

# 3520 and 3522 Sugar Cane Harvester Repair Manual

## TECHNICAL MANUAL 3520 and 3522 Sugar Cane Harvester Repair

TM100419 02APR13 (ENGLISH)

For complete service information also see:

3520 and 3522 Sugar Cane Harvester Diagnostic Technical Manual .....	TM100519
PowerTech Plus 9.0 L Tier 3/Stage IIIA OEM Diesel Engines — Base Engine.....	CTM400
PowerTech Plus 9.0L Diesel Engines — Level 14 Electronic Fuel System With Denso HPCR..	CTM385
Alternators and Starting Motors .....	CTM77
John Deere Starting Motor Repair .....	CTM207
120 Series Hydraulic Cylinders .....	CTM114319
John Deere Engine Repair.....	CTM104


**John Deere Thibodaux**  
PRINTED 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.

RW67285,0000B0A -19-22OCT01-1/1

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*Original Instructions. All information, illustrations and specifications in this manual are based on the latest information available at the time of publication.*

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A John Deere ILLUSTRATION ® Manual



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manual**

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**Have any questions please write to me:  
[admin@servicemanualperfect.com](mailto:admin@servicemanualperfect.com)**

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## Recognize Safety Information

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

Follow recommended precautions and safe operating practices.



T81389 —UN—07DEC88

DX,ALERT -19-29SEP98-1/1

## 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.



TS187 —19—30SEP88

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

## 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.



TS201 —UN—23AUG88

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

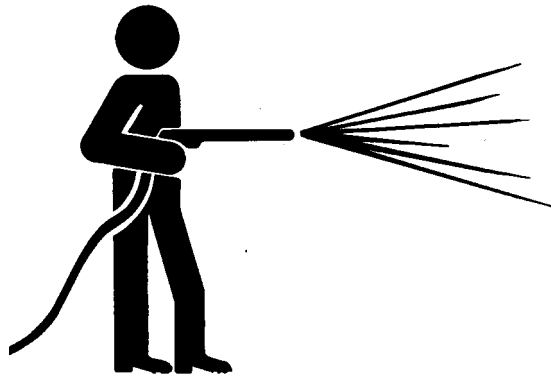
DX,READ -19-16JUN09-1/1



## 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.



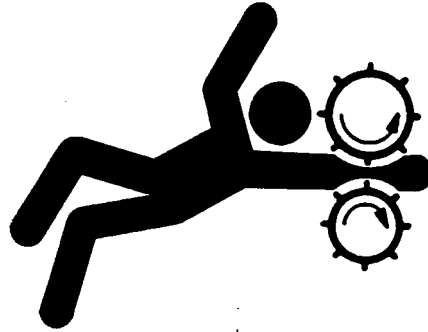
T6642EJ —UN—18OCT88

DX,CLEAN -19-04JUN90-1/1

## 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.

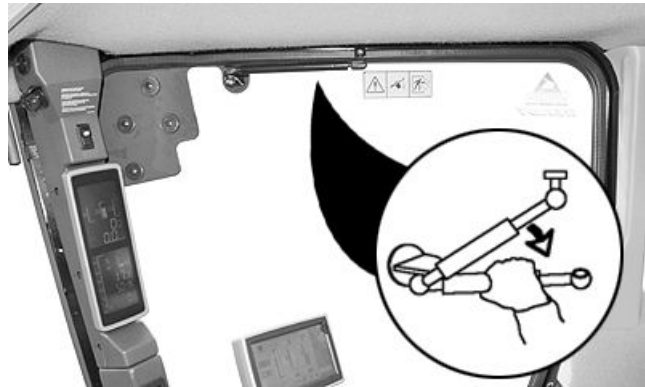


TS228 —UN—23AUG88

DX,LOOSE -19-04JUN90-1/1

## Emergency Exit

The right-hand cab window may be used as an emergency exit. Disengage the gas-filled spring on the sidewall of the cab and open the window.



