

748H Skidder Repair

(Serial No. 630436 -)

TECHNICAL MANUAL

748H Skidder Repair (S.N. 630436—)

TM11813 13OCT10 (ENGLISH)

For complete service information also see:

748H Skidder Operation and Test (S.N. 630436—).....	TM11797
H-Series Skidder Operator's Manual (S.N. 630436—).....	OMT255825
PowerTech™ 4.5L & 6.8L Diesel Engines - Base Engine	CTM104
PowerTech™ Plus 4.5L & 6.8L Diesel Engines—Level 14 Electronic Fuel System With Denso HPCR.....	CTM320
TeamMate™ IV Axles 1200 - 1400 Series Inboard Planetary Axles.....	CTM442
40 and 4000 Winches	CTM25
60 and 6000 Winches	CTM41
DF180 Series Powershift Transmission Repair Manual	CTM308
120 Series Cylinders	CTM114319
125 Series Cylinders	CTM109319
JDLink™ / ZXLink™ Machine Monitoring System.....	CTM10006
Specifications Manual.....	SP458

**Worldwide Construction
And Forestry Division**

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.



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.

,0004E4A -19-08SEP08-1/1

Introduction

Contents

Section 00—General Information

- Group 0001—Safety
- Group 0003—Torque Values

Section 01—Wheels

- Group 0110—Powered Wheels and Fasteners

Section 02—Axles

- Group 0200—Remove and Install
- Group 0225—Input Drive Shaft and U-Joints
- Group 0260—Hydraulic System

Section 03—Transmission

- Group 0300—Remove and Install
- Group 0315—Controls
- Group 0325—Input Drive Shafts and U-Joints
- Group 0350—Gears, Shafts, and Power Shift Clutches
- Group 0360—Hydraulic System

Section 04—Engine

- Group 0400—Removal and Installation

Section 05—Engine Auxiliary Systems

- Group 0505—Cold Weather Starting Aids
- Group 0510—Cooling System
- Group 0520—Intake System
- Group 0530—Exhaust System
- Group 0560—External Fuel Supply System

Section 07—Dampener Drive

- Group 0752—Elements

Section 09—Steering System

- Group 0930—Secondary Steering
- Group 0960—Hydraulic System
- Group 0962—Dual Mode Steering

Section 10—Service Brakes

- Group 1015—Controls Linkage
- Group 1060—Hydraulic System

Section 11—Park Brake

- Group 1111—Active Elements
- Group 1160—Hydraulic System

Section 17—Frame, Chassis, or Supporting Structures

- Group 1740—Frame Installation

- Group 1746—Frame Bottom Guards

Section 18—Operator's Station

- Group 1800—Removal and Installation
- Group 1810—Operator Enclosure
- Group 1821—Seat and Seat Belt
- Group 1830—Heating and Air Conditioning

Section 19—Sheet Metal and Styling

- Group 1910—Hood or Engine Enclosure

Section 20—Safety, Convenience, and Miscellaneous

- Group 2003—Pressurized Water System
- Group 2004—Horn and Warning Devices

Section 21—Main Hydraulic System

- Group 2160—Hydraulic System

Section 30—Winch

- Group 3000—Removal and Installation
- Group 3015—Control Linkage
- Group 3025—Input Drive Shafts and U-Joints
- Group 3050—Drive and Clutch

Section 32—Stacking Blades

- Group 3201—Blades
- Group 3215—Controls Linkage
- Group 3260—Hydraulic System

Section 38—Grapple

- Group 3803—Grapple Mechanism
- Group 3840—Frames
- Group 3860—Hydraulic System

Section 99—Dealer Fabricated Tools

- Group 9900—Dealer Fabricated Tools

Original Instructions. 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 © 2010
DEERE & COMPANY
Moline, Illinois
All rights reserved.
A John Deere ILLUSTRATION © Manual

**Thanks very much for your reading,
Want to get more information,
Please click here, Then get the complete
manual**

JustClickHere 

NOTE:

**If there is no response to click on the link above,
please download the PDF document first, and then
click on it.**

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

Section 00 General Information

Contents

	Page
Group 0001—Safety	00-0001-1
Group 0003—Torque Values	
Hardware Torque Specifications	00-0003-1
Keeping ROPS Installed Properly	00-0003-1
Torque Value	
Metric Bolt and Cap Screw	00-0003-2
Additional Metric Cap Screw	
Torque Values	00-0003-3
Unified Inch Bolt and Cap Screw	00-0003-4
Check Oil Lines And Fittings	00-0003-5
Service Recommendations for	
37° Flare and 30° Cone Seat	
Connectors	00-0003-5
Service Recommendations for	
O-Ring Boss Fittings	00-0003-6
Service Recommendations For	
Flat Face O-Ring Seal Fittings	00-0003-7
Service Recommendations for	
Metric Series Four Bolt Flange	
Fitting	00-0003-8
Service Recommendations For	
Inch Series Four Bolt Flange	
Fittings	00-0003-9

Recognize Safety Information

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

Follow the precautions and safe operating practices highlighted by this symbol.

