

# **3325 and 3365 Professional Turf Mower**

For complete service information also see:

**Yanmar Engine Repair . . . . . CTM3**

**John Deere Horicon Works  
TM1427 (30MAR93)**

LITHO IN U.S.A.  
ENGLISH

# 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 operation and tests. Repair sections tell how to repair the components. Operation and tests 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.

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

Fundamental service information is available from other sources covering basic theory of operation, fundamentals of troubleshooting, general maintenance, and basic type of failures and their causes.

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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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### 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.



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### 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).



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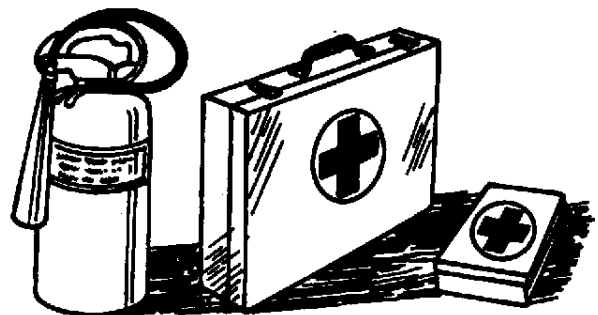
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### PREPARE FOR EMERGENCIES

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.



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## 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:

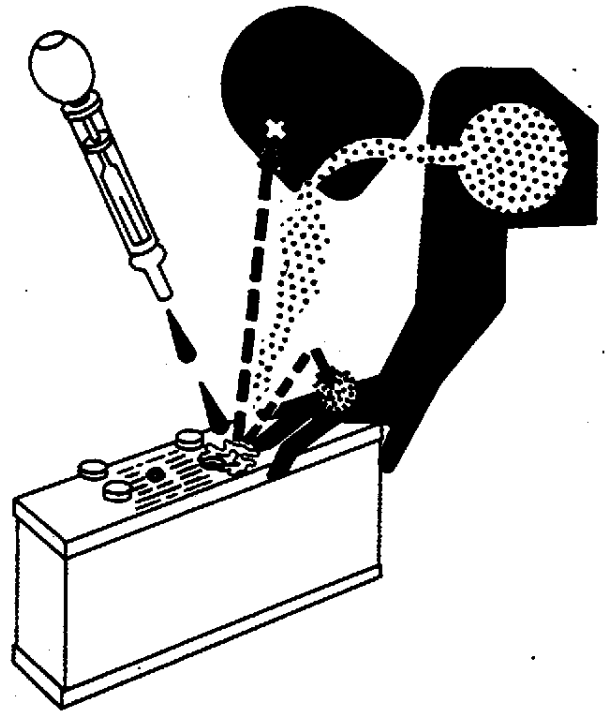
1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves.
3. Avoiding breathing fumes when electrolyte is added.
4. Avoiding spilling or dripping electrolyte.
5. Use proper jump start procedure.

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.



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DX.POISON -19-04JUN90

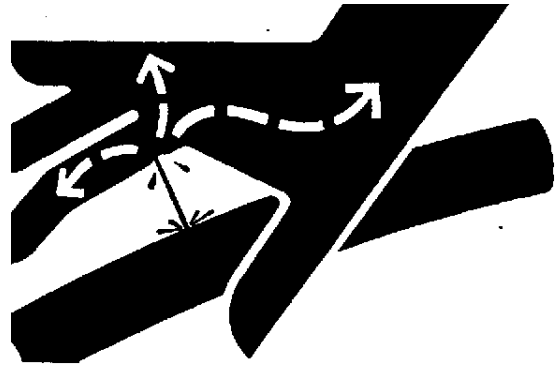
### AVOID HIGH-PRESSURE FLUIDS

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 should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.



DX,FLUID -19-03MAR93

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### AVOID INJURY FROM ROTATING BLADES

Keep hands and feet away while machine is running. Shut off power to service, lubricate or unlatch cutting units.