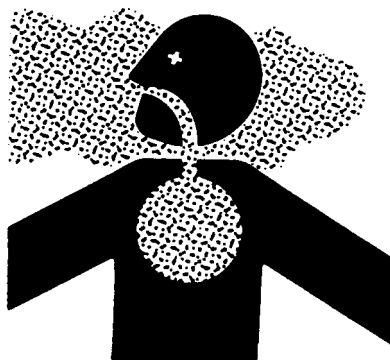
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GB52027,0001149 -19-26MAR13-1/1

## 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.

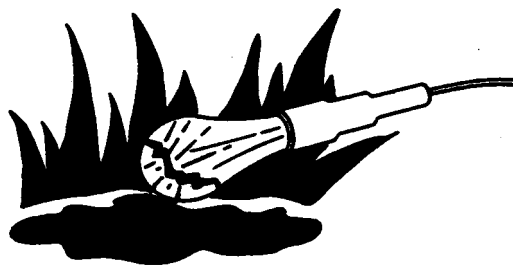


TS220—UN—23AUG88

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

## 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.



TS223—UN—23AUG88

DX,LIGHT -19-04JUN90-1/1

## Replace Safety Signs

Replace missing or damaged safety signs. Use this operator's manual for correct safety sign placement.

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



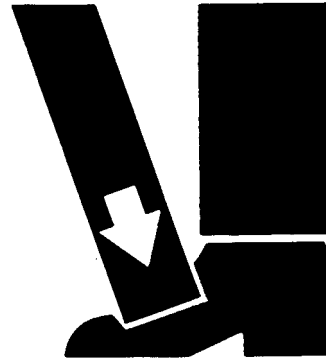
TS201—UN—23AUG88

DX,SIGNS -19-18AUG09-1/1

## 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.



TS226 —UN—23AUG88

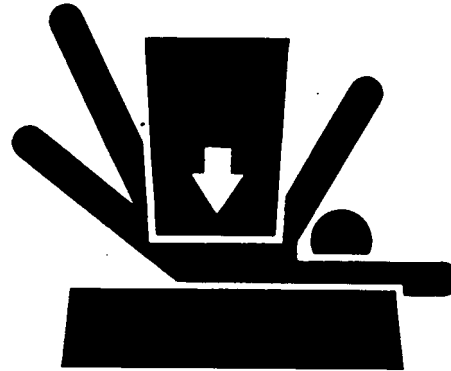
DX,LIFT -19-04JUN90-1/1

## Support Machine Properly

Always lower the attachment or implement to the ground before you work on the machine. If the work requires that the machine or attachment be lifted, provide secure support for them. If left in a raised position, hydraulically supported devices can settle or leak down.

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.

When implements or attachments are used with a machine, always follow safety precautions listed in the implement or attachment operator's manual.



TS229 —UN—23AUG88

DX,LOWER -19-24FEB00-1/1

## 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 accidentally burst when heat goes beyond the immediate flame area.



TS953 —UN—15MAY90

DX,TORCH -19-10DEC04-1/1

## Remove Paint Before Welding or Heating

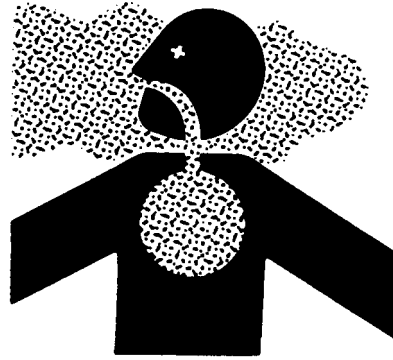
Avoid potentially toxic fumes and dust.

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

## Precautions for Welding

Remove paint before welding or heating (see Safety Section in this manual for more information on paint removal and high-pressure lines).

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

**IMPORTANT:** Welding on the engine is **NOT ALLOWED**. If welding must be performed on the machine, follow these precautions.

**IMPORTANT:** High currents or electrostatic discharge into electronic components from welding may cause permanent damage.