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

On your machine, DANGER signs are red in color, WARNING signs are orange, and CAUTION signs are yellow. DANGER and WARNING signs are located near specific hazards. General precautions are on CAUTION labels.



▲ DANGER

▲ WARNING

▲ CAUTION

T133555 —UN—28AUG00

T133588 —19—28AUG00

TX03679,00016CC -19-03NOV08-1/1

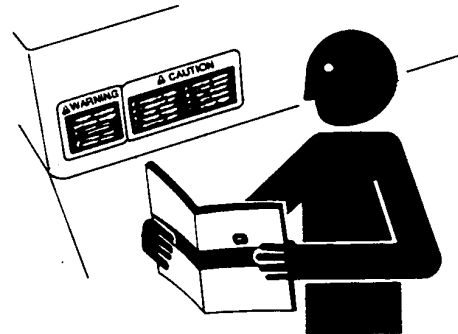
Follow Safety Instructions

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.

There can be additional safety information contained on parts and components sourced from suppliers that is not reproduced in this operator's manual.

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.

TS201 —UN—23AUG88

DX,READ -19-16JUN09-1/1

Operate Only If Qualified

Do not operate this machine unless you have read the operator's manual carefully and you have been qualified by supervised training and instruction.

Familiarize yourself with the job site and your surroundings before operating. Try all controls and machine functions with the machine in an open area before starting to work.

Know and observe all safety rules that may apply to your work situation and your work site.

TX03679,00016FA -19-03NOV08-1/1

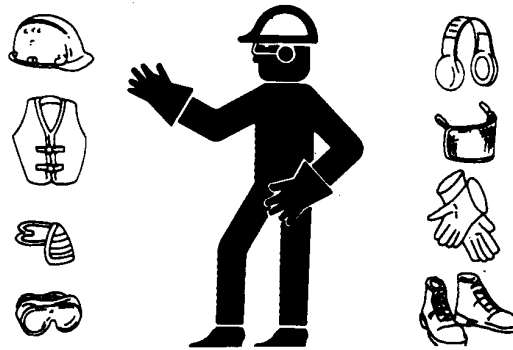
Wear Protective Equipment

Guard against injury from flying pieces or metal or debris; wear goggles or safety glasses.

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

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

Prolonged exposure to loud noise can cause impairment or loss of hearing. Wear suitable hearing protection such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises. Radio or music headphones are not suitable to use for hearing protection.



TS206—UN—23AUG88

OUT4001,0000570 -19-12FEB10-1/1

Avoid Unauthorized Machine Modifications

John Deere recommends using only genuine John Deere replacement parts to ensure machine performance. Never substitute genuine John Deere parts with alternate parts not intended for the application as these can create hazardous situations or hazardous performance. Non-John Deere parts, or any damage or failures resulting from their use are not covered by any John Deere warranty.

Modifications of this machine, or addition of unapproved products or attachments, may affect machine stability or

reliability, and may create a hazard for the operator or others near the machine. The installer of any modification which may affect the electronic controls of this machine is responsible for establishing that the modification does not adversely affect the machine or its performance.

Always contact an authorized dealer before making machine modifications that change the intended use, weight or balance of the machine, or that alter machine controls, performance or reliability.

AM40430,00000A9 -19-20AUG09-1/1

Inspect Machine

Inspect machine carefully each day by walking around it before starting.

Keep all guards and shields in good condition and properly installed. Fix damage and replace worn or broken parts immediately. Pay special attention to hydraulic hoses and electrical wiring.



T6607AQ—UN—18OCT88

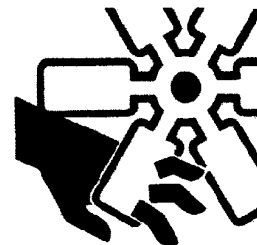
TX03679,0001734 -19-03NOV08-1/1

Stay Clear of Moving Parts

Entanglements in moving parts can cause serious injury.

Stop engine before examining, adjusting or maintaining any part of machine with moving parts.

Keep guards and shields in place. Replace any guard or shield that has been removed for access as soon as service or repair is complete.



