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

TECHNICAL MANUAL

John Deere
Worldwide Commercial and
Consumer Equipment Division

TM1470 (15MAR99)
Replaces TM1470 (15MAR94)

Litho in U.S.A

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.

O53,TMIFC -19-10MAR88

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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.

TM1470-19-15JAN99

Section 10
GENERAL INFORMATION

Contents

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.

T81389 -UN-07DEC88

O53,ALERT -19-16JUN87

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.

TS187 -19-30SEP88

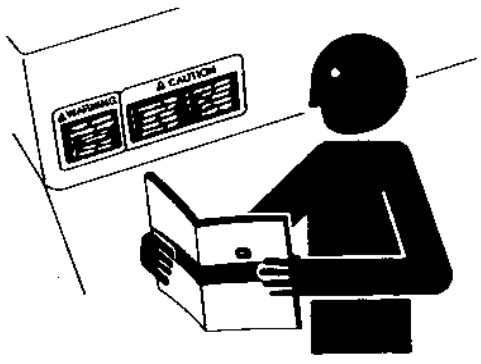
O53,SIGNAL -19-07OCT85

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.



TS201 -UN-23AUG88

O53,READ -19-23APR87

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.

TS227 -UN-23AUG88

O53,FLAME -19-05JAN88

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).

TS204 -UN-23AUG88

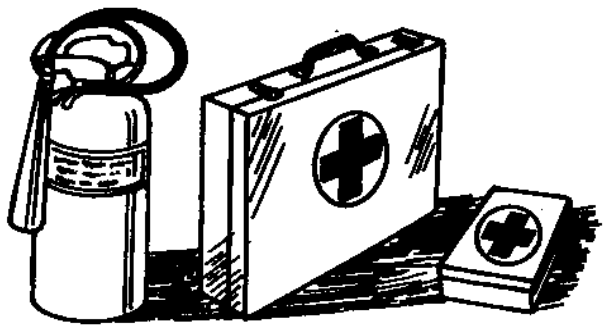
O53,SPARKS -19-05JAN88

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.



TS291 -UN-23AUG88

O53,FIRE2 -19-03MAR88

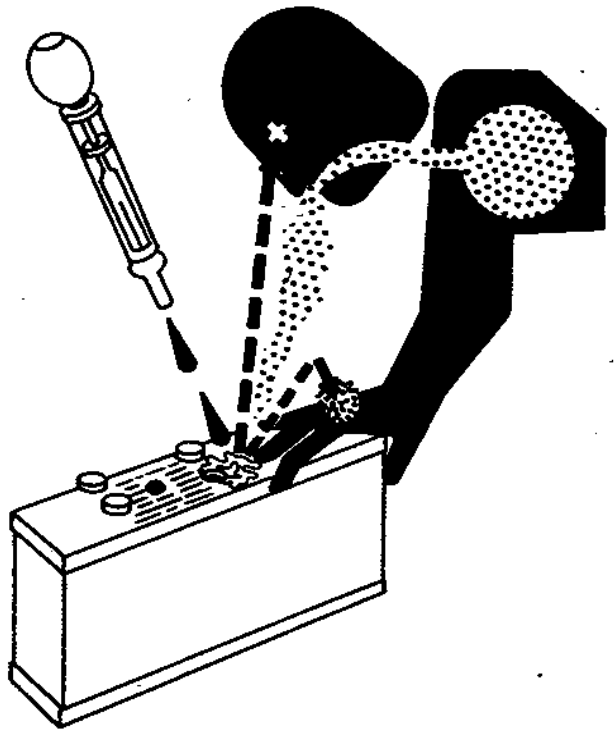
PREVENT ACID BURNS

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.



TS203 -UN-23AUG88

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.

TS281 -UN-23AUG88

O53,RCAP -19-29NOV88

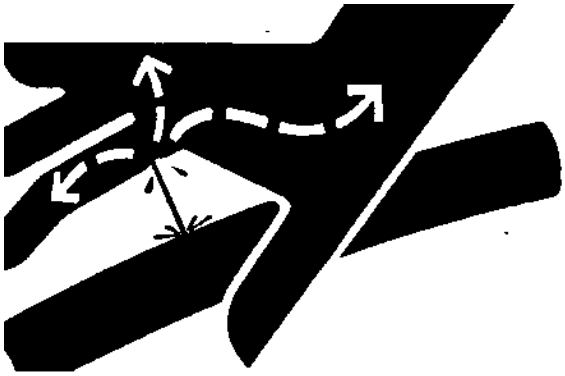
AVOID HIGH-PRESSURE FLUIDS

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.

