

38, 48 and 54-Inch Commercial Walk-Behind Mowers

TECHNICAL MANUAL

**John Deere
Lawn & Grounds Care Division
TM1488 (01APR96)**

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, other materials needed to do the job and service parts kits.

Section 10, Group 15—Repair Specifications, consist of all applicable specifications, wear tolerances and specific torque values for various components on each individual machine.

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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manual**

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**Have any questions please write to me:
admin@servicemanualperfect.com**

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GENERAL INFORMATION

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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.



DX,ALERT -19-04JUN90

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-UN-07DEC88
T81389

UNDERSTAND SIGNAL WORDS

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

DANGER or WARNING safety signs are located near specific hazards. General precautions are listed on CAUTION safety signs. CAUTION also calls attention to safety messages in this manual.



DX,SIGNAL -19-04JUN90

-19-30SEP88
TS187

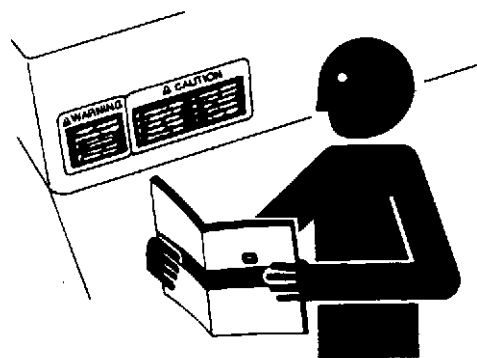
FOLLOW SAFETY INSTRUCTIONS

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. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available from your John Deere dealer.

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.

If you do not understand any part of this manual and need assistance, contact your John Deere dealer.



DX,READ -19-04JUN90

-UN-23AUG88
TS201

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

TS227 -JUN-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).



DX,SPARKS -19-04JUN90

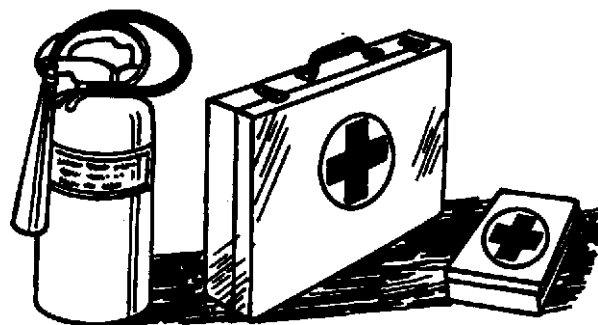
TS204 -JUN-23AUG88

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.



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:

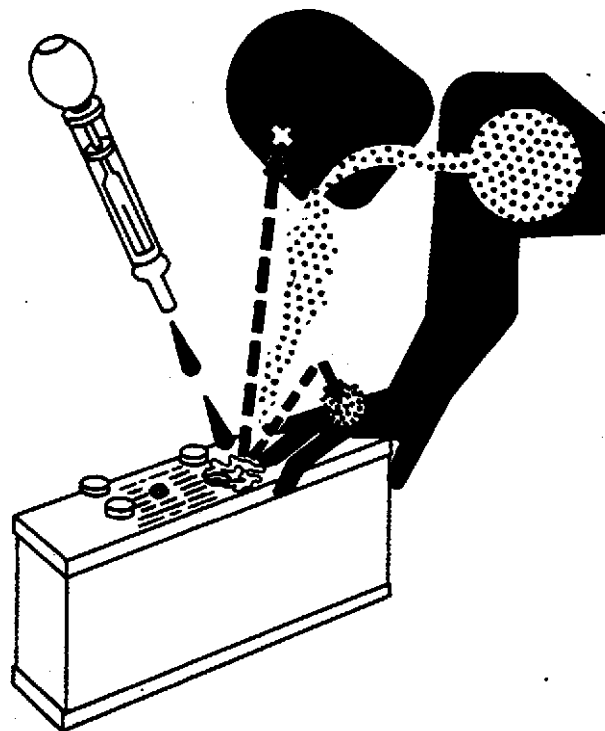
1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves.
3. Avoiding breathing fumes when electrolyte is added.
4. Avoiding spilling or dripping electrolyte.
5. Use proper jump start procedure.

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.