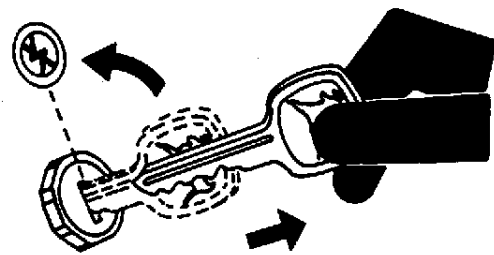
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### PARK MACHINE SAFELY

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

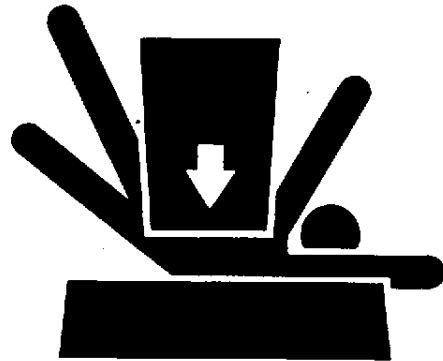
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### SUPPORT MACHINE PROPERLY

Always lower the attachment or implement to the ground before you work on the machine. If you must work on a lifted machine or attachment, securely 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.



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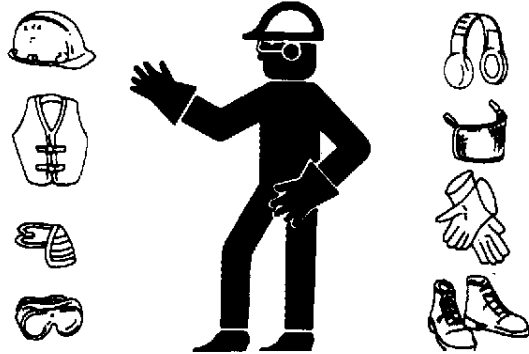
### WEAR PROTECTIVE CLOTHING

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.



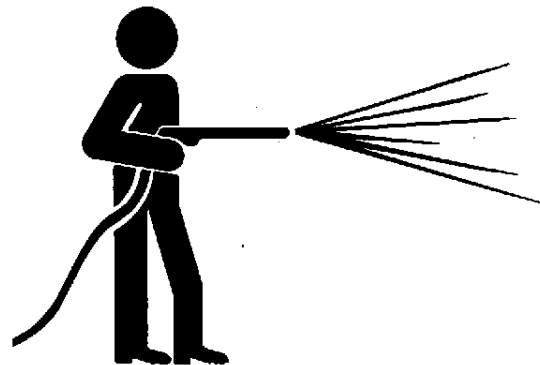
DX,WEAR -19-10SEP90

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TS206

### 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.



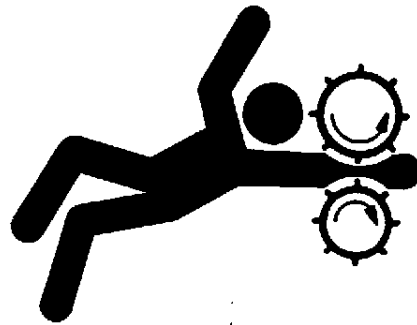
DX,CLEAN -19-04JUN90

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### 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.



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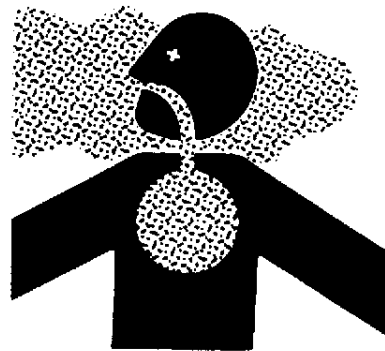
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### WORK IN VENTILATED AREA

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.

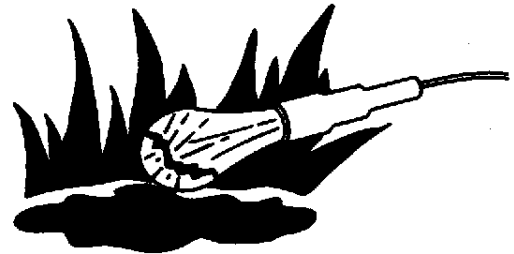


DX, AIR -19-04JUN90

TS220 -UN-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.