1. Remove paint from the area to be welded and ground cable clamp location.
2. Disconnect the negative (-) battery cable(s) or open battery (-) switch if equipped.



TS953—UN—15MAY90

3. Disconnect the positive (+) battery cable(s) or open battery (+) switch if equipped.
4. Clear or move any wiring harness sections away from the welding area.
5. Welding on engine components is not allowed.
6. Never connect the welder ground to any engine component or engine driven components that may be connected to the engine.
7. After welding, reverse steps 2—3.

DX,WELDING,PRECAUTIONS -19-06DEC10-1/1

## Live With Safety

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



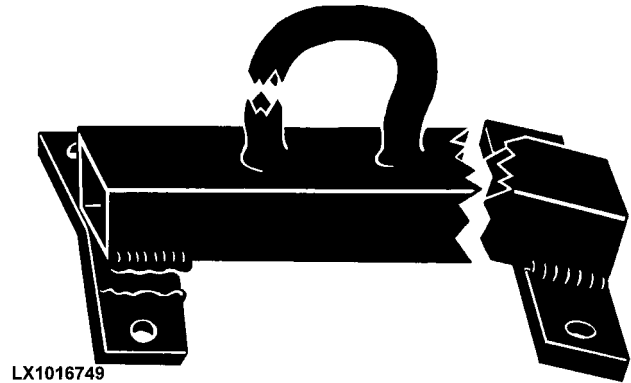
TS231 —19—07OCT88

DX,LIVE -19-25SEP92-1/1

## Construct Dealer-Made Tools Safely

Faulty or broken tools can result in serious injury. When constructing tools, use proper, quality materials, and good workmanship.

Do not weld tools unless you have the proper equipment and experience to perform the job.

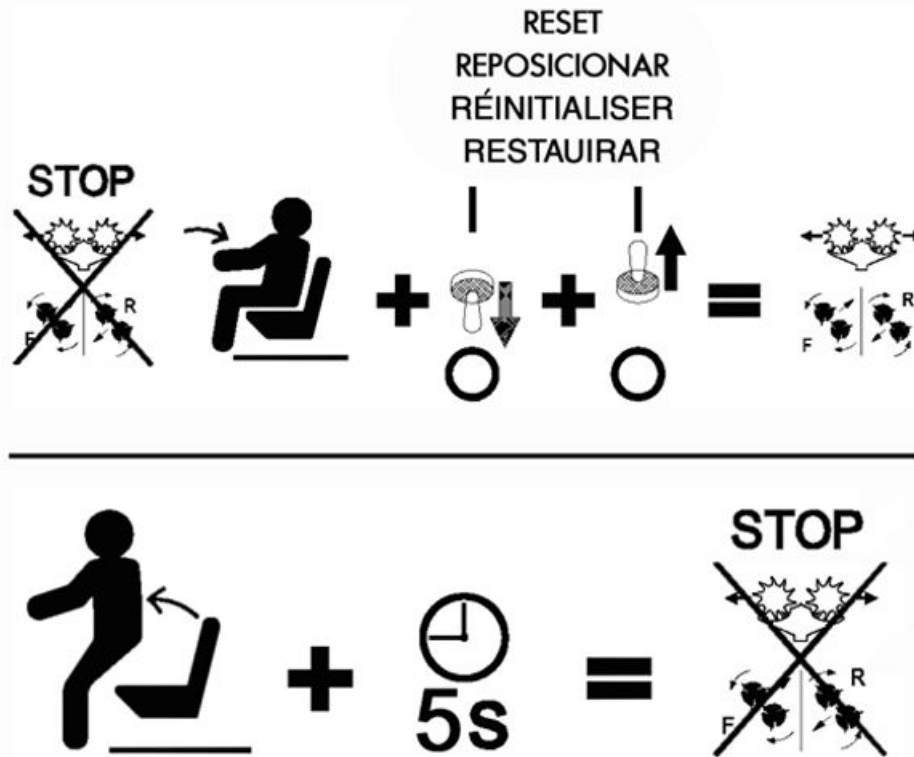


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DX,SAFE,TOOLS -19-10OCT97-1/1

## Seat Safety Switch



The operator must be seated and reset switch activated to start harvesting functions.

functions, the operator must return to seated position and engage reset switch located on the armrest console.

