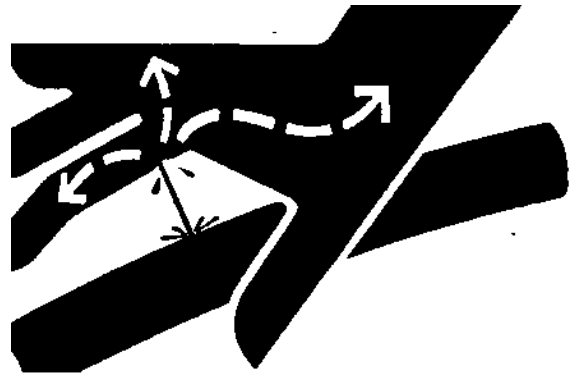
MX,2005DG,A3 -19-20OCT89

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury may call the Deere & Company Medical Department in Moline, Illinois, or other knowledgeable medical source.

8. Lower rockshaft arms.
9. Manual steering: Disconnect drag link (E).
10. Remove line clamp cap screws (D).
11. Disconnect hose (B) and flange (F). Close all openings with caps and plugs.
12. Power steering: Remove hydraulic lines. (See procedure in Section 60, Group 10.)
13. Disconnect wiring connectors (C and G).
14. Disconnect cable (A).

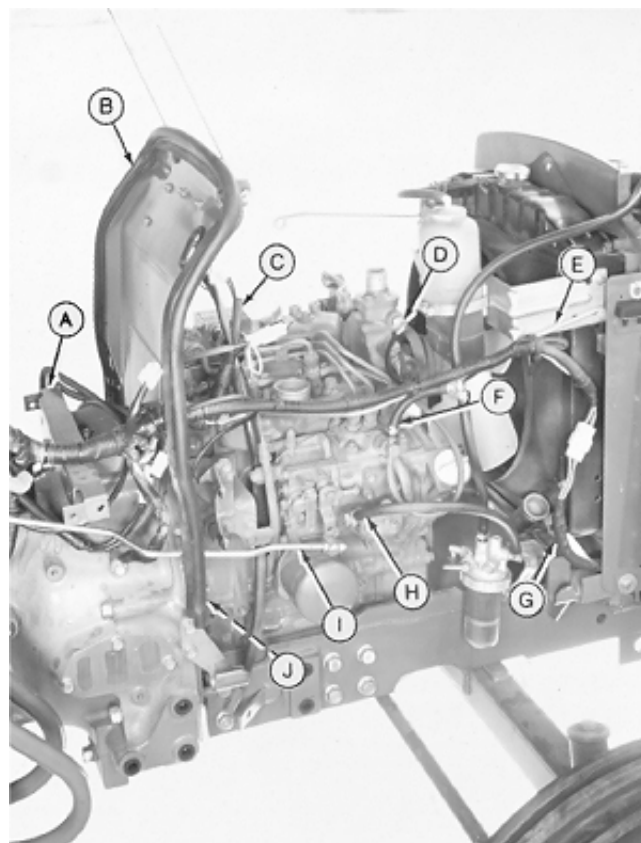
A—Hour Meter Cable
 B—Pressure Line Hose
 C—Fusible Link Connector
 D—Cap Screws (2 used)
 E—Drag Link
 F—Supply Line Mounting Flange
 G—Alternator Wiring Connector



Left-Hand Side Shown

15. Close shutoff valve on fuel filter.
16. Disconnect lines (F and H). Close all openings using caps and plugs.
17. Disconnect wiring harness (C and G).
18. Disconnect wiring leads (D and J).
19. Remove support rod (E).
20. Remove control rod (I).
21. Remove air shield (B).
22. Remove bracket (A).