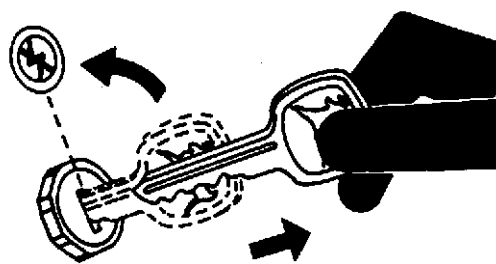
DX,POISON -19-04JUN90

TS203 -UN-23AUG88

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.



DX,PARK -19-04JUN90

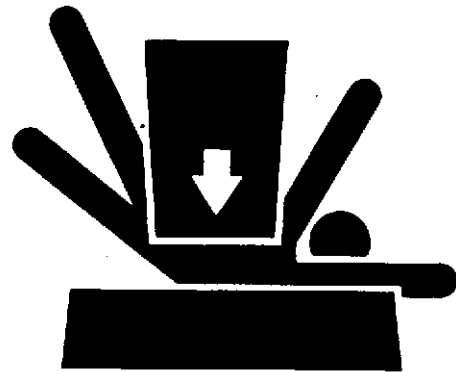
TS230 -UN-24MAY89

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SUPPORT MACHINE PROPERLY

If you must work on a lifted machine or attachment, properly support the machine or attachment.

Do not support the machine on cinder blocks, hollow tiles, or props that may crumble under continuous load. Do not work under a machine that is supported solely by a jack. Follow recommended procedures in this manual.



MX,SUPPORT,A -19-05FEB91

TS229 -JUN-23AUG88

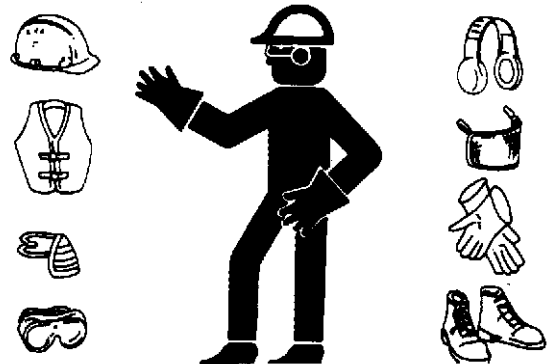
WEAR PROTECTIVE CLOTHING

Wear close fitting clothing and safety equipment appropriate to the job.

Prolonged exposure to loud noise can cause impairment or loss of hearing.

Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.

Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating machine.



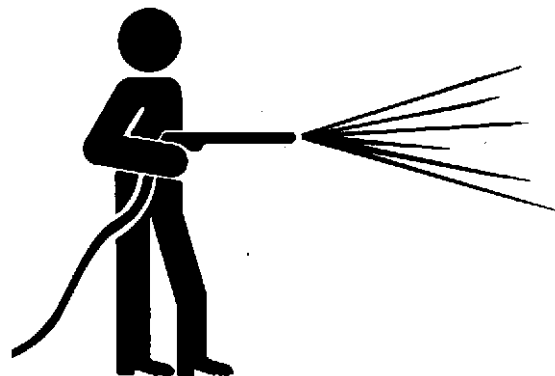
DX,WEAR -19-10SEP90

TS206 -JUN-23AUG88

WORK IN CLEAN AREA

Before starting a job:

- Clean work area and machine.
- Make sure you have all necessary tools to do your job.
- Have the right parts on hand.
- Read all instructions thoroughly; do not attempt shortcuts.



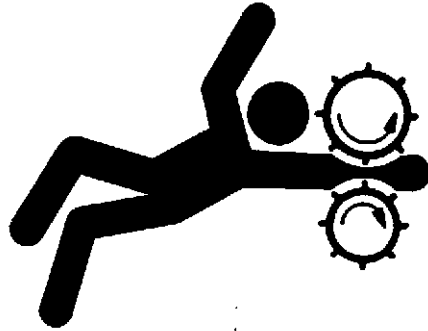
DX,CLEAN -19-04JUN90

T6642EJ -JUN-18OCT88

SERVICE MACHINES SAFELY

Tie long hair behind your head. Do not wear a necktie, scarf, loose clothing, or necklace when you work near machine tools or moving parts. If these items were to get caught, severe injury could result.

Remove rings and other jewelry to prevent electrical shorts and entanglement in moving parts.