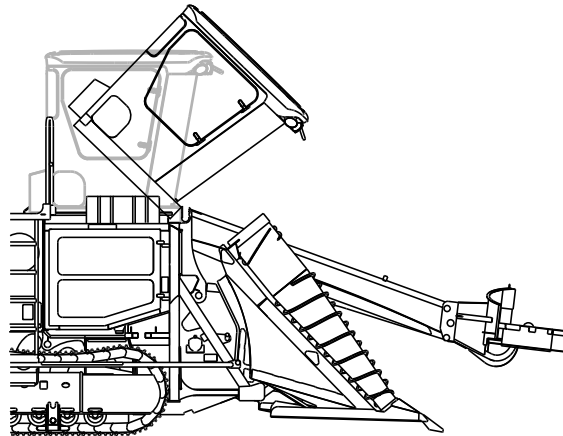
If the operator leaves the seat for more than five seconds, harvesting functions will stop. To restart harvesting

WM05597,00007DF -19-11FEB13-1/1

CM023500020 —UN—07FEB05

## Tilting the Cab

The entire cab tilts forward, providing access to the engine for maintenance and repair by a qualified technician. The cab pivots at the front, raised by a single hydraulic cylinder. Make sure there are no people near the machine. Be sure that windows are closed, articles are removed from the cab and the topper boom is completely lowered to prevent damage. (See Service Section for tilting the cab procedure).



WM05597,00007E0 -19-21FEB13-1/1

T8130000499 —UN—21FEB13

## Protect Bystanders

Be sure everyone is clear of the harvester before starting the engine or moving the steering wheel.



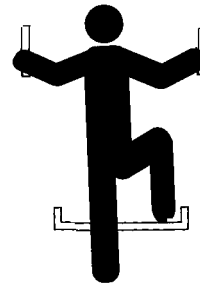
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T803324,000062F -19-13APR05-1/1

## Use Steps and Handholds Correctly

Prevent falls by facing the machine when getting on and off. Maintain 3-point contact with steps, handholds, and handrails.

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.



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DX,WW,MOUNT -19-12OCT11-1/1

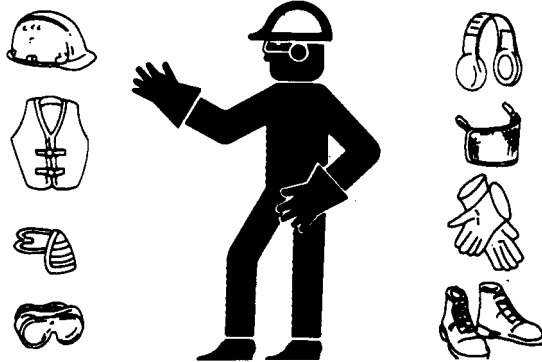
## Wear Protective Clothing

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.



TS206 —UN—23AUG88

DX,WEAR -19-10SEP90-1/1

## Handle Fuel Safely—Avoid Fires

Handle fuel with care: it is highly flammable. Do not refuel the machine while smoking or when near open flame or sparks.

Always stop engine before refueling machine. Fill fuel tank outdoors.

Prevent fires by keeping machine clean of accumulated trash, grease, and debris. Always clean up spilled fuel.

Use only an approved fuel container for transporting flammable liquids.

Never fill fuel container in pickup truck with plastic bed liner. Always place fuel container on ground before refueling. Touch fuel container with fuel dispenser nozzle before removing can lid. Keep fuel dispenser nozzle in contact with fuel container inlet when filling.