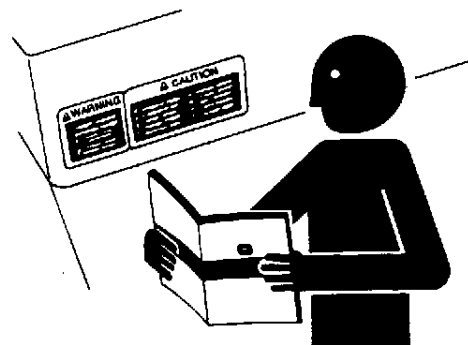


DX, LIGHT -19-04JUN90

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### REPLACE SAFETY SIGNS

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



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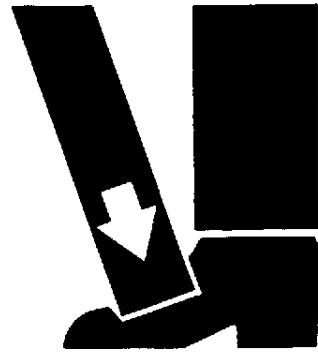
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### USE PROPER LIFTING EQUIPMENT

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

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### REMOVE PAINT BEFORE WELDING OR HEATING

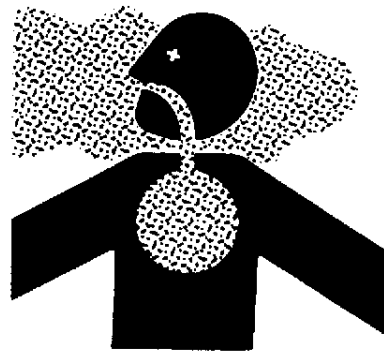
Avoid potentially toxic fumes and dust.

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 -19-03MAR93

TS220 -UN-23AUG88

### AVOID HEATING NEAR PRESSURIZED FLUID LINES

Flammable spray can be generated by heating near pressurized fluid lines, resulting in severe burns to yourself and bystanders. Do not heat by welding, soldering, or using a torch near pressurized fluid lines or other flammable materials. Pressurized lines can be accidentally cut when heat goes beyond the immediate flame area.



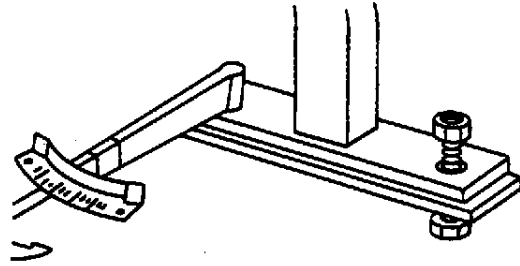
DX,TORCH -19-03MAR93

TS953 -UN-15MAY90

### KEEP ROPS INSTALLED PROPERLY

Make certain all parts are reinstalled correctly if the roll-over protective structure (ROPS) is loosened or removed for any reason. Tighten mounting bolts to proper torque.

The protection offered by ROPS will be impaired if ROPS is subjected to structural damage, is involved in an overturn incident, or is in any way altered by welding, bending, drilling, or cutting. A damaged ROPS should be replaced, not reused.



DX,ROPS3 -19-03MAR93

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TS212

### 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

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TS952

## PRACTICE SAFE MAINTENANCE

Understand service procedure before doing work. Keep area clean and dry.

Never lubricate, service, or adjust machine while it is moving. Keep hands, feet, and clothing from power-driven parts. Disengage all power and operate controls to relieve pressure. Lower equipment to the ground. Stop the engine. Remove the key. Allow machine to cool.

Securely support any machine elements that must be raised for service work.

Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any buildup of grease, oil, or debris.

Disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.



DX,SERV -19-03MAR93

TS218 -UN-23AUG88

## 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

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### DISPOSE OF WASTE PROPERLY

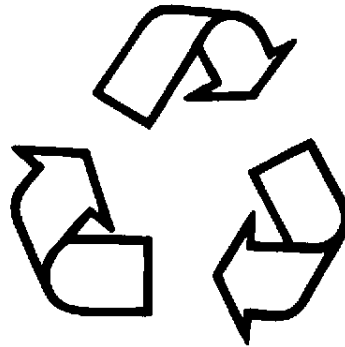
Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with John Deere equipment include such items as oil, fuel, coolant, brake fluid, filters, and batteries.