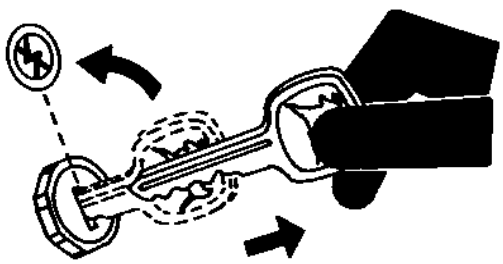


X9811 -UN-23AUG88

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.



TS230 -UN-24MAY89

O53,PARK -19-05JAN88

Section 20
ENGINE REPAIR

Contents

Group 20–Fuel System

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.

TS225 -UN-17JAN89

20
05
1

MX,2005DG,A1 -19-09JUN89

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.)

20 05 2

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.

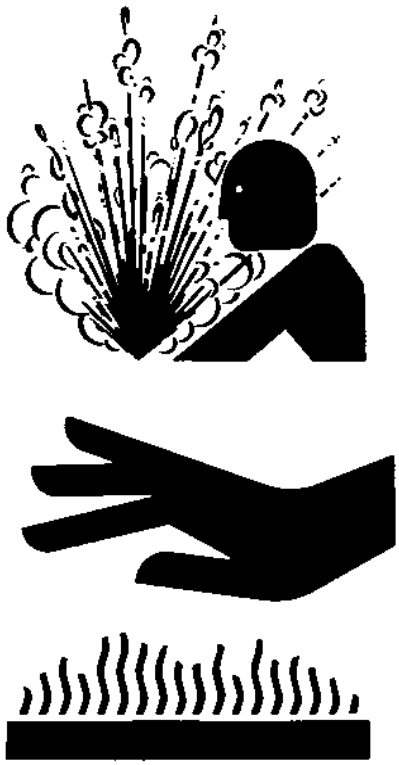
NOTE: Approximate coolant capacity is:
670.....3.8 L (4.0 qt)
770.....4.8 L (5.1 qt)

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.



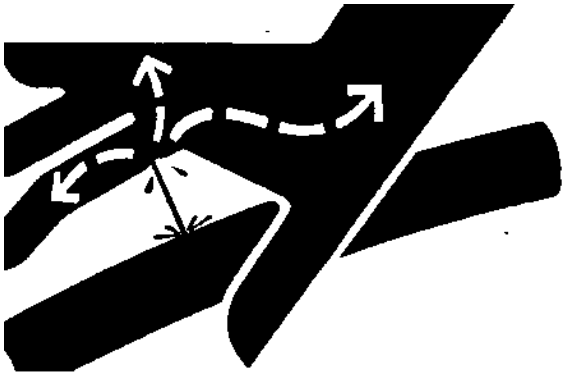
TS271 -UN-23AUG88

TS281 -UN-23AUG88

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.



X9811 -UN-23AUG88

20 05 3

8. Lower rockshaft arms.

9. Manual steering: Disconnect drag link (E).

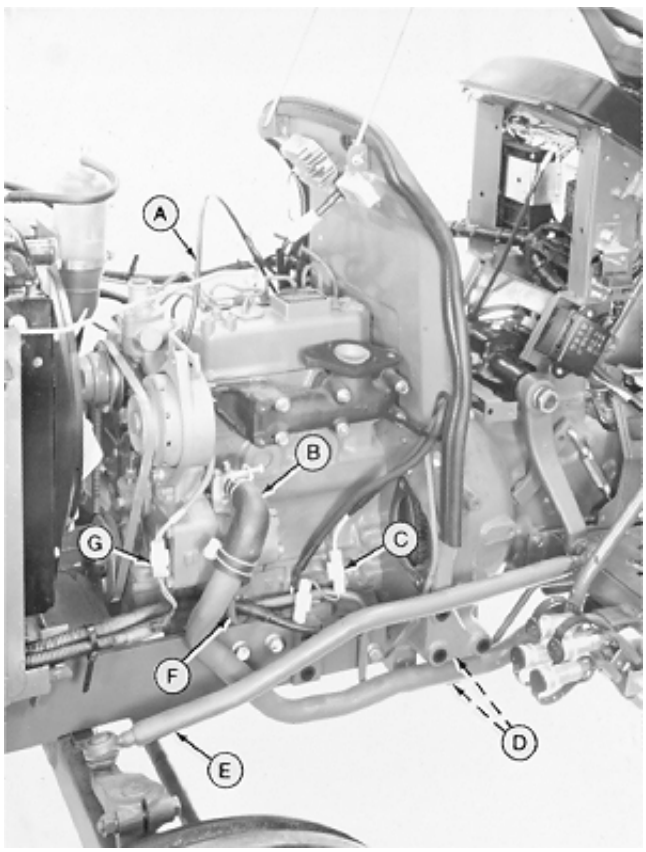
10. Remove line clamp cap screws (D).