TS202 —UN—23AUG88

Do not store fuel container where there is an open flame, spark, or pilot light such as within a water heater or other appliance.

DX,FIRE1 -19-12OCT11-1/1

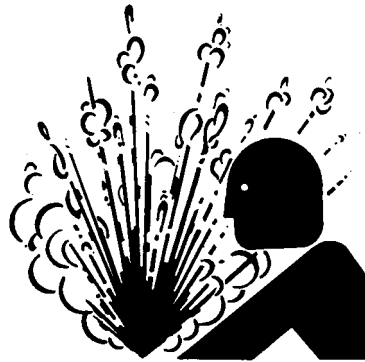
## Service Accumulator Systems Safely

Escaping fluid or gas from systems with pressurized accumulators that are used in air conditioning, hydraulic, and air brake 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 pressurized system before removing accumulator.

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.



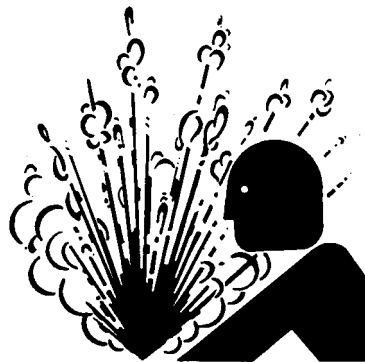
TS281 —UN—23AUG88

DX,WW,ACCLA2 -19-22AUG03-1/1

## Service Cooling System Safely

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

Shut off engine. Only remove filler cap when cool enough to touch with bare hands. Slowly loosen cap to first stop to relieve pressure before removing completely.



TS281 —UN—23AUG88

DX,RCAP -19-04JUN90-1/1

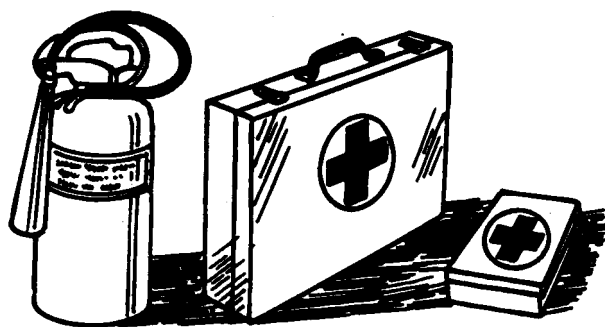


## Prepare for Emergencies

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.



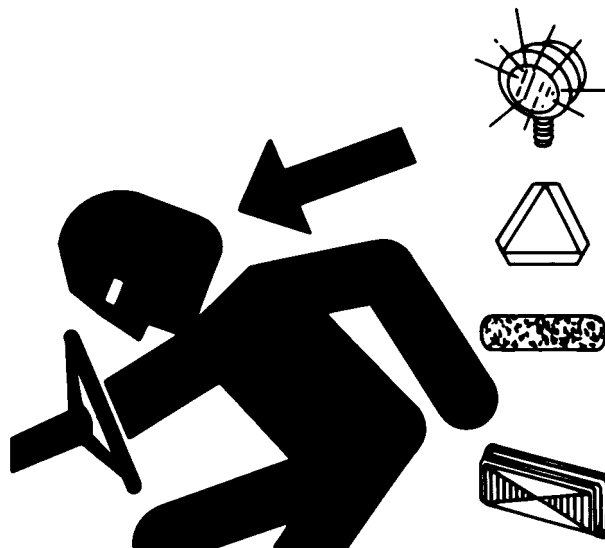
TS291 —UN—23AUG88

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

## Use Safety Lights and Devices

Prevent collisions between other road users, slow moving tractors with attachments or towed equipment, and self-propelled machines on public roads. Frequently check for traffic from the rear, especially in turns, and use turn signal lights.

Use headlights, flashing warning lights, and turn signals day and night. Follow local regulations for equipment lighting and marking. Keep lighting and marking visible, clean, and in good working order. Replace or repair lighting and marking that has been damaged or lost. An implement safety lighting kit is available from your John Deere dealer.