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

Do not pour waste onto the ground, down a drain, or into any water source.

Air conditioning refrigerants escaping into the air can damage the Earth's atmosphere. Government regulations may require a certified air conditioning service center to recover and recycle used air conditioning refrigerants.

Inquire on the proper way to recycle or dispose of waste from your local environmental or recycling center, or from your John Deere dealer.



DX,DRAIN -19-03MAR93

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### 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 -19-25SEP92

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# Group 10 General Specifications

## 3325 AND 3365 SPECIFICATIONS

### ENGINE

Make	Yanmar
Type	Diesel
Model	4TN82—RJE
Horsepower at 2700 rpm	28 kW (38 hp)
Number of Cylinders	4
Displacement	1.8 L (110.2 cu in.)
Bore and Stroke	82 x 86 mm (3.23 x 3.39)
Fast Idle	2800 rpm
Slow Idle	1000 rpm
Start Aid	Air Heater
Cooling System	Liquid Cooled
Air Cleaner	Replaceable Dry Type w/Safety Element
Engine Shutoff	Key Switch

### FUEL SYSTEM

Type	Direct Injection
Fuel Delivery	Electric Fuel Pump

### ELECTRICAL SYSTEM

Type	12 Volt
Battery Size	BCI Group 24 F 550 Cold Cranking Amps
Alternator	40 Amps
System Polarity	Negative Ground
Starter	12 Volt Electric w/Solenoid
Instrumentation	Hour Meter, Fuel Gauge & 11 Function Indicators (Stop Engine, Service Alert, Engine Oil Pressure, Engine Coolant Temperature, Water in Fuel, Hydraulic Oil Temperature, Hydrostatic Oil Temperature, Engine Air Heater, Parking Brake, Engine Alternator Volts, Engine Air Restriction)

MX,1010HV,A1 -19-30NOV92

**SPECIFICATIONS—CONTINUED**

**POWER TRAIN**

Type . . . . . 25 Series Sundstrand w/Kansaki Transaxle

Control (Foot) . . . . . 2 Pedal

**Travel Speeds:**

Forward (Transport) . . . . . 0—18.7 km/h (0—11.7 mph)

Reverse . . . . . 0—9.7 km/h (0—6 mph)

Mowing . . . . . 0—10.8 km/h (0—7.2 mph)

**STEERING/BRAKES**

Steering . . . . . Hydrostatic Power

Brakes . . . . . Mechanical Wet Disk

**HYDRAULIC SYSTEM**

Dual Hydraulic Pump Flow at 2800 rpm . . . . . 37.8 L/min (10 gpm) per section

Reel Relief Valve . . . . . 20684 kPa (207 bar) (3000 psi)

Wing Lift and Rockshaft Relief Valves . . . . . 14617 kPa (146 bar) (2120 psi)

Filter Bypass Relief Valve . . . . . 138—207 kPa (1.4—2.1 bar) (20—30 psi)

**HYDROSTATIC SYSTEM**

Charge Pump Flow at 2800 rpm . . . . . 12.1 L/min (3.2 gpm) minimum

Charge Pump Relief Valve . . . . . 965—1379 kPa (9.6—13.8 bar) (140—200 psi)

Main Relief Valve . . . . . 41369—44816 kPa (414—448 bar) (6000—6500 psi)

Filter Bypass Relief Valve . . . . . 138—207 kPa (1.4—2.1 bar) (20—30 psi)

Cooler Bypass Relief Valve . . . . . 552—896 kPa (5.5—9.0 bar) (80—130 psi)

Transaxle Pump Flow at 2800 rpm . . . . . 31.8 L/min (8.4 gpm)

Steering Relief Valve . . . . . 10497 + 500—0 kPa (105 + 5 - 0 bar)  
(1522.5 + 72.5 - 0 psi)

**CAPACITIES**

Fuel Tank . . . . . 75 L (20 gal)

Engine Crankcase . . . . . 5.7 L (6.0 qt) with Filter

Engine Cooling System . . . . . 6.6 L (7 qt)

Hydraulic System . . . . . 26.5 L (7 gal)

