

F735 Front Mower

TECHNICAL MANUAL

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

TM1597 (Dec99)

This technical manual is written for an experienced technician and contains sections that are specifically for this product. It is a part of a total product support program.

The manual is organized so that all the information on a particular system is kept together. The order of grouping is as follows:

- Table of Contents
- General Diagnostic Information
- Specifications
- Electrical Wiring Harness Legend
- Component Location
- System Schematic
- Wiring Harness
- Troubleshooting Chart
- Theory of Operation
- Diagnostics
- Tests and Adjustments
- Repair

Note: Depending on the particular section or system being covered, not all of the above groups may be used.

Each section will be identified with a symbol rather than a number. The groups and pages within a section will be consecutively numbered.

We appreciate your input on this manual. To help, there are postage paid postcards included at the back. If you find any errors or want to comment on the layout of the manual please fill out one of the cards and mail it back to us.

Safety 

Specifications and Information 

Diesel Engine 

Electrical 

Hydrostatic Power Train 

Steering 

Brakes 

Hydraulics 

Attachments 

Miscellaneous 

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.

COPYRIGHT© 1999
Deere & Co.
John Deere Worldwide Commercial and
Consumer Equipment Division
Horicon, WI
All rights reserved



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 servicing practices.

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.

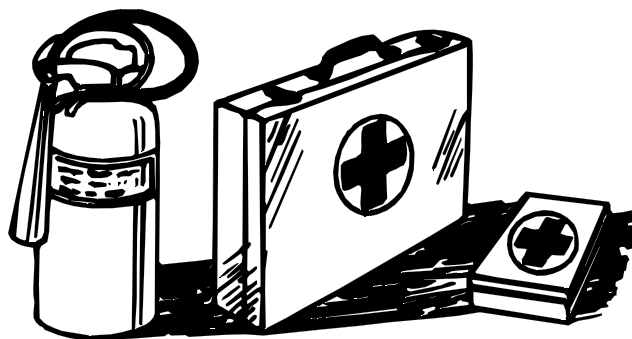
REPLACE SAFETY SIGNS



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

HANDLE FLUIDS SAFELY—AVOID FIRES

Be Prepared for Emergencies



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.

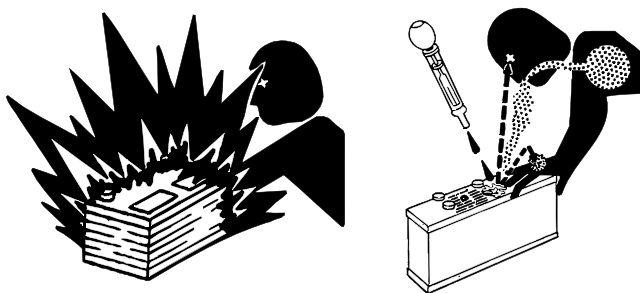
Do not store oily rags; they can ignite and burn spontaneously.

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.

USE CARE IN HANDLING AND SERVICING BATTERIES



Prevent Battery Explosions

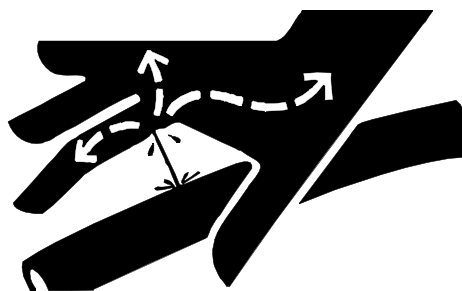
- Keep sparks, lighted matches, and open flame away from the top of battery. Battery gas can explode.
- Never check battery charge by placing a metal object across the posts. Use a voltmeter or hydrometer.
- Do not charge a frozen battery; it may explode. Warm battery to 16°C (60°F).

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 acid burns by:**
 1. Filling batteries in a well-ventilated area.
 1. Wearing eye protection and rubber gloves.
 1. Avoiding breathing fumes when electrolyte is added.
 1. Avoiding spilling or dripping electrolyte.
 1. Using proper jump start procedure.
- **If you spill acid on yourself:**
 1. Flush your skin with water.
 1. Apply baking soda or lime to help neutralize the acid.
 1. Flush your eyes with water for 10—15 minutes.
 1. Get medical attention immediately.
- **If acid is swallowed:**
 1. Drink large amounts of water or milk.
 1. Then drink milk of magnesia, beaten eggs, or vegetable oil.
 1. Get medical attention immediately.