TS951 —UN—12APR90

DX,FLASH -19-07JUL99-1/1

## Using Cylinder Safety Stops

When working under the harvester, always raise the machine all the way up. Raise the machine, lower the safety stops on suspension height cylinders and slowly lower the harvester until the suspension is completely locked. If a hose bursts, the safety stops limit the course of the cylinders and the harvester will remain raised.



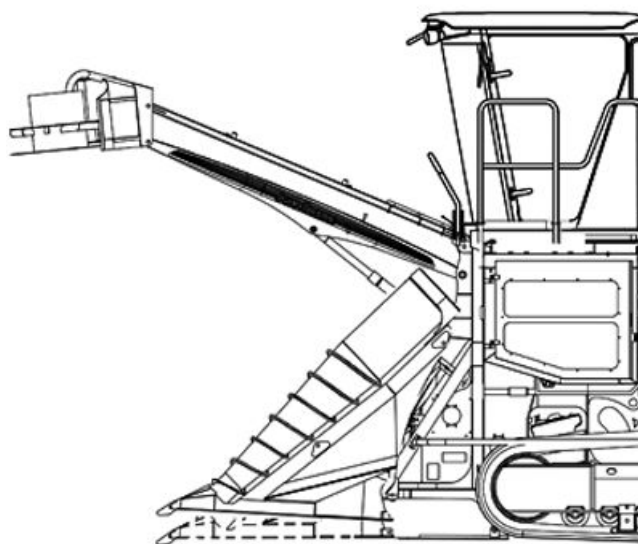
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OU64006,0000157 -19-26MAR13-1/1

## Safe Transport of Harvester

Before driving harvester on public roads, raise the topper. It should not, however, obstruct the operator's view.

Unless other conditions require, normal configuration of the harvester for road transport would be with frame raised to level, crop dividers raised, and topper and elevator lowered to not exceed height of the cab.



CQ280276 —UN—27FEB08

WM05597,00007FD -19-19FEB13-1/1

## Avoid High-Pressure Fluids

Inspect hydraulic hoses periodically – at least once per year – for leakage, kinking, cuts, cracks, abrasion, blisters, corrosion, exposed wire braid or any other signs of wear or damage.

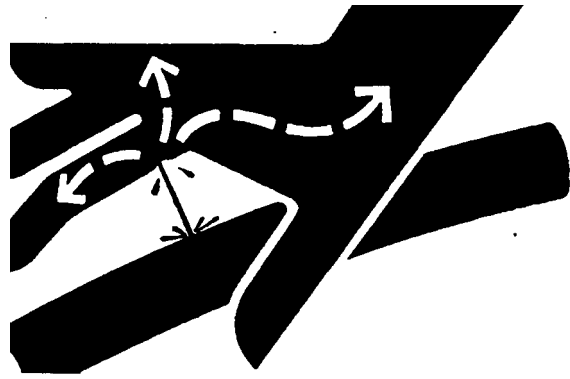
Replace worn or damaged hose assemblies immediately with John Deere approved replacement parts.

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 -19-12OCT11-1/1

X9811 —UN—23AUG88

## Use Caution on Hillsides

Avoid holes, ditches, and obstructions that may cause the harvester to tip over, especially on hillsides.

**NEVER** drive near the edge of a gully or steep embankment because it may cave in.

The danger of an overturn increases greatly with narrow tread, 2032 mm (80 in.) or less, and with high speed.

Keep hydraulic oil level at upper level when operating on hillsides. Low oil level might result in loss of steering. If this should happen, hold harvester with brakes, shift to NEUTRAL, apply parking brake, stop engine, and add hydraulic oil to proper level.

Before operating on extremely steep slopes, fill hydraulic system overfull in sight glass, from 4 to 8 L (1 to 2 gal.). This is particularly important when using large hydraulic cylinders, due to the volume of oil used to extend them.