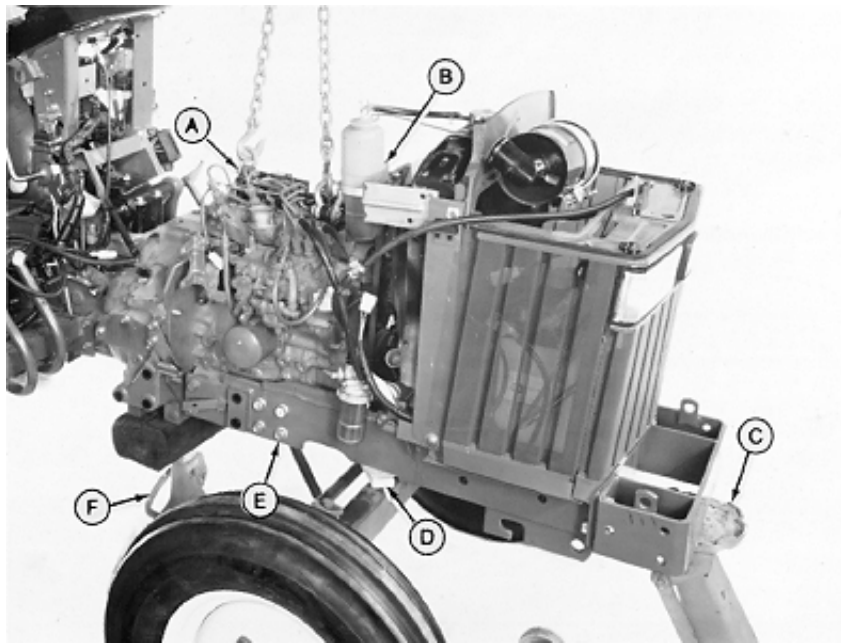
A—Fuel Tank Support Bracket
B—Air Shield
C—Wiring Harness
D—Coolant Temperature Switch Wiring Lead
E—Radiator Support Rod
F—Return Fuel Leak-Off Line
G—Wiring Harness
H—Fuel Pump Supply Line
I—Throttle Control Rod
J—Engine Oil Pressure Switch Wiring Lead



Right-Hand Side Shown

MX,2005DG,A5 -19-20OCT89

M53551 -JUN-20NOV89



M53552
-UN-29JAN90

A—Lifting Brackets (2 used)
B—Recovery Tank Assembly

C—Floor Jack
D—Wood Block (2 used)

E—Cap Screw (12 used)

F—Support Stand

23. Remove recovery tank assembly (B).

24. Remove rocker arm cover.

25. Install lifting brackets such as JDG19 or JT01748 Lifting Brackets (A).

26. Attach a hoist to engine.

27. Install support stand (F) under clutch housing.

28. Install a floor jack (C) under front weight support.

29. Install a wood block (D) between front axle and frame on both sides.

30. Remove six cap screws (E) from each side of frame.

31. Roll front end away from tractor.

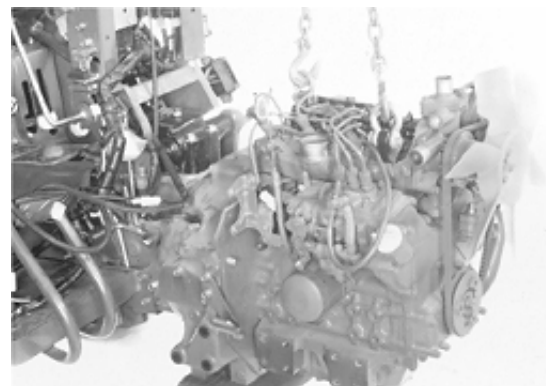
MX,2005DG,A6 -19-20OCT89

NOTE: Put transmission in neutral to ease clutch shaft alignment with engine during installation.

32. Put transmission shift lever in neutral.

33. Remove eight cap screws and lock washers. Remove engine.

34. Make repairs as necessary. (See CTM-3.)



M53553
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MX,2005DG,A7 -19-20OCT89