USE CARE AROUND HIGH-PRESSURE FLUID LINES

Avoid High-Pressure Fluids



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

Avoid injury from escaping fluid under pressure by stopping the engine and relieving pressure in the system before disconnecting or connecting 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.

Avoid Heating Near Pressurized Fluid Lines

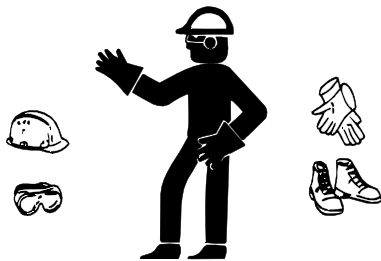


Flammable spray can be generated by heating near pressurized fluid lines, resulting in severe burns to yourself and bystanders. Do not heat by welding, soldering, or using a torch near pressurized fluid lines or other flammable materials. Pressurized lines can be accidentally cut when heat goes beyond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



USE SAFE SERVICE PROCEDURES

Wear Protective Clothing

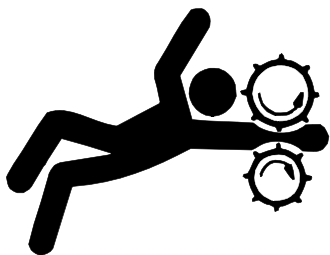


Wear close fitting clothing and safety equipment appropriate to the job.

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.

Service Machines Safely



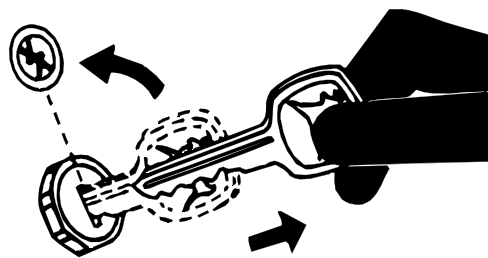
Tie long hair behind your head. Do not wear a necktie, scarf, loose clothing, or necklace when you work near machine tools or moving parts. If these items were to get caught, severe injury could result.

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

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.

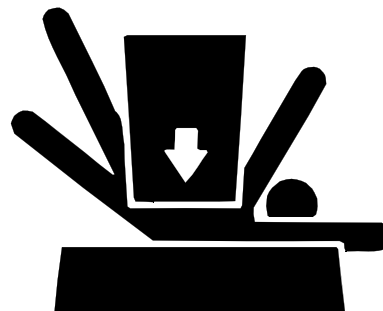
Park Machine Safely



Before working on the machine:

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

Support Machine Properly and Use Proper Lifting Equipment



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.

Lifting heavy components incorrectly can cause severe injury or machine damage. Follow recommended procedure for removal and installation of components in the manual.

Work in Clean Area

Before starting a job:

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

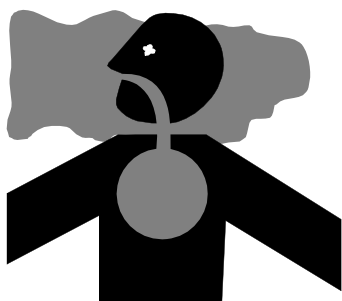
Using High-Pressure Washers

Directing pressurized water at electronic/electrical components or connectors, bearings, hydraulic seals, fuel injection pumps or other sensitive parts and components may cause product malfunctions. Reduce pressure and spray at a 45 to 90 degree angle.

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.

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.

WARNING: California Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

Gasoline engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

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.

Avoid Harmful Asbestos Dust

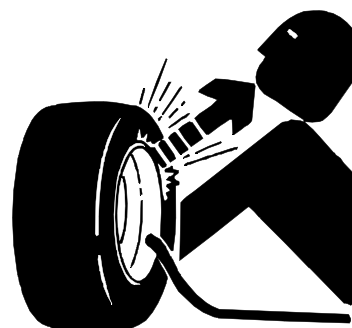
Avoid breathing dust that may be generated when handling components containing asbestos fibers. Inhaled asbestos fibers may cause lung cancer.

Components in products that may contain asbestos fibers are brake pads, brake band and lining assemblies, clutch plates, and some gaskets. The asbestos used in these components is usually found in a resin or sealed in some way. Normal handling is not hazardous as long as airborne dust containing asbestos is not generated.