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).



M53550 -UN-20NOV89

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,A4 -19-20OCT89

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).

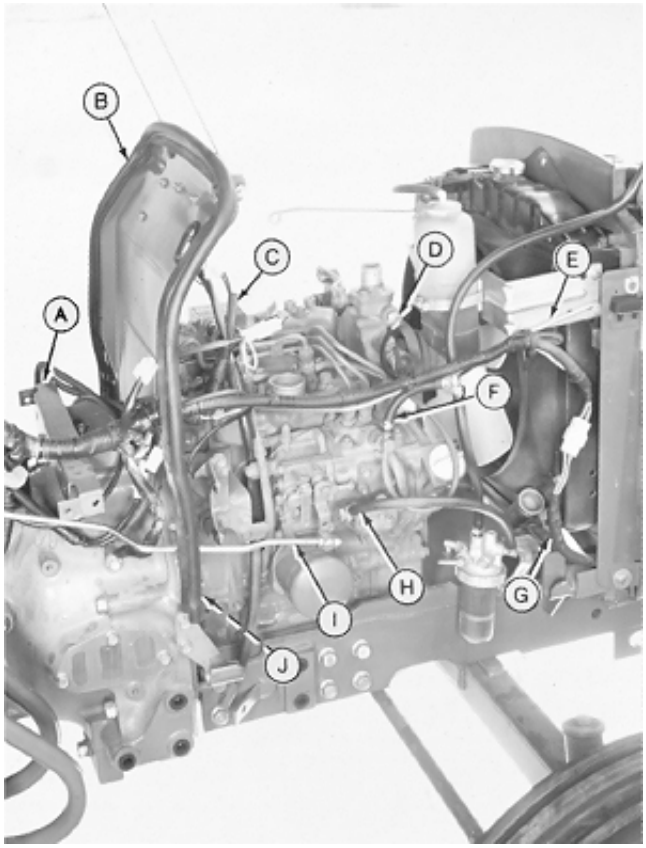
19. Remove support rod (E).

20. Remove control rod (I).

21. Remove air shield (B).

22. Remove bracket (A).

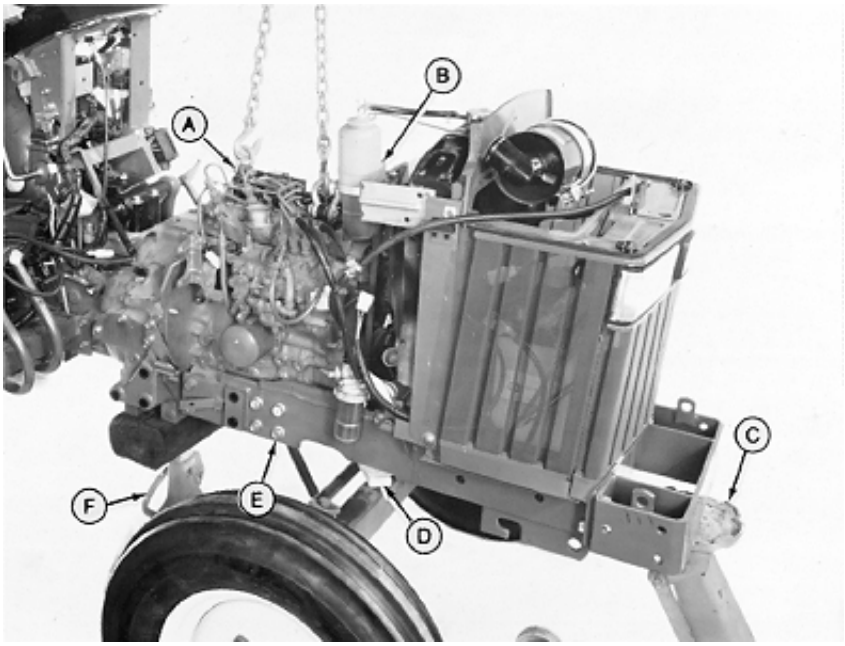
A—Fuel Tank Support Bracket
B—Air Shield
C—Wiring Harness
D—Coolant Temperature Switch Wiring Lead
E—Radiator Support Rod
F—Return Fuel Leak-Off Line
G—Wiring Harness
H—Fuel Pump Supply Line
I—Throttle Control Rod
J—Engine Oil Pressure Switch Wiring Lead