WM05597,00007FE -19-19FEB13-1/1

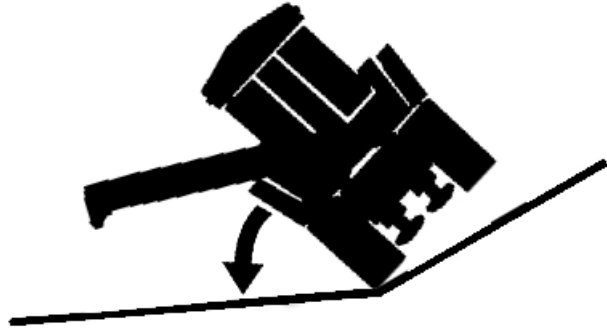
CM989999019 —UN—06JAN00

## Use Caution On Slopes When Turning

Ballast of machine is greatly affected by position of elevator.

When operating on slopes, elevator **MUST** be centered behind machine before turning.

The danger of an overturn increases greatly when elevator is swung to left or right during a turn.



T8130000097 —UN—10JAN13

JR07957,000023F -19-10JAN13-1/1

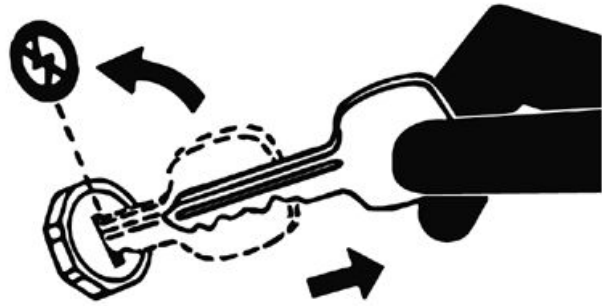
## Stopping and Parking

Your ability to stop your harvester and park it safely is just as important as being able to get it underway safely.

Harvester rollover, collisions, runaway tractors, and people being crushed under machines can happen when operators ignore safety.

To avoid these accidents, take some precautions:

- Signal before stopping, turning, or slowing down on highways.
- Pull over to right-hand shoulder of highway before stopping, if possible.
- Slow down before braking.
- Pump brakes when stopping on slippery surfaces like ice, snow, mud, or loose gravel.
- Shift to park or set parking brake.
- Turn off all electrical switches and remove key.



CN989999020 —UN—06JAN00

AG,T803324,55 -19-14JUL99-1/1

## Service Tires Safely

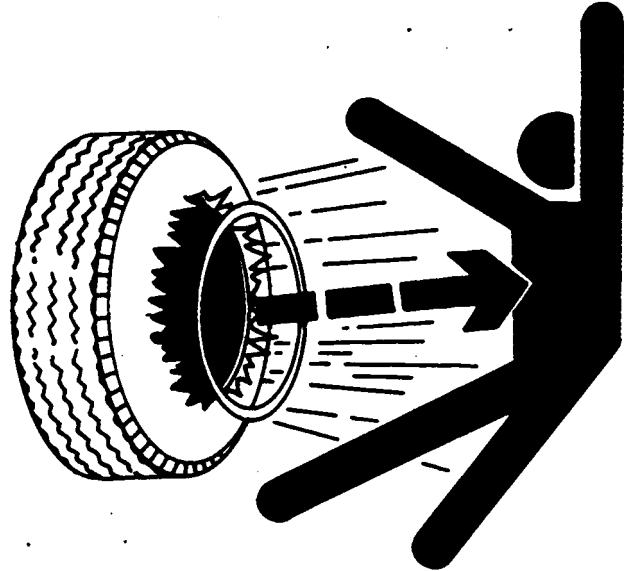
Explosive separation of a tire and rim parts can cause serious injury or death.