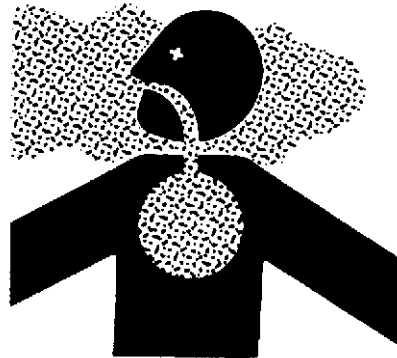
DX, LOOSE -19-04JUN90

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TS228 -JUN-23AUG88

WORK IN VENTILATED AREA

Engine exhaust fumes can cause sickness or death. If it is necessary to run an engine in an enclosed area, remove the exhaust fumes from the area with an exhaust pipe extension.

If you do not have an exhaust pipe extension, open the doors and get outside air into the area.



DX, AIR -19-04JUN90

TS220 -JUN-23AUG88

ILLUMINATE WORK AREA SAFELY

Illuminate your work area adequately but safely. Use a portable safety light for working inside or under the machine. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.

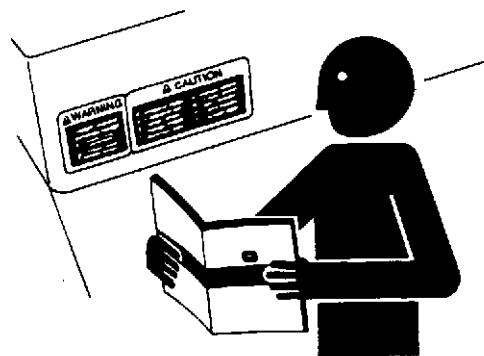


DX, LIGHT -19-04JUN90

TS223 -JUN-23AUG88

REPLACE SAFETY SIGNS

Replace missing or damaged safety signs. See the machine operator's manual for correct safety sign placement.



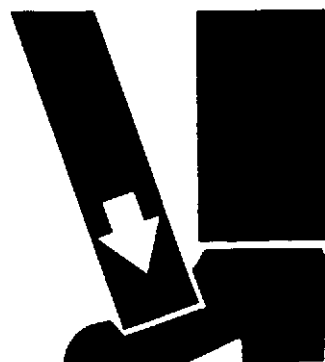
DX, SIGNS1 -19-04JUN90

TS201 -JUN-23AUG88

USE PROPER LIFTING EQUIPMENT

Lifting heavy components incorrectly can cause severe injury or machine damage.

Follow recommended procedure for removal and installation of components in the manual.



DX,LIFT -19-04JUN90

TS226 -JUN-23AUG88

SERVICE TIRES SAFELY

Explosive separation of a tire and rim parts can cause serious injury or death.

Do not attempt to mount a tire unless you have the proper equipment and experience to perform the job.

Always maintain the correct tire pressure. Do not inflate the tires above the recommended pressure. Never weld or heat a wheel and tire assembly. The heat can cause an increase in air pressure resulting in a tire explosion. Welding can structurally weaken or deform the wheel.

When inflating tires, use a clip-on chuck and extension hose long enough to allow you to stand to one side and NOT in front of or over the tire assembly. Use a safety cage if available.

Check wheels for low pressure, cuts, bubbles, damaged rims or missing lug bolts and nuts.



DX,TIRECP -19-24AUG90

TS952 -JUN-12APR90

REMOVE PAINT BEFORE WELDING OR HEATING

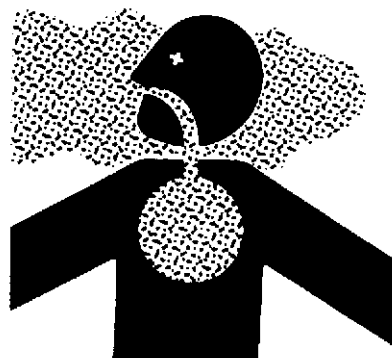
Avoid potentially toxic fumes and dust.

Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch.

Do all work outside or in a well ventilated area. Dispose of paint and solvent properly.

Remove paint before welding or heating:

- If you sand or grind paint, avoid breathing the dust. Wear an approved respirator.
- If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.



DX,PAINT -19-04JUN90

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-JUN-23AUG88
TS220

USE PROPER TOOLS

Use tools appropriate to the work. Makeshift tools and procedures can create safety hazards.