T133592—UN—12SEP01

TX03679,00016D2 -19-03NOV08-1/1

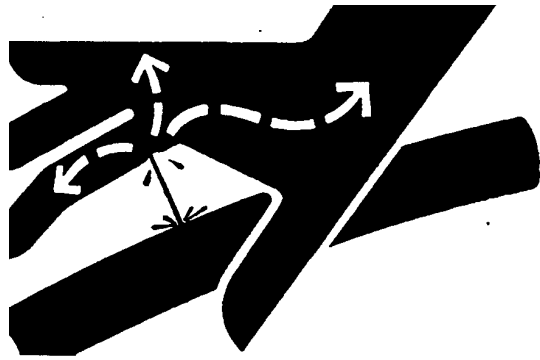
Avoid High-Pressure Fluids

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 in English from Deere & Company Medical Department in



Moline, Illinois, U.S.A., by calling 1-800-822-8262 or +1 309-748-5636.

DX,FLUID -19-20AUG09-1/1

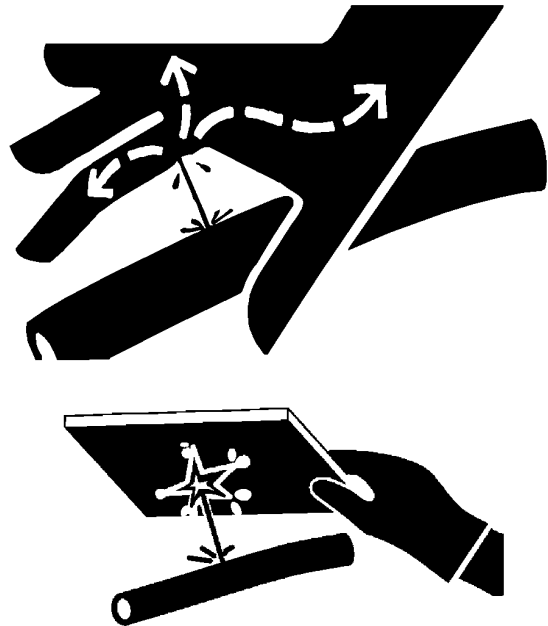
X9811 —UN—23AUG88

Avoid High-Pressure Oils

This machine uses a high-pressure hydraulic system. Escaping oil under pressure can penetrate the skin causing serious injury.

Never search for leaks with your hands. Protect hands. Use a piece of cardboard to find location of escaping oil. Stop engine and relieve pressure before disconnecting lines or working on hydraulic system.

If hydraulic oil penetrates your skin, see a doctor immediately. Injected oil must be removed surgically within hours or gangrene may result. Contact a knowledgeable medical source or the Deere & Company Medical Department in Moline, Illinois, U.S.A.



TX03679,00016D3 -19-03NOV08-1/1

T133509 —UN—17MAR06

T133840 —UN—20SEP00

Do Not Use Starting Fluid

IMPORTANT: Avoid an explosion or fire. Machine is equipped with electrical cold start assist system. Do not use starting fluid of any type on the machine.

This machine is equipped with a Tier III engine. Fire, explosion or engine damage will result from using starting fluids of any type on this machine.



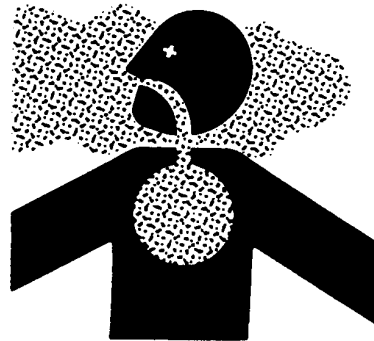
OUO1065,00001B7 -19-09JUN08-1/1

T145705 —UN—18SEP01

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.



TS220 —UN—23AUG88

DX,AIR -19-17FEB99-1/1

Prevent Fires

Handle Fuel Safely: Store flammable fluids away from fire hazards. Never refuel machine while smoking or when near sparks or flame.

Clean Machine Regularly: Keep trash, debris, grease and oil from accumulating in engine compartment, around fuel lines, hydraulic lines, exhaust components, and electrical wiring. Never store oily rags or flammable materials inside a machine compartment.

Maintain Hoses and Wiring: Replace hydraulic hoses immediately if they begin to leak, and clean up any oil spills. Examine electrical wiring and connectors frequently for damage.

Keep A Fire Extinguisher Available: Always keep a multipurpose fire extinguisher on or near the machine. Know how to use extinguisher properly.



T133553 —UN—07SEP00



T133554 —UN—07SEP00



T133552 —UN—14SEP00

TX03679,00016F5 -19-03NOV08-1/1

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

DX,SPARKS -19-03MAR93-1/1

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.