Avoid creating dust. Never use compressed air for cleaning. Avoid brushing or grinding material containing asbestos. When servicing, wear an approved respirator. A special vacuum cleaner is recommended to clean asbestos. If not available, apply a mist of oil or water on the material containing asbestos. Keep bystanders away from the area.



SERVICE TIRES SAFELY



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

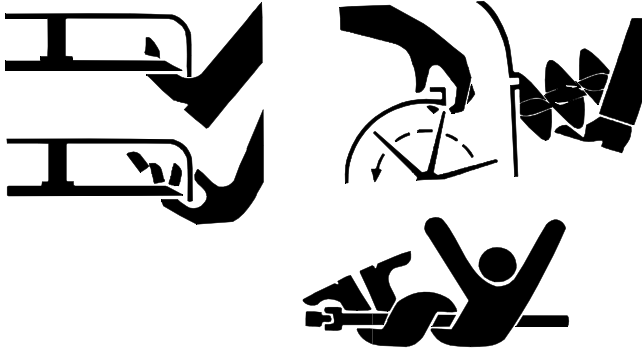
Do not attempt to mount a tire unless you have the proper equipment and experience to perform the job. Always maintain the correct tire pressure. Do not inflate the tires above the recommended pressure. Never weld or heat a wheel and tire assembly. The heat can cause an increase in air pressure resulting 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.



AVOID INJURY FROM ROTATING BLADES, AUGERS AND PTO SHAFTS



Keep hands and feet away while machine is running. Shut off power to service, lubricate or remove mower blades, augers or PTO shafts.

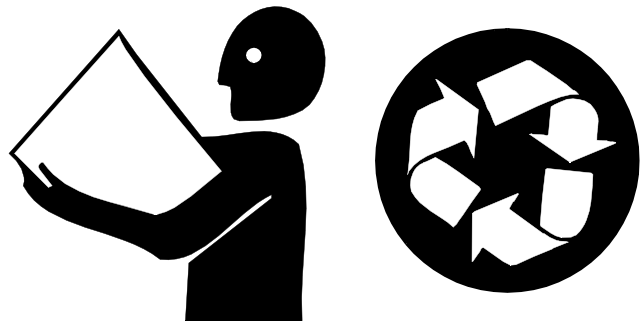
SERVICE COOLING SYSTEM SAFELY



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

Shut off machine. Remove filler cap only when cool enough to touch with bare hands. Slowly loosen cap to first stop to relieve pressure before removing completely.

HANDLE CHEMICAL PRODUCTS SAFELY



Direct exposure to hazardous chemicals can cause serious injury. Potentially hazardous chemicals used with John Deere equipment include such items as lubricants, coolants, paints, and adhesives.

A Material Safety Data Sheet (MSDS) provides specific details on chemical products: physical and health hazards, safety procedures, and emergency response techniques. Check the MSDS before you start any job using a hazardous chemical. That way you will know exactly what the risks are and how to do the job safely. Then follow procedures and recommended equipment.

Dispose of Waste Properly

Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with John Deere equipment includes 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. Inquire on the proper way to recycle or dispose of waste from your local environmental or recycling center, or from your John Deere dealer.