Hydrostatic Transaxle System . . . . . 18.9 L (5 gal)

Cutting Unit Gear Case . . . . . 0.4 L (0.8 pt)

MX,1010HV,A2 -19-30NOV92

**SPECIFICATIONS—CONTINUED**

**TIRES**

Size:

Front . . . . . 33 x 12.5—15  
 Rear . . . . . 23 x 10.5—12

Maximum Inflation:

Front (Mowers Up) . . . . . 68 kPa (0.7 bar) (9.9 psi)  
 Front (Mowers Down) . . . . . 67 kPa (0.67 bar) (9.7 psi)  
 Rear . . . . . 62 kPa (0.6 bar) (9.0 psi)

**OVERALL DIMENSIONS:**

Wheelbase . . . . . 162.5 cm (64 in.)  
 Tread Width . . . . . 142 cm (56 in.)  
 Machine Width (Mowers down) . . . . . 368 cm (145 in.)  
 Machine Width (Mowers up) . . . . . 226 cm (89 in.)  
 Turning Radius . . . . . 152 cm (60 in.)  
 Working Weight . . . . . 1619 kg (3570 lb)

**MOWER**

Mower Lift . . . . . Single Lift Lever w/Auxiliary Switches for Wing Mowers  
 Number of Reels . . . . . 5  
 Overall Cutting Width . . . . . 3.5 m (138 in.)

Reel Speed (3325) . . . . . 1300 rpm  
 Bed Knife Adjustment . . . . . Reel to Bed Knife  
 Height of Cut Range . . . . . 10 to 76 mm (0.375 to 3.0 in.)  
 Number of Blades . . . . . 6 standard; 8 or 10 optional

**CUTTING RATIOS**

Ground Speed:		7 km/h (4.5 mph)	8 km/h (5.0 mph)	9 km/h (5.5 mph)	10 km/h (6.0 mph)	11 km/h (6.5 mph)	11.6 km/h (7.2 mph)
<b>NO. of BLADES</b>	<b>MODEL</b>						
6 Blades	3325	17.4 mm (0.71 in.)	19.8 mm (0.79 in.)	22.3 mm (0.86 in.)	24.8 mm (0.94 in.)	27.3 mm (1.02 in.)	28.8 mm (1.13 in.)
	3365	16.0 mm (0.63 in.)	18.0 mm (0.71 in.)	20.0 mm (0.78 in.)	22.0 mm (0.85 in.)	23.0 mm (0.92 in.)	26.0 mm (1.02 in.)
8 Blades	3325	13.0 mm (0.53 in.)	14.9 mm (0.59 in.)	16.7 mm (0.65 in.)	18.6 mm (0.71 in.)	20.5 mm (0.77 in.)	21.6 mm (0.85 in.)
	3365	12.0 mm (0.47 in.)	13.0 mm (0.51 in.)	15.0 mm (0.59 in.)	16.0 mm (0.63 in.)	18.0 mm (0.71 in.)	19.0 mm (0.75 in.)
10 Blades	3325	10.4 mm (0.42 in.)	11.9 mm (0.47 in.)	13.4 mm (0.52 in.)	14.9 mm (0.57 in.)	16.4 mm (0.61 in.)	17.3 mm (0.68 in.)
	3365	10.0 mm (.38 in.)	11.0 mm (0.42 in.)	12.0 mm (0.47 in.)	13.0 mm (0.51 in.)	14.0 mm (0.55 in.)	15.0 mm (0.59 in.)

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**REPAIR SPECIFICATIONS**

*NOTE: For repair specification of the engine, use CTM3, 3TN and 4TN Series Yanmar Diesel Engines.*

*For repair specification of reel mower cutting units, use TM1528, Reel Mower Cutting Units.*

