

670 and 770 Tractors

(Serial No. 100,001-)

**John Deere Horicon Works
OMM95326 Issue J0**

LITHO IN U.S.A.
ENGLISH

Introduction

THANK YOU for purchasing a John Deere product.

READ THIS MANUAL carefully to learn how to operate and service your machine correctly. Failure to do so could result in personal injury or equipment damage.

THIS MANUAL SHOULD BE CONSIDERED a permanent part of your machine and should remain with the machine when you sell it.

RIGHT-HAND AND LEFT-HAND sides are determined by facing in the direction the implement will travel when going forward.



THIS MACHINE is of metric design. Measurements in this manual are metric with the customary U.S. measurement following. Use only metric hardware and tools as specified.

WRITE IDENTIFICATION NUMBERS in the Specifications section. Accurately record all the numbers to help in tracing the machine should it be stolen. Your dealer also needs these numbers when

you order parts. If this manual is kept on the machine, also file the identification numbers in a secure place off the machine.

WARRANTY is provided as part of John Deere's support program for customers who operate and maintain their equipment as described in this manual. The warranty is explained on the warranty certificate which you should have received from your dealer.

This warranty provides you the assurance that John Deere will back its products where defects appear within the warranty period. In some circumstances, John Deere also provides field improvements, often without charge to the customer, even if the product is out of warranty. Should the equipment be abused, or modified to change its performance beyond the original factory specifications, the warranty will become void and field improvements may be denied. Setting fuel delivery above specifications or otherwise overpowering machines will result in such action.

THE TIRE MANUFACTURER'S warranty supplied with your machine may not apply outside the U.S.



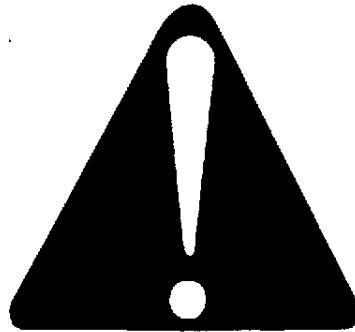
M61608
-UN-26SEP88

Safety

RECOGNIZE SAFETY INFORMATION

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

Follow recommended precautions and safe operating practices.



DX,ALERT -19-04JUN90

T81389 -UN-07DEC88

UNDERSTAND SIGNAL WORDS

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

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



DX,SIGNAL -19-04JUN90

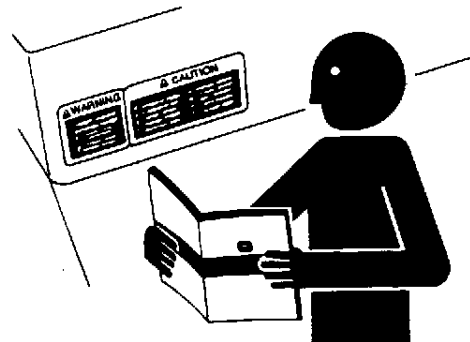
TS187 -19-30SEP88

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.

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.