LIVE WITH SAFETY



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

CONTENTS

Page



SPECIFICATIONS AND INFORMATION

SPECIFICATIONS	2
GENERAL VEHICLE SPECIFICATIONS	2
METRIC FASTENER TORQUE VALUES	4
METRIC FASTENER TORQUE VALUE—GRADE 7	5
INCH FASTENER TORQUE VALUES	6
O-RING SEAL SERVICE RECOMMENDATIONS	
FACE SEAL FITTINGS WITH INCH STUD ENDS TORQUE	7
FACE SEAL FITTINGS WITH METRIC STUD ENDS TORQUE	8
O-RING FACE SEAL FITTINGS	9
O-RING BOSS FITTINGS	9
DIESEL FUEL SPECIFICATIONS	10
DIESEL FUEL SPECIFICATIONS	10
LUBRICITY	10
STORAGE	10
ENGINE OIL SPECIFICATIONS	11
4-CYCLE DIESEL ENGINE OIL—NORTH AMERICA	11
4-CYCLE DIESEL ENGINE OIL—EUROPE	11
BREAK-IN DIESEL ENGINE OIL—NORTH AMERICA	12
BREAK-IN DIESEL ENGINE OIL—EUROPE	12
OILS AND LUBRICANTS SPECIFICATIONS	13
HYDROSTATIC TRANSMISSION AND HYDRAULIC OIL	13
GEAR CASE OIL—NORTH AMERICA	13
GEAR CASE OIL—EUROPE	14
ANTI-CORROSION GREASE SPECIFICATIONS	14
CHASSIS AND MOWER SPINDLE GREASE	15
ALTERNATIVE LUBRICANTS	15
SYNTHETIC LUBRICANTS	15
LUBRICANT STORAGE	15
MIXING OF LUBRICANTS	15
OIL FILTERS	15
COOLANT SPECIFICATIONS	16
DIESEL ENGINE COOLANT	16
DIESEL ENGINE COOLANT DRAIN INTERVAL	16
SERIAL NUMBER LOCATION	17
MACHINE IDENTIFICATION NUMBER	17
ENGINE SERIAL NUMBER	17
STEERING VALVE SERIAL NUMBER	17
HYDROSTATIC TRANSAXLE SERIAL NUMBER	17
MOWER DECK SERIAL NUMBER	17
PTO GEARBOX SERIAL NUMBER	17

SPECIFICATIONS

GENERAL VEHICLE SPECIFICATIONS



ENGINE

Engine Yanmar 2V78
 Engine Model Number 2008D001
 Type Vertical Shaft, 4-Cycle, Diesel
 Number of Cylinders 2 (V Twin)
 Power Output@ 3000 RPM 13.4 kW (18 hp)
 Displacement 749 cc (46 cu in.)
 Cylinder Bore x Stroke 78 mm (3.071 in.) x 78.4 mm (3.087 in.)
 Aspiration Natural
 Cooling System Liquid Cooled
 Lubricating System Forced Lubrication with Trochoid Pump
 Lubricant Capacity (with Filter) 2.27 L (2.4 qt)
 Cooling System Capacity (Total) 3.9 L (4.12 qt)
 Radiator Capacity 2.5 L (2.643 qt)
 Coolant Recovery Tank Capacity 0.3 L (0.317 qt)
 Air Cleaner Dual Element

FUEL SYSTEM

Fuel Tank Location Left Side, Behind Operator
 Fuel Tank Capacity 26.5 L (7 gal)
 Fuel Filter Replaceable In-Line

ELECTRICAL

Charging System Flywheel Stator
 Charging Capacity 20 Amp Regulated

POWER TRAIN

Manufacturer Kanzaki
 Transaxle Hydrostatic
 Travel Speeds at Full Engine RPM
 Forward 0—11.3 km/h (0—7 mph)
 Reverse 0—4.8 km/h (0—3 mph)
 Transmission/Hydraulic Oil Capacity 4.4 L (4.7 qt)

STEERING

Type Power, Hydraulic, Rear Wheels

BRAKES

Location Transaxle
 Type Drum and Shoes

HYDRAULICS

Attachment Lift Hydraulic
 Type Mechanical Spool Valve

PTO DRIVE

Type Gear Box
 Clutch Type Engine Mounted Electric

MOWER DECK (48-INCH)

Cutting Width 122 cm (48 in.)
 Cutting Height 25—100 mm (1—4 in.)
 Number of Blades 3

MOWER DECK (54-INCH)

Cutting Width 137 cm (54 in.)
 Cutting Height 25—100 (1—4 in.)
 Number of Blades 3

MOWER DECK (60-INCH)

Cutting Width 152 cm (60 in.)
 Cutting Height 25—100 mm (1—4 in.)
 Number of Blades 3

WHEELS AND TIRES

Drive Tires (Front) 20 x 10.00-8
 Rear Tires 15 x 6.00-6
 Mower Deck Caster Wheels 9 x 3.5-4

WEIGHTS AND DIMENSIONS

Weight (Without Mower Deck) 494 kg (1089 lb)
 Wheelbase 1.0 m (39.4 in.)
 Overall Height 1.2 m (47.6 in.)
 Overall Width (Without Mower Deck) 0.97 m (38.8 in.)
 Overall Length (Without Mower Deck) 2.1 m (81.0 in.)
 Sound Rating (With Mower Deck) 90 dBa
 Sound Rating (Without Mower Deck) 85 dBa