Use power tools only to loosen threaded parts and fasteners.

For loosening and tightening hardware, use the correct size tools. DO NOT use U.S. measurement tools on metric fasteners. Avoid bodily injury caused by slipping wrenches.

Use only service parts meeting John Deere specifications.



DX,REPAIR -19-04JUN90

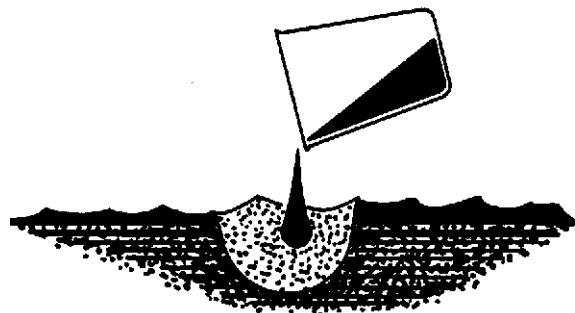
-JUN-08NOV89
TS779

DISPOSE OF FLUIDS PROPERLY

Improperly disposing of fluids can harm the environment and ecology. Before draining any fluids, find out the proper way to dispose of waste from your local environmental agency.

Use proper containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them.

DO NOT pour oil into the ground, down a drain, or into a stream, pond, or lake. Observe relevant environmental protection regulations when disposing of oil, fuel, coolant, brake fluid, filters, batteries, and other harmful waste.



DX,DRAIN -19-05JUN90

TS222 -JUN-23AUG88

LIVE WITH SAFETY

Before returning machine to customer, make sure machine is functioning properly, especially the safety systems. Install all guards and shields.



DX,LIVE -19-04JUN90

TS231 -19-07OCT88

POWER UNIT SPECIFICATIONS

	12.5 HP	14 HP	17 HP
ENGINE			
Make	John Deere "K" Series	John Deere "K" Series	John Deere "K" Series
Type	OHV	OHV	OHV
Model	FC400-AS11, AS05 and FC401V-BS05	FC420V-AS11, DS11 and ES11	FC540V-AS11, DS11 and ES11
Horsepower	9.3 kW (12.5 hp)	10.4 kW (14 hp)	12.6 kW (17 hp)
Number of Cylinders	1	1	1
Displacement	404 cm ³ (24.6 cu in.)	423 cm ³ (25.8 cu in.)	535 cm ³ (32.6 cu in.)
Bore and Stroke	87 x 68 mm (3.50 x 2.60 in.)	89 x 68 mm (3.50 x 2.68 in.)	89 x 86 mm (3.50 x 3.38 in.)
Fast Idle	3350 rpm	3350 rpm	3350 rpm
Slow Idle	1550 rpm	1550 rpm	1550 rpm
Starting System	Recoil	Recoil	Electric only
Lubrication	Electric-optional Pressurized	Electric-optional Pressurized	Pressurized
Cooling System	Forced Air	Forced Air	Forced Air
Air Cleaner	Dry 2 Stage Replaceable	Dry 2 Stage Replaceable	Dry 2 Stage Replaceable
Engine Shutoff	Key Switch	Key Switch	Key Switch
ELECTRICAL SYSTEM			
Type	12 Volt	12 Volt	12 Volt
Battery Size	160 Cold Cranking Amps at -18°C (0°F)	160 Cold Cranking Amps at -18°C (0°F)	160 Cold Cranking Amps at -18°C (0°F)
Stator	13 Amp	13 Amp	15 Amp
FUEL SYSTEM			
Type	Carburetor	Carburetor	Carburetor
Fuel Delivery	Fuel Pump	Fuel Pump	Fuel Pump
DRIVE TRAIN			
Type	Gear Transaxle	Gear Transaxle	Gear Transaxle
Number of Speeds	5 forward, 1 reverse	5 forward, 1 reverse	5 forward, 1 reverse
Travel Speeds at Full Engine RPM			
Forward			
1st Gear	2.6 km/h (1.6 mph)	2.6 km/h (1.6 mph)	2.6 km/h (1.6 mph)
2nd Gear	4.1 km/h (2.5 mph)	4.1 km/h (2.5 mph)	4.1 km/h (2.5 mph)
3rd Gear	6.1 km/h (3.8 mph)	6.1 km/h (3.8 mph)	6.1 km/h (3.8 mph)
4th Gear	7.8 km/h (4.8 mph)	7.8 km/h (4.8 mph)	7.8 km/h (4.8 mph)
5th Gear	9.5 km/h (5.9 mph)	9.5 km/h (5.9 mph)	9.5 km/h (5.9 mph)
Reverse	1.2 km/h (0.75 mph)	1.2 km/h (0.75 mph)	1.2 km/h (0.75 mph)
Brakes	Wet Disk	Wet Disk	Wet Disk
Park Brake	Clutch Interlock	Clutch Interlock	Clutch Interlock
Steering	Turn/Brake Lever and Linkage	Turn/Brake Lever and Linkage	Turn/Brake Lever and Linkage
PTO Clutch	Engine-mounted, electric	Engine-mounted, electric	Engine-mounted, electric
Clutch	Dual Lever, V-belt	Dual Lever, V-belt	Dual Lever, V-belt