Item	Measurement	Specification
<b>SECTION 20—ENGINE REPAIR</b>		
ENGINE:		
Mounting Bracket-to-Frame . . . . .	Torque . . . . .	44—54 N·m (33—40 lb-ft)
Cap Screws and Nuts		
Mounting Bracket-to-Engine . . . . .	Torque . . . . .	90 N·m (66 lb-ft)
Cap Screws (16 used)		
COOLING SYSTEM:		
Coolant Level Below Bottom of . . . . .	Distance . . . . .	13—25 mm (0.5—1.0 in.)
Filler Neck		
Radiator-to-Frame Cap Screws . . . . .	Torque . . . . .	31—37 N·m (270—330 lb-in.)
<b>SECTION 30—FUEL AND AIR REPAIR</b>		
For all injection pump, nozzle and governor repair—Use CTM3.		
<b>SECTION 40—ELECTRICAL SYSTEM</b>		
For starter and alternator repair—use CTM3.		
<b>SECTION 50—POWER TRAIN REPAIR</b>		
DRIVE SHAFT:		
Drive Shaft-to-Isolator . . . . .	Torque . . . . .	49 N·m (36 lb-ft)
Cap Screws and Nuts		
Isolator-to-Flywheel Cap Screws . . . . .	Torque . . . . .	49 N·m (36 lb-ft)
Engine Mount-to-Frame Cap Screws . . . . .	Torque . . . . .	44—54 N·m (33—40 lb-ft)
Drive Shaft Coupler Cap Screws . . . . .	Torque . . . . .	60 N·m (45 lb-ft)
CHARGE PUMP:		
Seal . . . . .	Depth Below Surface . . . . .	1.5—2.5 mm (0.056—0.096 in.)
Charge Pump-to-Transmission Cap Screws . . . . .	Torque . . . . .	37—50 N·m (27—37 lb-ft)

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## REPAIR SPECIFICATIONS—CONTINUED

Item	Measurement	Specification
<b>SECTION 50—POWER TRAIN REPAIR—CONTINUED</b>		
<b>HYDROSTATIC TRANSMISSION:</b>		
Swash Plate End Covers Cap Screws	Torque	8—9 N·m (72—84 lb-in.)
Center Section Needle Bearings	Depth above surface of housing	3 mm (7/64 in.)
Center Section-to-Housing Cap Screws	Torque	44—55 N·m (33—41 lb-ft)
Gear to Output Shaft Cap Screw	Torque	54 N·m (40 lb-ft)
Transmission-to-Transaxle Cap Screws	Torque	142 N·m (105 lb-ft)
<b>Neutral Centering Spring</b>		
S.N. —840000	Approx Length	133 mm (5.25 in.)
S.N. 840001—	Approx Length	203 mm (8.00 in.)
<b>HYDROSTATIC OIL COOLER:</b>		
Oil Cooler Fittings	Torque	34 N·m (25 lb-ft)
<b>TRANSAXLE:</b>		
<b>PTO Clutch</b>		
Separator Plate-to-Cylinder	Maximum distance	4.7 mm (0.185 in.)
Top Plate	Minimum thickness	2.9 mm (0.114 in.)
Clutch Disk	Minimum thickness	1.9 mm (0.075 in.)
Separator Plate	Minimum thickness	1.0 mm (0.039 in.)
Piston Return Spring	Minimum free length	29 mm (1.14 in.)
	Minimum working load	17.5 mm at 540 N (0.689 in. at 121 lb)
<b>Differential</b>		
Bearing Retainer Cap Screws	Torque	26 N·m (19 lb-ft)
<b>Rear Cover Assembly</b>		
M12 Cap Screws	Torque	90 N·m (66 lb-ft)
M10 Cap Screws	Torque	50 N·m (37 lb-ft)
M8 Cap Screws	Torque	26 N·m (19 lb-ft)
Differential Ring Gear	Backlash	0.15—0.21 mm (0.006—0.008 in.)
Differential Carrier-to-Case Cap Screws	Torque	26 N·m (19 lb-ft)
<b>Front Cover Cap Screws</b>		
M12 Cap Screw	Torque	90 N·m (66 lb-ft)
M10 Cap Screw	Torque	50 N·m (37 lb-ft)
PTO Valve Cover Cap Screws	Torque	26 N·m (19 lb-ft)
Support-to-Transaxle Cap Screws	Torque	80 N·m (59 lb-ft)
ROPS-to-Frame Cap Screws and Nuts	Torque	130 N·m (96 lb-ft)
Frame-to-Transaxle Cap Screws	Torque	175 N·m (129 lb-ft)
Cross Brace-to-Frame Cap Screws and Nuts (3365)	Torque	175 N·m (129 lb-ft)