M53551 -UN-20NOV89

Right-Hand Side Shown

MX,2005DG,A5 -19-20OCT89



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.

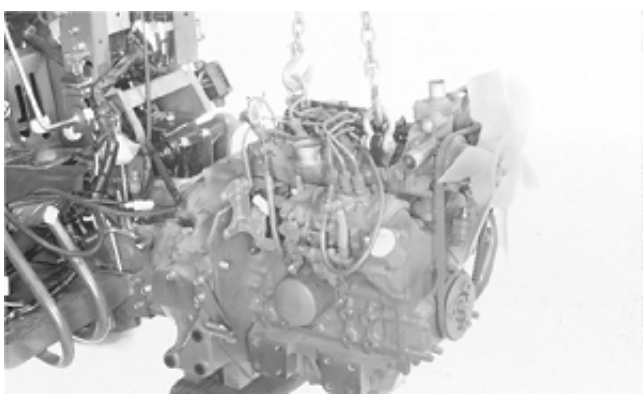
MX,2005DG,A6 -19-20OCT89

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

32. Put transmission shift lever in neutral.

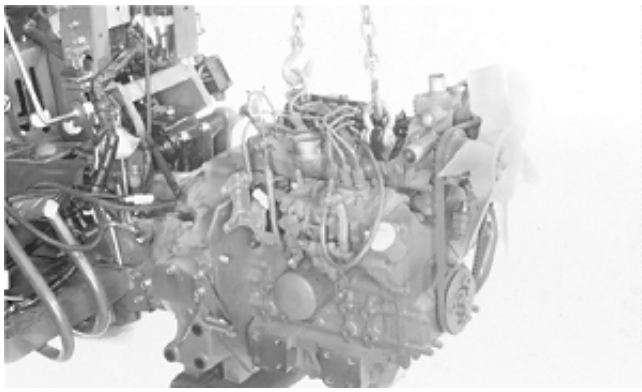
33. Remove eight cap screws and lock washers. Remove engine.

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



MX,2005DG,A7 -19-20OCT89

INSTALL ENGINE



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

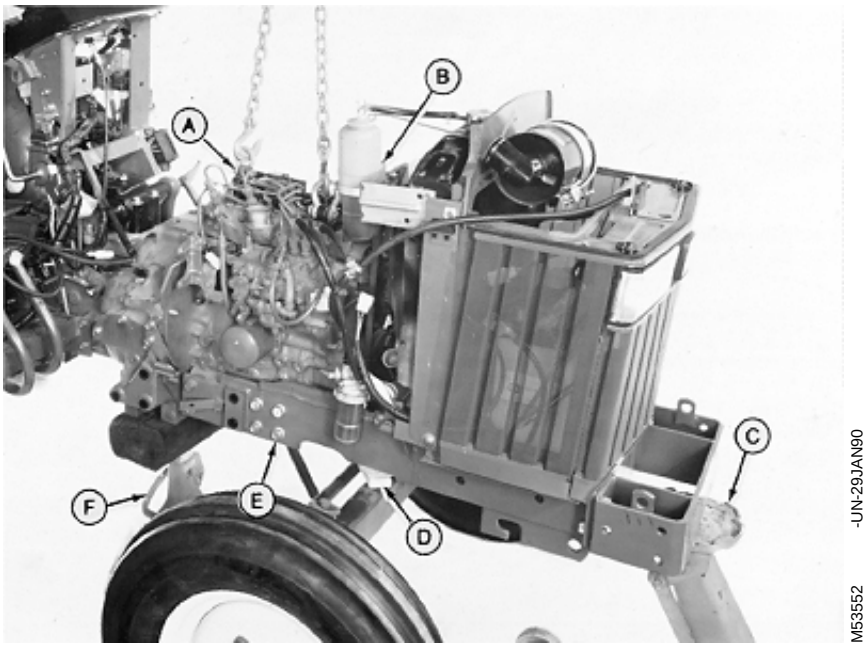
2. Apply multipurpose grease to end of clutch shaft.