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

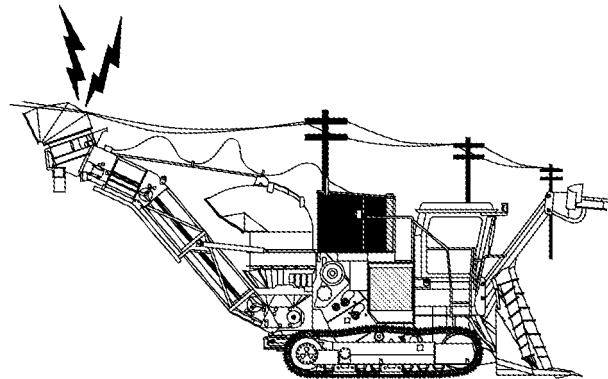
DX,RIM -19-24AUG90-1/1

## Avoid Electrical Power Lines

Put the topper and elevator in transport position before driving on public roads.

Secure radio aerial in its transport position before driving on public roads, it may come into contact with low-hanging electrical cables. This would result in the operator suffering a severe electrical shock.

Maintain minimum distance of 3 m (10 ft.) plus twice the length of power line insulators.



CM989999024 —UN—06JAN00

JR07957,000027F -19-18FEB13-1/1

## Keep Hands Away from Knives

Never attempt to clear obstructions in cutting areas unless engine is shut off and key removed. Everyone must be clear of the harvester before starting the engine.

Cutting/Shearing areas: topper, side knives, vine knives, base cutter blades, cooling fans, extractors, and elevator slats.



CM98999025 —UN—06JAN00

WM05597,0000800 -19-19FEB13-1/1

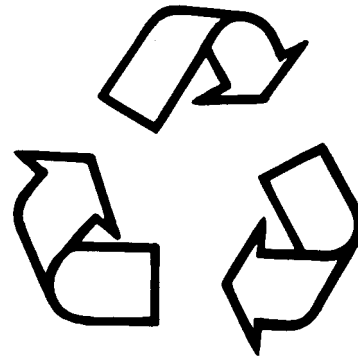
## Dispose of Waste Properly

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.



TS1133 —UN—26NOV90

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 -19-03MAR93-1/1

## 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

## 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:

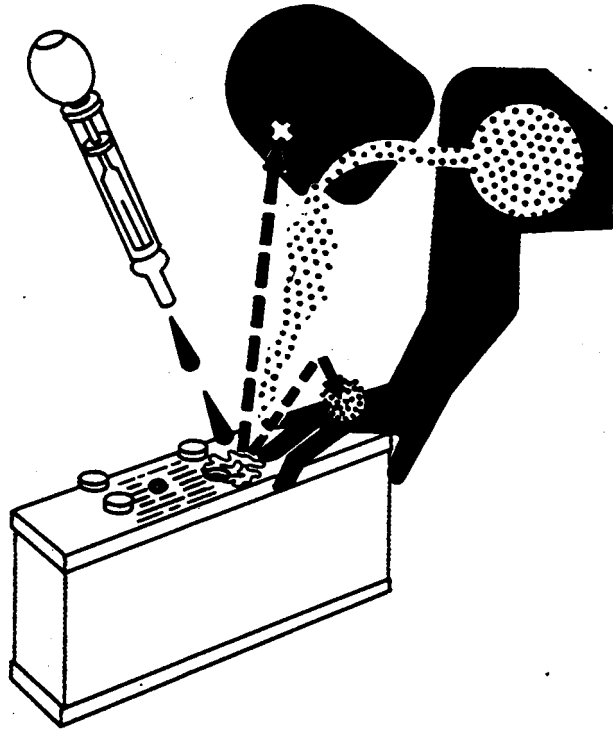
1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves.
3. Avoiding breathing fumes when electrolyte is added.
4. Avoiding spilling or dripping electrolyte.
5. Use proper jump start procedure.

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 15—30 minutes. Get medical attention immediately.

If acid is swallowed:

1. Do not induce vomiting.
2. Drink large amounts of water or milk, but do not exceed 2 L (2 quarts).
3. Get medical attention immediately.



TS203 —UN—23AUG88

DX,POISON -19-21APR93-1/1