**REPAIR SPECIFICATIONS—CONTINUED**

Item	Measurement	Specification
<b>SECTION 50—POWER TRAIN REPAIR—CONTINUED</b>		
Front Wheel Lug Bolts . . . . .	Torque . . . . .	115 N·m (85 lb-ft)
Oil Cooler-to-Transmission . . . . .	Torque . . . . .	49 N·m (36 lb-ft)
Hose Connections		
Wing Lift-to-Flow Control Valve . . . . .	Torque . . . . .	49 N·m (36 lb-ft)
Hose Connection		
Steering Valve-to-Flow Control Valve . . . . .	Torque . . . . .	49 N·m (36 lb-ft)
Hose Connection		
Steering Valve-to-PTO Valve Hose Connection . . . . .	Torque . . . . .	49 N·m (36 lb-ft)
Hydraulic Pump-to-Transaxle Cap Screws . . . . .	Torque . . . . .	54 N·m (40 lb-ft)
Cutting Unit Supply Line-to-Hydraulic . . . . .	Torque . . . . .	102 N·m (75 lb-ft)
Pump Connections		
Suction Tube-to-Hydraulic Pump Flange . . . . .	Torque . . . . .	37 N·m (27 lb-ft)
Cap Screws		
Lift Link-to-Rockshaft Arm Cap Screws . . . . .	Torque . . . . .	163 N·m (120 lb-ft)
and Nuts		
<b>FINAL DRIVES:</b>		
Seal Housing-to-Axle Housing . . . . .	Torque . . . . .	25 N·m (18 lb-ft)
Cap Screws (Axle S.N. —000755)		
Ring Gear Cap Screws . . . . .	Torque . . . . .	26 N·m (230 lb-in.)
Final Drive-to-Differential Housing . . . . .	Torque . . . . .	52 N·m (38 lb-ft)
Cap Screws		
<b>CONTROL LINKAGE:</b>		
Neutral Centering Lever Bushing . . . . .	Minimum diameter . . . . .	19.088 ± 0.025 mm (0.7515 ± 0.001 in.)
(S.N. 840001— )		

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**REPAIR SPECIFICATIONS—CONTINUED**

Item	Measurement	Specification
<b>SECTION 60—STEERING AND BRAKE REPAIR</b>		
<b>STEERING VALVE:</b>		
Rotor to Stator Clearance	Maximum clearance	0.08 mm (0.003 in.)
Top of Steering Tube to Bushing	Dimension	2.5 mm (0.1 in.)
Metering Assembly Screws	Torque	1.4 ± 0.1 N·m (12 ± 1 lb-in.)
Commutator Ring and Drive Plate TIR	Maximum allowable TIR	0.13 mm (0.005 in.)
Port Cover Nuts	Torque	30 N·m (266 lb-in.)
Check Ball Plug	Torque	14 N·m (124 lb-in.)
Steering Wheel Nut	Torque	15 N·m (11 lb-ft)
Relief Valve	Pressure	10497 + 500 - 0 kPa (1522.5 + 72.5 - 0 psi)
<b>BRAKES:</b>		
Brake Disk	Thickness (new)	4.6—4.8 mm (0.181—0.189 in.)
	Minimum thickness	4.4 mm (0.173 in.)
Brake Disk Spline-to-Shaft	Backlash (new)	0.13—0.31 mm (.005—.012 in.)
	Maximum backlash	1.2 mm (0.047 in.)
Brake Linkage Rod	Approximate length (includes clevis)	557 mm (21.9 in.)
Brake Plate	Thickness (new)	2.5—2.7 mm (0.098—0.106 in.)
	Minimum thickness	2.3 mm (0.090 in.)
	Warpage (new)	0.15 mm (0.006 in.)
	Maximum warpage	0.3 mm (0.012 in.)
<b>STEERING AXLE:</b>		
Steering Cylinder-to-Spindle Nut	Torque	75 N·m (55 lb-ft)
Tie Rod-to-Spindle Nut	Torque	53 N·m (39 lb-ft)
Toe-in Adjustment	Length less at front than at rear of rear tires	6 mm (1/4 in.)
Tie Rod Nut	Torque	118 N·m (87 lb-ft)
Pivot Pin Nut	Torque	509 N·m (375 lb-ft)
Axle Pivot End Play	Approximate clearance	1 mm (0.040 in.)