(See your John Deere dealer for MSDS's on chemical products used with John Deere equipment.)



TS1132 —UN—26NOV90

DX,MSDS,NA -19-03MAR93-1/1

Dispose of Waste Properly

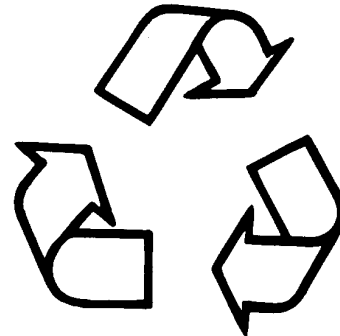
Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with John Deere equipment include such items as oil, fuel, coolant, brake fluid, filters, and batteries.

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.



TS1133 —UN—26NOV90

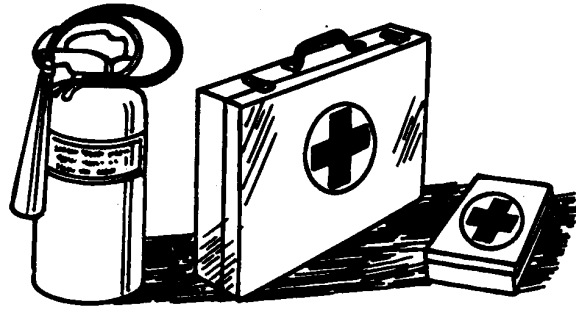
DX,DRAIN -19-03MAR93-1/1

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

DX,FIRE2 -19-03MAR93-1/1

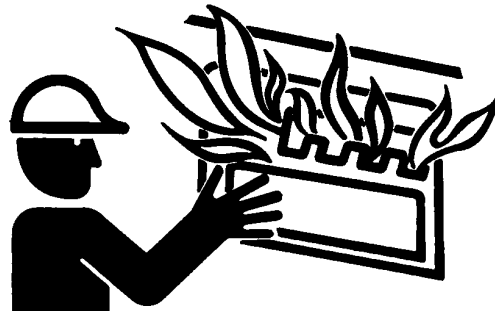
Clean Debris from Machine

Keep engine compartment, radiator, batteries, hydraulic lines, exhaust components, fuel tank, and operator's station clean and free of debris.

Clean any oil spills or fuel spills on machine surfaces.

Temperature in engine compartment may go up immediately after engine is stopped. **BE ON GUARD FOR FIRES DURING THIS PERIOD.**

Open access door(s) to cool the engine faster, and clean engine compartment.



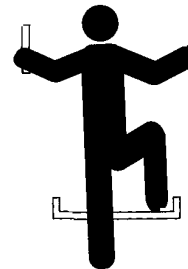
T6669AG—UN—18OCT88

OUT4001,00000E3 -19-20AUG09-1/1

Use Steps and Handholds Correctly

Prevent falls by facing the machine when you get on and off. Maintain 3-point contact with steps and handrails. Never use machine controls as handholds.

Use extra care when mud, snow, or moisture present slippery conditions. Keep steps clean and free of grease or oil. Never jump when exiting machine. Never mount or dismount a moving machine.



T133468—UN—30AUG00

TX03679,00016F2 -19-03OCT07-1/1

Start Only From Operator's Seat

Avoid unexpected machine movement. Start engine only while sitting in operator's seat. Ensure all controls and working tools are in proper position for a parked machine.

Never attempt to start engine from the ground. Do not attempt to start engine by shorting across the starter solenoid terminals.



T133715—UN—07SEP00

TX03679,0001799 -19-03OCT07-1/1

Use and Maintain Seat Belt

Use seat belt when operating machine. Remember to fasten seat belt when loading and unloading from trucks and during other uses.

Examine seat belt frequently. Be sure webbing is not cut or torn. Replace seat belt immediately if any part is damaged or does not function properly.

The complete seat belt assembly should be replaced every three years, regardless of appearance.



USE SEAT BELT

T133716 —19—14SEP00

TX03679,00016DD -19-03OCT07-1/1

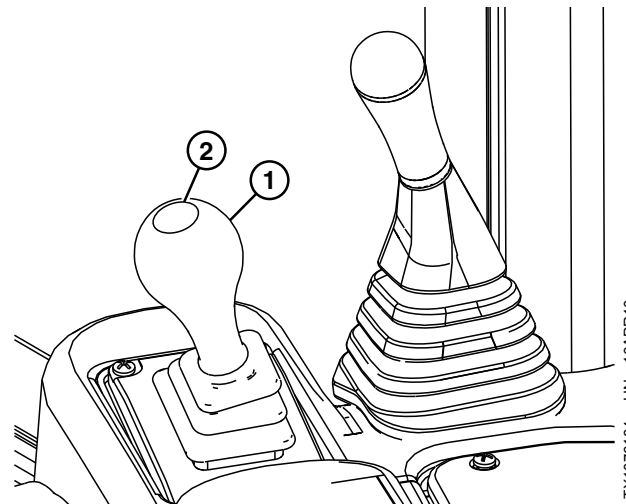
Prevent Unintended Machine Movement

Be careful not to accidentally actuate controls. Move transmission out of gear and lower all equipment to the ground during work interruptions. Follow these steps before allowing coworkers to approach the machine, before standing up, leaving the operator's seat, or exiting the machine:

- Lower equipment to the ground
- Move transmission gear selector to neutral position
- Engage park brake by pressing park brake switch. Verify park brake indicator light on the standard display monitor comes on.
- Stop the engine

1— Gear Selector
2— Gear Enable/Differential Lock Switch

3— Park Brake Switch



Gear Enable/Differential Lock Switch



Park Brake Switch

TX1076184 —UN—16APR10

TX1076187A —UN—16APR10

OU90V02,000042C -19-25MAY10-1/1

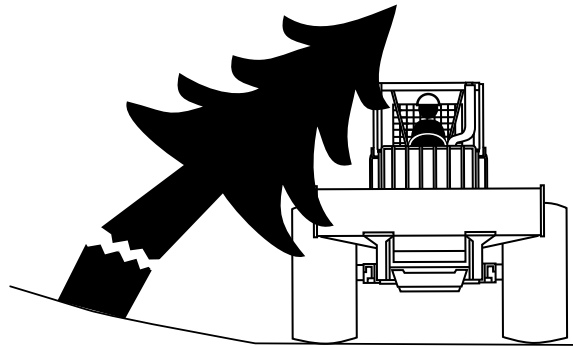
Avoid Work Site Hazards

Plan your operation before starting work. Check skidding trails and landings for stumps, large rocks, drop-offs, muddy areas and standing water. Carefully examine overhead for trees and branches that might fall or strike the operator's station. Take precautions to avoid these hazards.

Be sure co-workers and bystanders are clear of machine before operating. Keep bystanders away from attachments and unsupported loads over or near personnel. Keep co-workers a safe distance away when skidding, because logs may kick-out unexpectedly.

Use extra care if you must drive over logs or saplings that may be dislodged or spring-up against the machine or bystanders.

Keep bystanders clear at all times. Keep bystanders away from raised booms, attachments, and unsupported loads. Avoid swinging or raising booms, attachments, or loads over or near personnel. Use barricades or a signal person to keep vehicles and pedestrians away. Use a signal person if moving machine in congested areas or where visibility is restricted. Always keep signal person in view. Coordinate hand signals before starting machine.



T146611 —UN—22OCT01

Do not operate under low-hanging electrical wires. Contact may cause serious injury or death by electrocution.

Reduce machine speed when operating equipment with tool on or near ground when obstacles may be hidden (e.g., during snow removal or clearing mud, dirt, etc). At high speeds, hitting obstacles (rocks, uneven concrete or manholes) can cause a sudden stop. Always wear your seat belt. On units equipped with shoulder belts, always wear both the seat and shoulder belts and **do not lean forward** while operating.

OU90V02,000042D -19-12APR10-1/1

Operate Machine Safely

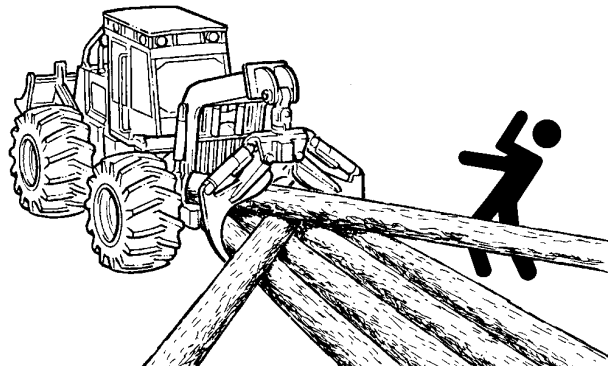
Wear the seat belt when operating this machine. Do not operate the machine if all elements of the operator protective structure (OPS) are not in place and in good repair.

Use extra care around landings where bystanders are more likely to be present. Do not skid logs past people that are not a safe distance away from logs that may swing or kick-out.

Use extra care when backing-up with logs attached. Make sure the de-limbing grate is in good repair and bystanders are a safe distance away.