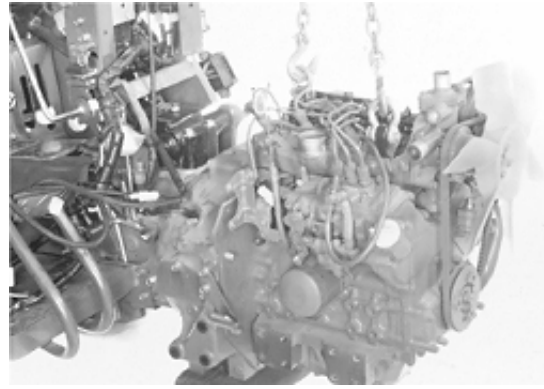
INSTALL ENGINE

1. Put transmission shift lever in neutral to ease clutch shaft alignment with engine.

2. Apply multipurpose grease to end of clutch shaft.

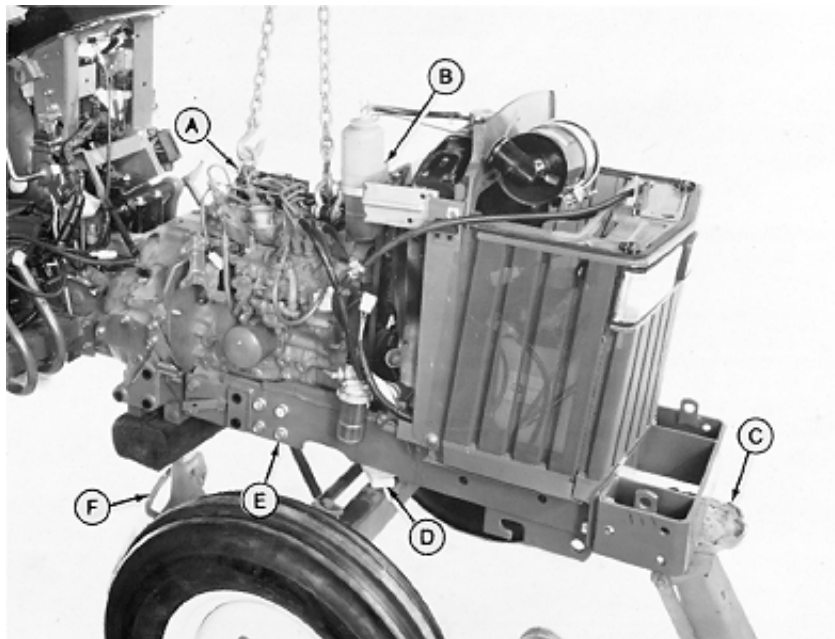
NOTE: Turn flywheel when installing engine, to engage engine with clutch shaft(s).

3. Install engine. Tighten cap screws to 54 N·m (40 lb-ft).



MX,2005DG,A8 -19-20OCT89

M53553 -UN-20NOV89



M53552 -UN-20JAN90

A—Lifting Brackets (2 used)
B—Recovery Tank Assembly

C—Floor Jack
D—Wood Block (2 used)

E—Cap Screw (12 used)

F—Support Stand

4. Apply thread lock and sealer (medium strength) to threads of cap screws (E).

5. Install front end to tractor. Tighten cap screws (E) to 90 N·m (65 lb-ft).

6. Remove wood blocks (D), floor jack (C) and support stand (F).

7. Remove lifting brackets (A).

8. Install rocker arm cover.

9. Install recovery tank assembly (B).

MX,2005DG,A9 -19-20OCT89



Suggest:

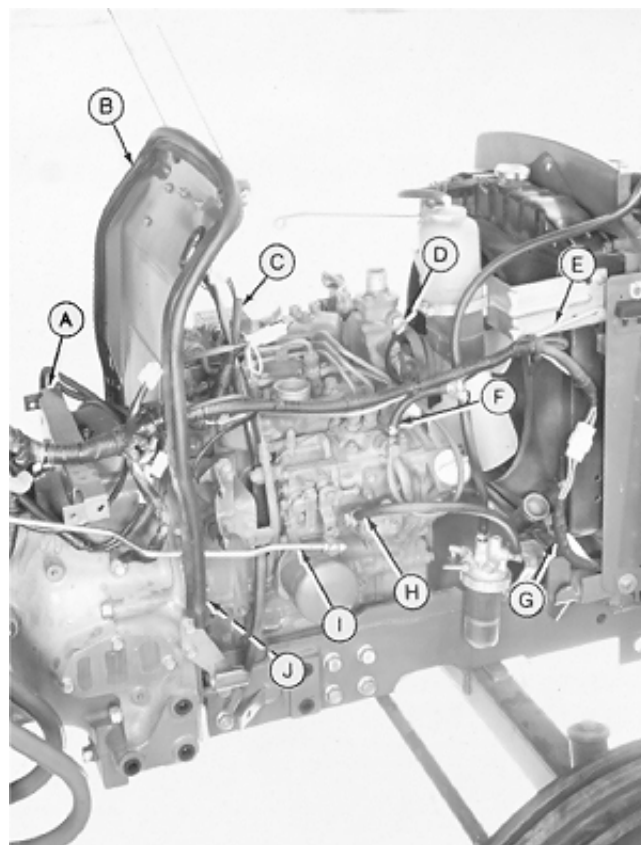
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10. Install bracket (A).
11. Install air shield (B).
12. Install control rod (I).
13. Install support rod (E).
14. Connect wiring leads (D and J).
15. Connect wiring harness (C and G).
16. Connect lines (F and H).
17. Open shutoff valve on fuel filter.