READ -19-28JUN90

TS201 -UN-23AUG88

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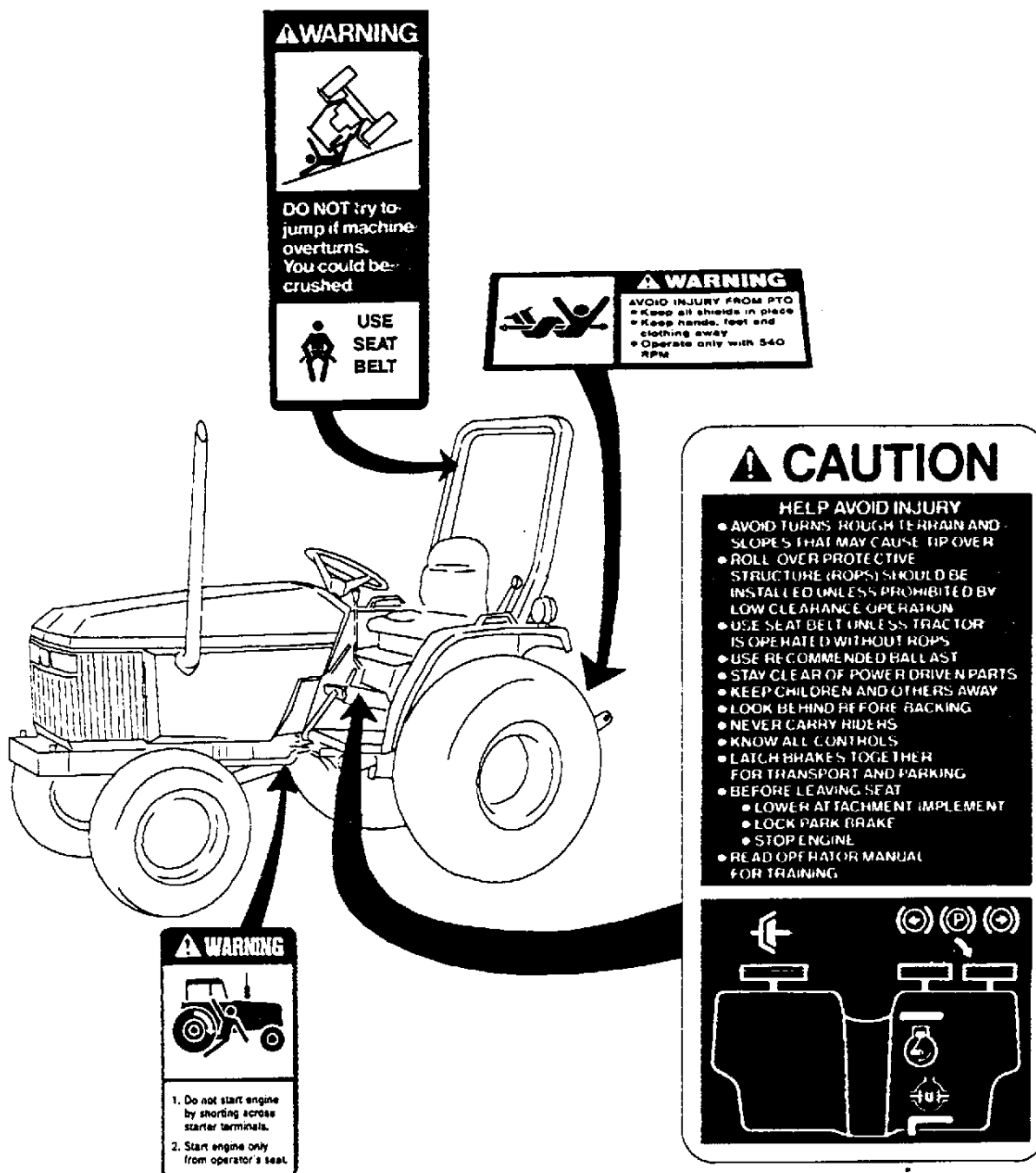
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-19-19JAN89

M61613

MX,SAGD,A -19-09OCT90



PROTECT CHILDREN

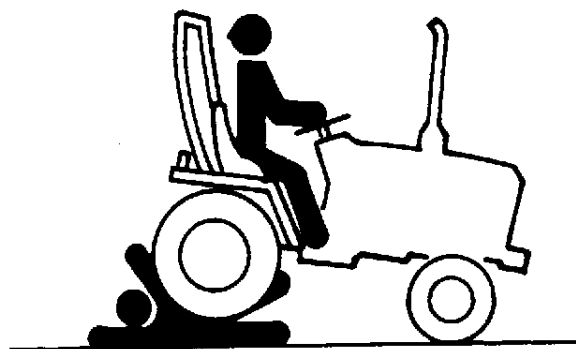
Keep children and others away when you operate machine.

BEFORE YOU BACK UP:

- Stop the PTO.
- Look behind tractor for children.

Do not let children operate tractor.

Do not let children ride on tractor or any implement.



MX,SAGD,B -19-09OCT90

M61505 -UN-26SEP88

AVOID TIPPING

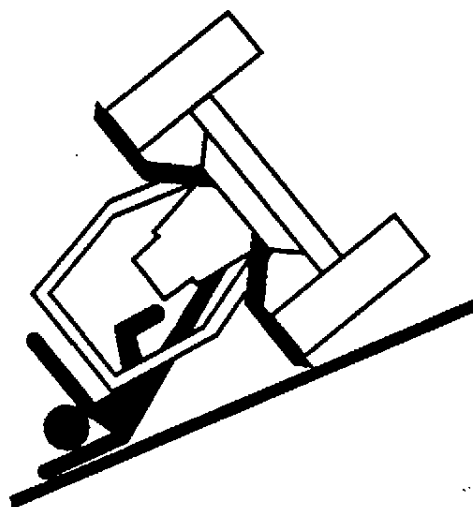
Do not drive where machine could slip or tip.

Stay alert for holes, rocks, and roots in the terrain, and other hidden hazards. Keep away from drop-offs.

Slow down before you make a sharp turn.

Driving forward out of a ditch or mired condition or up a steep slope could cause tractor to tip over backward. Back out of these situations if possible.

Use care when pulling loads or using heavy equipment. Use counterweights or wheel weights suggested in this operator's manual.