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**REPAIR SPECIFICATIONS—CONTINUED**

Item	Measurement	Specification
<b>SECTION 70—HYDRAULIC REPAIR</b>		
<b>HYDRAULIC PUMPS:</b>		
Transaxle Pump-to-Differential . . . . .	Torque . . . . .	47 N·m (35 lb-ft)
Housing Cap Screws		
Lift Link-to-Rockshaft Arm Cap Screw . . . . .	Torque . . . . .	163 N·m (120 lb-ft)
Transaxle Pump Cover . . . . .	Torque . . . . .	47 N·m (35 lb-ft)
Socket Head Screws		
Hydraulic Pump . . . . .	Torque . . . . .	47 N·m (35 lb-ft)
Socket Head Screws		
Hydraulic Pump Mounting Cap Screws . . . . .	Torque . . . . .	54 N·m (40 lb-ft)
Hydraulic Pump Tube Nuts . . . . .	Torque . . . . .	102 N·m (75 lb-ft)
<b>REEL CONTROL VALVE:</b>		
Tie Rod Nuts . . . . .	Torque . . . . .	18.6 N·m (165 lb-in.)
<b>WING LIFT VALVE:</b>		
Tie Rod Nuts . . . . .	Torque . . . . .	13 N·m (115 lb-in.)
<b>FLOW CONTROL VALVE:</b>		
Priority Flow Divider Spool Plug . . . . .	Torque . . . . .	98 N·m (72 lb-ft)
Proportional Flow Divider Spool Plug . . . . .	Torque . . . . .	44 N·m (33 lb-ft)
Relief Spools Seat Retainers . . . . .	Torque . . . . .	29 N·m (22 lb-ft)
Relief Spools Plugs . . . . .	Torque . . . . .	98 N·m (72 lb-ft)
Socket Head Mounting Screws . . . . .	Torque . . . . .	17 N·m (150 lb-in.)
<b>WEIGHT TRANSFER:</b>		
Solenoid Nut . . . . .	Torque . . . . .	5.5—8 N·m (48—72 lb-in.)
Cylinder Piston . . . . .	Torque . . . . .	47 N·m (35 lb-ft)
<b>ROCKSHAFT ASSEMBLY:</b>		
Rockshaft Valve		
Control Valve Spool Bolt Torque . . . . .	Torque . . . . .	10 N·m (88 lb-in.)
Control Valve-to-Rockshaft Cap Screw . . . . .	Torque . . . . .	24 N·m (18 lb-ft)
Control Valve Cover-to-Rockshaft . . . . .	Torque . . . . .	27 N·m (20 lb-ft)
Cap Screws		
Rockshaft Upper Lever Tension . . . . .	Force . . . . .	11.3—13.6 Kg (25—30 lb)
Rockshaft Piston Cover		
Piston Cover-to-Rockshaft . . . . .	Torque . . . . .	88 N·m (65 lb-ft)
Check Relief Valve Spring . . . . .	Free length . . . . .	27.7 mm (1.09 in.)
	Compressed length . . . . .	18 mm at 10N (0.71 in. at 2 lb)
Check Relief Valve Plug . . . . .	Torque . . . . .	34 N·m (25 lb-ft)
Stop Valve Spring . . . . .	Free length . . . . .	36 mm (1.4 in.)
	Compressed length . . . . .	14 mm at 59N (0.55 in. at 13 lb)
Stop Bolt Assembly-to-Piston . . . . .	Torque . . . . .	25 N·m (18 lb-ft)
Cover Socket Head Screws		
Overload Relief Valve Spring . . . . .	Free length . . . . .	44 mm (1.73 in.)
	Compressed length . . . . .	38 mm at 170 N (1.50 in. at 38 lb)

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