Continued on next page

General Specifications/Specifications

10-10-2

	14 HP	17 HP
CAPACITIES		
Fuel Tank	19 L (5 U.S. gal)	19 L (5 U.S. gal)
Engine Crankcase with Filter	1.6 L (3.4 U.S. pt)	1.9 L (4.0 U.S. pt)
Transaxle	2.3 L (4.9 U.S. pt)	2.3 L (4.9 U.S. pt)
TIRES		
Standard Equipment	13 x 6.50—6	13 x 6.50—6
SHIPPING WEIGHT		
Power Unit only	152 kg (334 lbs)	166 kg (365 lbs)
with 48 Inch Deck	258 kg (567 lbs)	272 kg (598 lbs)
with 54 Inch Deck	262 kg (577 lbs)	276 kg (608 lbs)

(Specifications and design subject to change without notice.)

MX,1010FP,A2 -19-05FEB91

MOWER DECK SPECIFICATIONS

	48 Inch Deck	54 Inch Deck
Deck Material	11 gauge (3 mm) steel one-piece stamped	11 gauge (3 mm) steel one-piece stamped
Blades	3	3
Blade Length	42 cm (16.6 in.)	47 cm (18.6 in.)
Blade Drive	V-belt with self-adjusting Idler	V-belt with self-adjusting Idler
Cutting Height	19—102 mm (0.750—4 in.)	19—102 mm (0.750—4 in.)
Shipping Weight	106 kg (233 lbs)	110 kg (243 lbs)

(Specifications and design subject to change without notice.)

MX,1010FP,A3 -19-18FEB91

MACHINE REPAIR SPECIFICATIONS		
SECTION 20-ENGINE REPAIR		
Item	Measurement	Specification
For all repair specifications-Use CTM5		
Engine-to-Frame Cap Screw	Torque	16 N•m (144 lb-in.)
SECTION 30-FUEL AND AIR REPAIR		
For all carburetor repair specifications-Use CTM5		
SECTION 40-ELECTRICAL SYSTEM		
For all starter and engine ignition and charging system repair-Use CTM5		
Transaxle Neutral Start Switch-to-Case	Torque	10 N•m (88 lb-in.)
Electric PTO Clutch-to-Engine Crankshaft	Torque	56 N•m (45 lb-ft)
SECTION 50-POWER TRAIN REPAIR		
Axle/Shift Shaft Assembly --Miscellaneous Washers	Minimum Thickness	1.7 mm (0.067 in.)
	Minimum Thickness	2.2 mm (0.087 in.)
Reduction Shaft Assembly --Grooved Washer	Minimum Thickness	1.7 mm (0.067 in.)
Brake Assembly--Friction Disks	Minimum Thickness	1.9 mm (0.075 in.)
--Friction Plates	Minimum Thickness	1.25 mm (0.049 in.)
Clutch Shaft Assembly		
--Plate	Minimum Thickness	4.3 mm (0.169 in.)
--Clutch Disk	Minimum Thickness	1.9 mm (0.075 in.)
--Eight Plates	Minimum Thickness	0.9 mm (0.035 in.)
--Plate	Minimum Thickness	3.0 mm (0.118 in.)
--Clutch Springs (Single Spring Style)	Minimum Free Length	30.3 mm (1.193 in.)
	Compressed Length	21 mm (0.827 in.) at 173-194 N (39-44 lb force)
<i>Continued on next page</i>		