MX,SAGD,C -19-09OCT90

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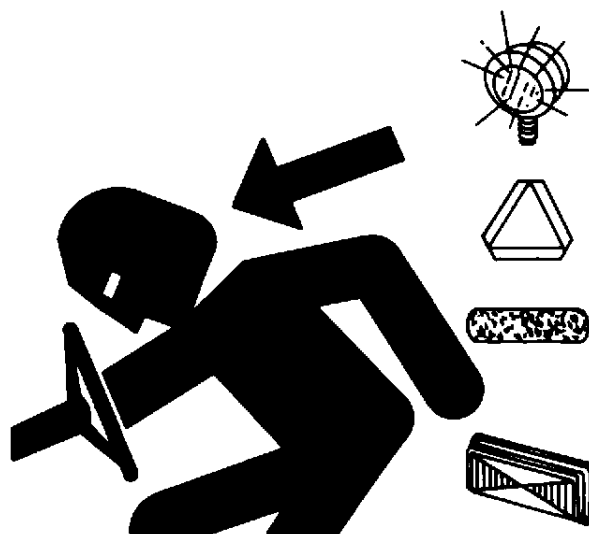


USE SAFETY LIGHTS AND DEVICES

Slow moving tractors, self-propelled equipment and towed implements or attachments can create a hazard when driven on public roads. They are difficult to see, especially at night. Avoid personal injury or death resulting from collision with a vehicle.

Flashing warning lights and turn signals are recommended whenever driving on public roads. To increase visibility, use the lights and devices provided with your machine. For some equipment, install extra flashing warning lights.

Keep safety items in good condition. Replace missing or damaged items. An implement safety lighting kit is available from your John Deere dealer.



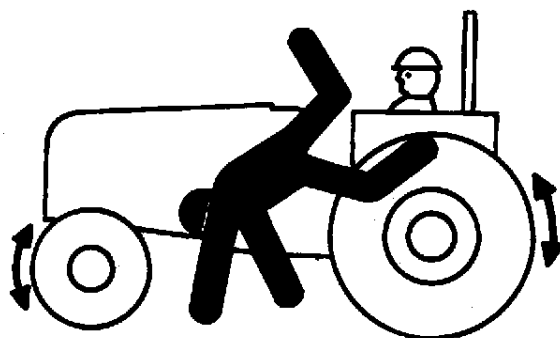
DX,FLASH -19-04JUN90

TS951 -UN-12APR90

KEEP RIDERS OFF MACHINE

Only allow the operator on the machine. Keep riders off.

Riders on machine are subject to injury such as being struck by foreign objects and being thrown off of the machine. Riders also obstruct the operator's view resulting in the machine being operated in an unsafe manner.



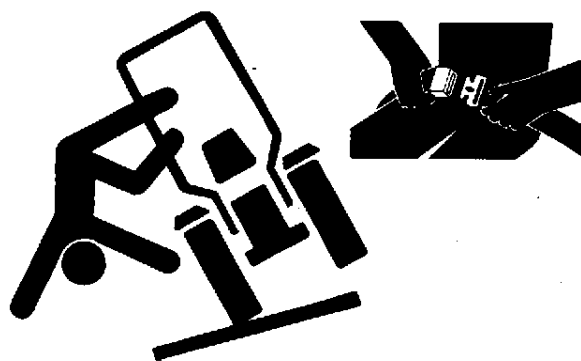
DX,RIDER -19-04JUN90

TS290 -UN-23AUG88

USE SEAT BELT PROPERLY

Use a seat belt when you operate with a roll-over protective structure (ROPS) or cab to minimize chance of injury from an accident such as an overturn.

Do not use a seat belt if operating without a ROPS or cab.



DX,ROPS1 -19-24AUG90

TS205 -UN-23AUG88



CAUTION: 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.

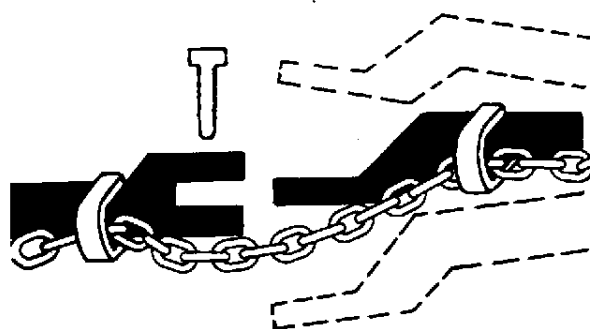
DX,RIM1 -19-04SEP90

USE A SAFETY CHAIN

A safety chain will help control drawn equipment should it accidentally separate from the drawbar.

Using the appropriate adapter parts, attach the chain to the tractor drawbar support or other specified anchor location. Provide only enough slack in the chain to permit turning.