20 05 6

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



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).

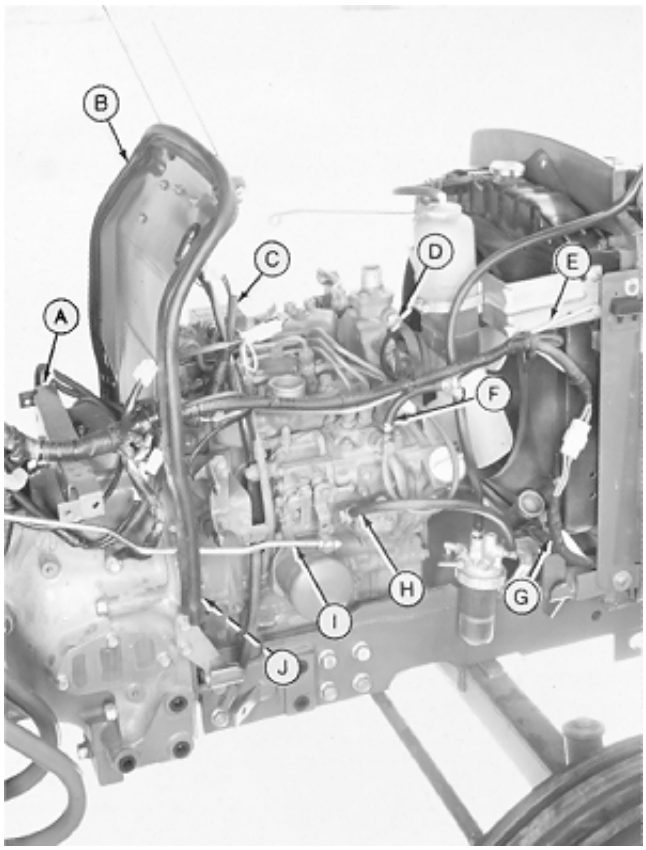
8. Install rocker arm cover.

9. Install recovery tank assembly (B).

MX,2005DG,A9 -19-20OCT89

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.)

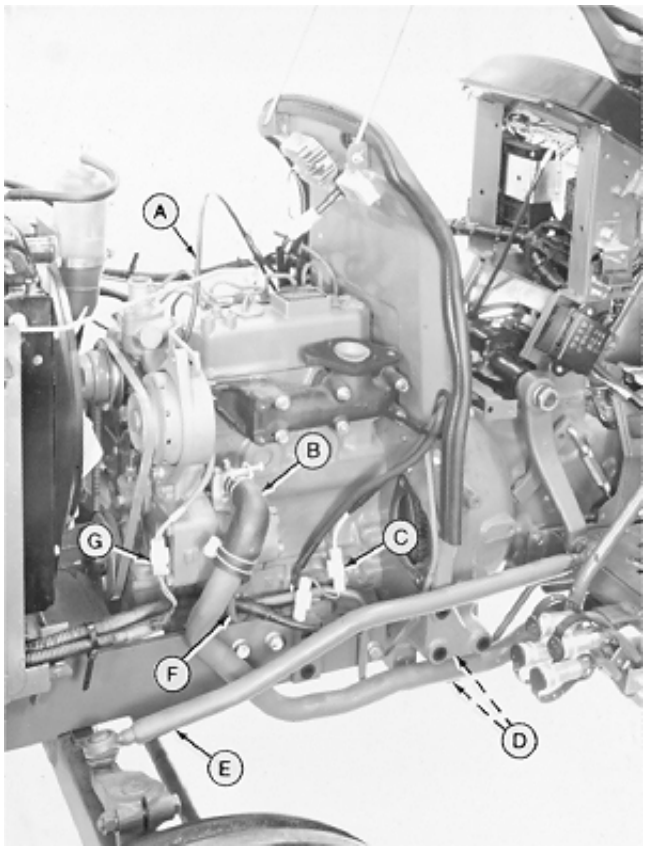
27. Install starter. (See procedure in Section 40, Group 10.)

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.)



M53550 -UN-20NOV89

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