Be careful when operating in muddy or frozen conditions because the machine may slide or tip more easily. Avoid

side slopes when possible. Drive straight up or down slopes to reduce the possibility of tipping.



T146610 —UN—22OCT01

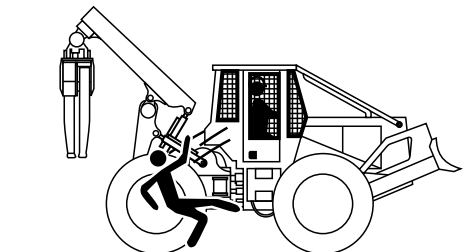
TX03679,000180A -19-03OCT07-1/1

Keep Riders Off Machine

Only allow operator on machine.

Riders are subject to injury. They may fall from machine, be caught between machine parts, or be struck by foreign objects.

Riders may obstruct operator's view or impair his ability to operate machine safely.



T145263 —UN—06SEP01

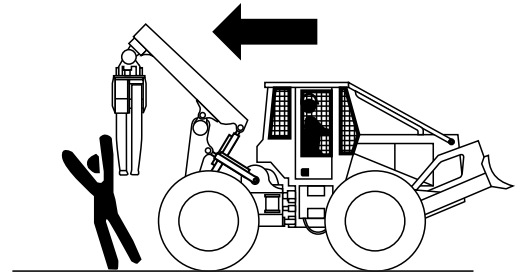
TX03679,0001800 -19-03OCT07-1/1

Avoid Backover Accidents

Before moving machine, be sure all persons are clear of machine path. Turn around and look directly for best visibility. Use mirror to assist in checking around machine. Keep windows and mirror clean, adjusted, and in good repair.

Be certain reverse warning alarm is working properly.

Use a signal person when backing if view is obstructed or when in close quarters. Keep signal person in view at all times. Use prearranged hand signals to communicate.



T145264 —UN—06SEP01

TX03679,0001801 -19-03OCT07-1/1

Avoid Machine Tip Over

Use seat belt at all times.

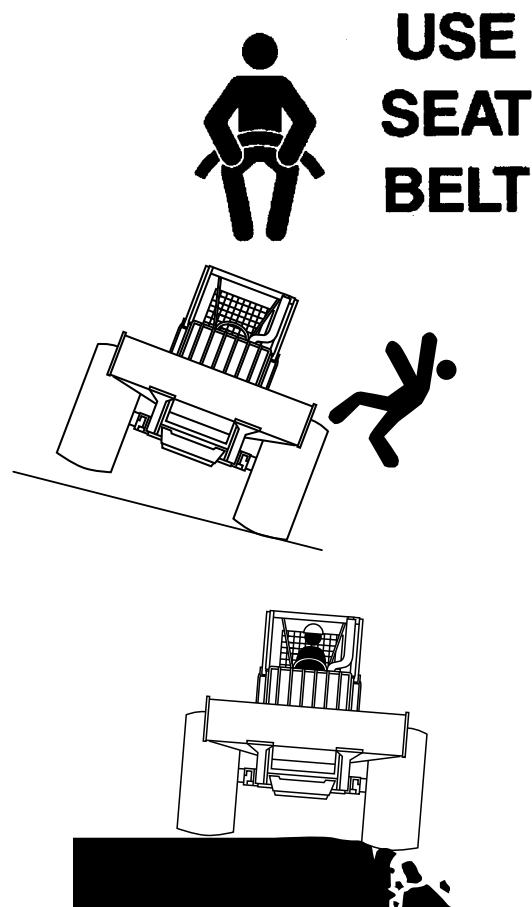
Do not jump if the machine tips. You will be unlikely to jump clear and the machine may crush you.

Load and unload from trucks or trailers carefully. Be sure truck is wide enough and on a firm level surface. Use loading ramps and attach them properly to truck bed.

Be careful on slopes. Avoid sharp turns. Avoid stumps, rocks and drop-offs when possible. Use extra care on soft, uneven or frozen ground.

Do not overload. Know the capacity of the machine. Be careful with heavy loads which may affect machine stability.

Ensure solid footing. Use extra care in soft ground conditions that may not uniformly support the wheels. Do not operate close to banks that may cave in and cause machine to tip or fall.



**USE
SEAT
BELT**

T133716 —19—14SEP00

T145266 —UN—06SEP01

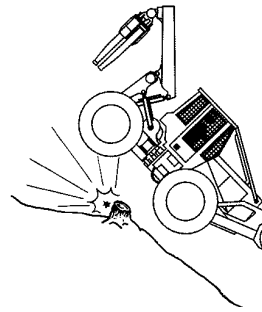
T146612 —UN—06NOV01

TX03679,0001802 -19-03OCT07-1/1

Operating on Slopes

Avoid side slope travel whenever possible. When working on steep slopes, travel as straight up and down as possible to prevent machine tip over.