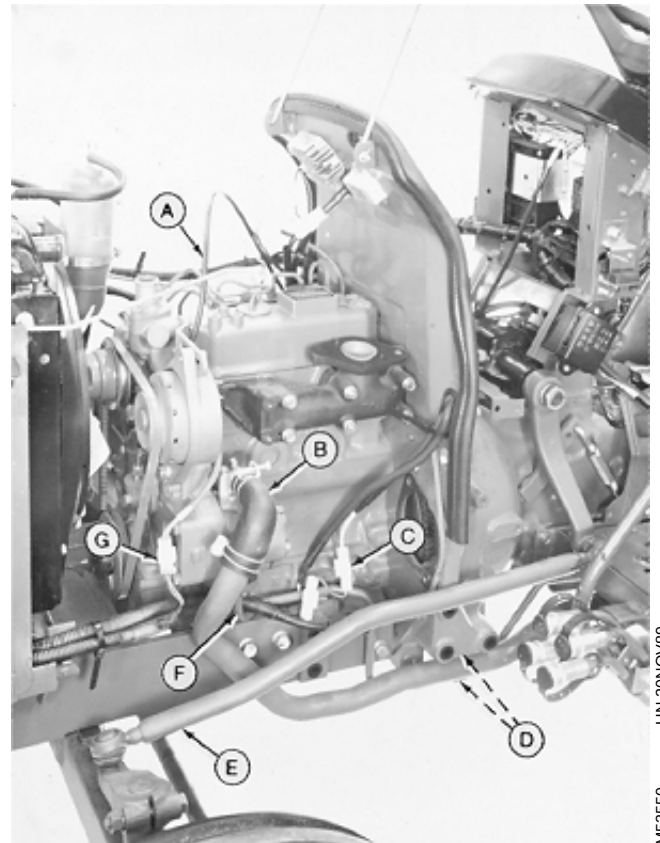
A—Fuel Tank Support Bracket
B—Air Shield
C—Wiring Harness
D—Coolant Temperature Switch Wiring Lead
E—Radiator Support Rod
F—Return Fuel Leak-Off Line
G—Wiring Harness
H—Fuel Pump Supply Line
I—Throttle Control Rod
J—Engine Oil Pressure Switch Wiring Lead



Right-Hand Side Shown

MX,2005DG,A10 -19-20OCT89

18. Connect cable (A).
19. Connect wiring connectors (C and G).
20. Power steering: Install hydraulic lines. (See procedure in Section 60, Group 10.)
21. Connect flange (F) and hose (B).
22. Install line clamp cap screws (D).
23. Manual steering: Connect drag link (E).
24. Install muffler and new gasket.
25. Install radiator and air cleaner hoses.
26. MFWD: Install drive shaft. (See procedure in Section 50, Group 30.)
27. Install starter. (See procedure in Section 40, Group 10.)
28. Install fuel shut-off solenoid. (See procedure in Group 20.)
29. Install fuel tank. (See procedure in Group 20.)
30. Fill radiator with proper coolant to top of filler neck. (See Engine Coolant in Section 10, Group 20.)
31. Adjust throttle control linkage. (See Section 220, Group 15.)



Left-Hand Side Shown

- A—Hour Meter Cable
- B—Pressure Line Hose
- C—Fusible Link Connector
- D—Cap Screws (2 used)
- E—Drag Link
- F—Supply Line Mounting Flange
- G—Alternator Wiring Connector

MX,2005DG,A11 -19-20OCT89

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