Select low gear before starting down slope. The slope on which you can operate safely will be limited by ground condition and the load being handled. Use service brakes to control speed.



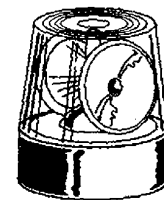
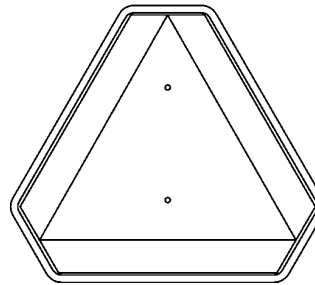
T145730—UN—20SEP01

TX03679,0001803 -19-03OCT07-1/1

Operating or Traveling On Public Roads

Machines that work near vehicle traffic or travel slower than normal highway speeds must have proper lighting and markings to assure they are visible to other drivers.

Install additional lights, beacons, slow moving vehicle (SMV) emblems, or other devices and use as required to make the machine visible and identify it as a work machine. Check state and local regulations to assure compliance. Keep these devices clean and in working condition.



T141891—UN—22MAY01

TX03679,00017C8 -19-03OCT07-1/1

Inspect and Maintain ROPS

A damaged roll-over protective structure (ROPS) should be replaced, not reused.

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.

If ROPS was loosened or removed for any reason, inspect it carefully before operating the machine again.

To maintain the ROPS:

- Replace missing hardware using correct grade hardware.
- Check hardware torque.
- Check isolation mounts for damage, looseness or wear; replace them if necessary.
- Check ROPS for cracks or physical damage.

TX03679,000179F -19-03OCT07-1/1

Keep the Operator Protective Structure (OPS) in Place

It is important to keep the operator protective structure (OPS) in place (doors, screens, windows, windshield, etc.) to minimize hazards from whipping or intruding objects. To maintain OPS protection, replace damaged parts immediately.

The polycarbonate windows are part of the operator protection system. Replace if damaged, cloudy, or has visible micro-cracking or crazing.

The protection offered by OPS will be impaired if OPS is subjected to structural damage, is involved in an overturn incident, or is altered by welding, bending, drilling, or cutting. Damaged OPS components should be replaced, not reused.

Keep all bolts and attaching hardware tight.

OU90V02,0000477 -19-20MAY10-1/1

Add and Operate Attachments Safely

Always verify compatibility of attachments by contacting your authorized dealer. Adding unapproved attachments may affect machine stability or reliability, and may create a hazard for others near the machine.

Ensure that a qualified person is involved in attachment installation. Add guards to machine if operator protection

is required or recommended. Verify that all connections are secure and attachment responds properly to controls.

Carefully read attachment manual and follow all instructions and warnings. In an area free of bystanders and obstructions, carefully operate attachment to learn its characteristics and range of motion.

TX03679,00016F0 -19-03OCT07-1/1

Park and Prepare for Service Safely

Warn others of service work. Always park and prepare your machine for service or repair properly.

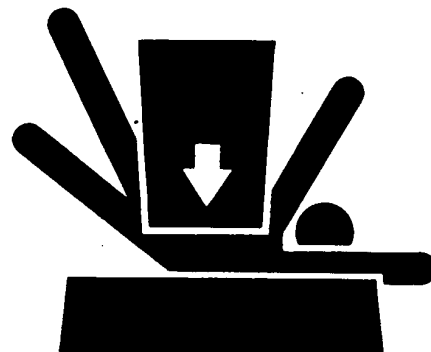
- Park machine on a level surface and lower equipment to the ground.
- Engage park brake.
- Stop engine and remove key.
- Install articulation locking bar.
- Attach a "Do Not Operate" tag in an obvious place in the operator's station.

IMPORTANT: Engine side panels may be warm immediately after machine shut down and gloves may need to be worn.

Support machine or attachment before working under it.

- Do not support machine with any hydraulically actuated tools or attachments.
- Do not support machine with cinder blocks or wooden pieces that may crumble or crush.
- Do not support machine with a single jack or other devices that may slip out of place.

Understand service procedures before beginning repairs. Keep service area clean and dry. Use two people whenever the engine must be running for service work.



T133332 —19—14DEC01

TS229 —UN—23AUG88

OUTJ003,00007AB -19-17AUG06-1/1

Service Tires Safely

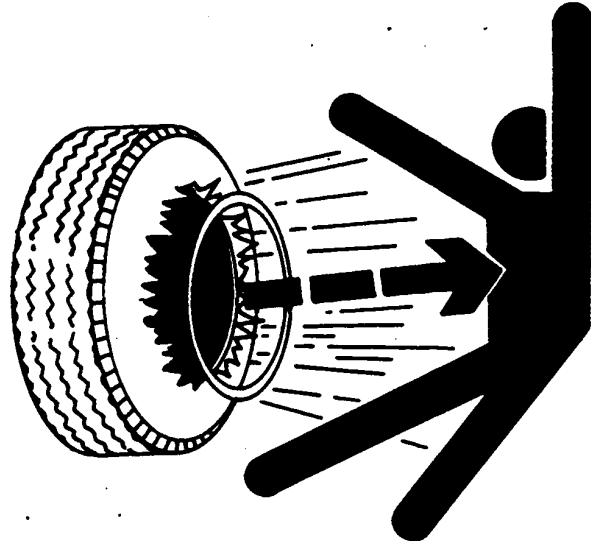
Explosive separation of a tire and rim parts can cause serious injury or death.

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.



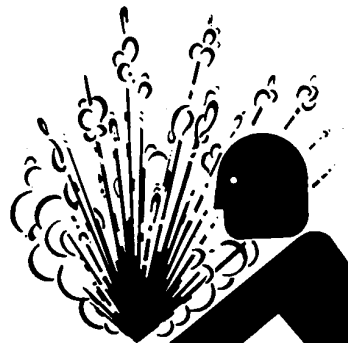
TS211 —UN—23AUG88

DX,RIM -19-24AUG90-1/1

Service Cooling System Safely

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

Do not service radiator through the radiator cap. Only fill through the surge tank filler cap. Shut off engine. Only remove surge tank filler cap when cool enough to touch with bare hands. Slowly loosen cap to relieve pressure before removing completely.



TS281 —UN—23AUG88

VD76477,0001157 -19-20DEC06-1/1

Service Accumulator Systems Safely

Escaping fluid or gas from pressurized hydraulic accumulator systems can cause serious injury. Extreme heat can cause the accumulator to burst, and pressurized lines can be accidentally cut. Do not weld or use a torch near a pressurized accumulator or pressurized line.

Relieve pressure from the hydraulic system before removing accumulator. Never attempt to relieve hydraulic system or accumulator pressure by loosening a fitting.

Accumulators cannot be repaired.



TS281 —UN—23AUG88

DX,WW,ACCLA -19-15APR03-1/1

Remove Paint Before Welding or Heating

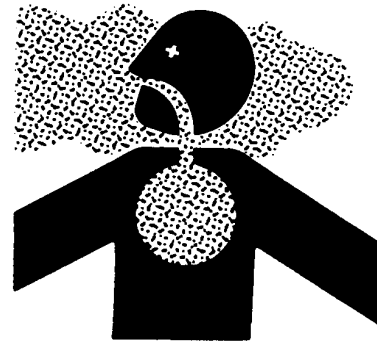
Avoid potentially toxic fumes and dust.

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

Remove paint before heating:

- Remove paint a minimum of 100 mm (4 in.) from area to be affected by heating. If paint cannot be removed, wear an approved respirator before heating or welding.
- 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.

Do not use a chlorinated solvent in areas where welding will take place.



TS220 —UN—23AUG88

Do all work in an area that is well ventilated to carry toxic fumes and dust away.

Dispose of paint and solvent properly.

DX,PAINT -19-24JUL02-1/1

Make Welding Repairs Safely

IMPORTANT: Disable electrical power before welding. Turn off main battery switch or disconnect positive battery cable. Separate harness connectors to engine and vehicle microprocessors.

Avoid welding or heating near pressurized fluid lines. Flammable spray may result and cause severe burns if pressurized lines fail as a result of heating. Do not let heat go beyond work area to nearby pressurized lines.

Remove paint properly. Do not inhale paint dust or fumes. Use a qualified welding technician for structural repairs.



T133547 —UN—31AUG00

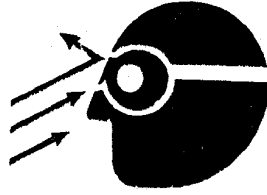
Make sure there is good ventilation. Wear eye protection and protective equipment when welding.

TX03679,00016D5 -19-04JUN07-1/1

Drive Metal Pins Safely

Always wear protective goggles or safety glasses and other protective equipment before striking hardened parts. Hammering hardened metal parts such as pins and bucket teeth may dislodge chips at high velocity.

Use a soft hammer or a brass bar between hammer and object to prevent chipping.



T133738 —JUN—14SEP00

TX03679,0001745 -19-07SEP06-1/1