See your John Deere dealer for a chain with a strength rating equal to or greater than the gross weight of the towed machine. Do not use safety chain for towing.



TS217 -UN-23AUG88

DX,CHAIN -19-04JUN90



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.



DX,FIRE1 -19-04JUN90

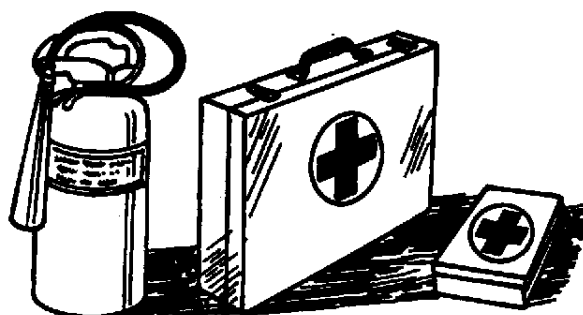
TS202 -UN-23AUG88

PREPARE FOR EMERGENCIES

Be prepared if a fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.



DX,FIRE2 -19-04JUN90

TS291 -UN-23AUG88

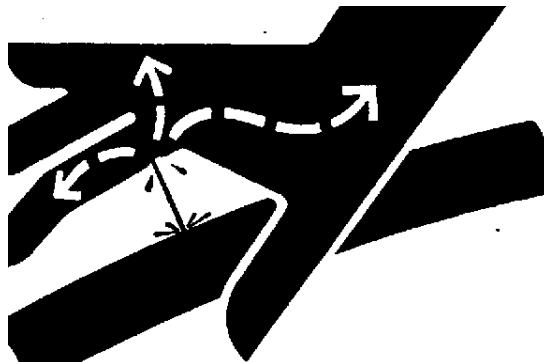
AVOID HIGH-PRESSURE FLUIDS

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 may call the Deere & Company Medical Department in Moline, Illinois, or other knowledgeable medical source.



DX,FLUID,NA -19-11JUN90

X9811 -UN-23AUG88



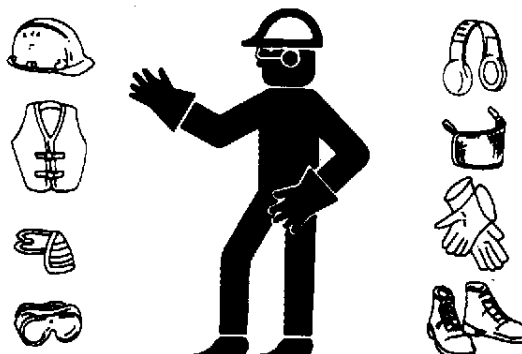
WEAR PROTECTIVE CLOTHING

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

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

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

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



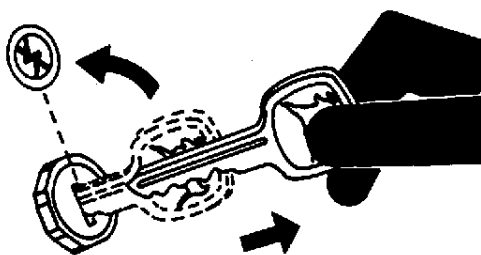
DX,WEAR -19-10SEP90

TS206 -UN-23AUG88

PARK MACHINE SAFELY

Before working on the machine:

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



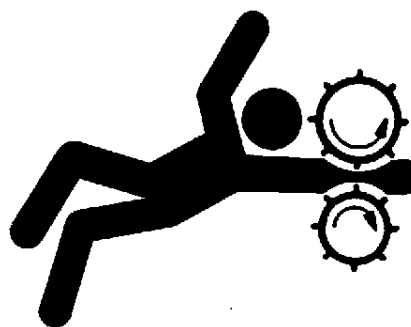
DX,PARK -19-04JUN90

TS230 -UN-24MAY89

SERVICE MACHINES SAFELY

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

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



DX,LOOSE -19-04JUN90

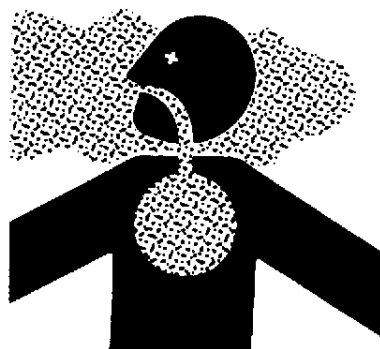
TS228 -UN-23AUG88



WORK IN VENTILATED AREA

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

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



DX,AIR

-19-04JUN90

TS220
-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

TS223
-UN-23AUG88



PREVENT ACID BURNS

Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into eyes.

Avoid the hazard by:

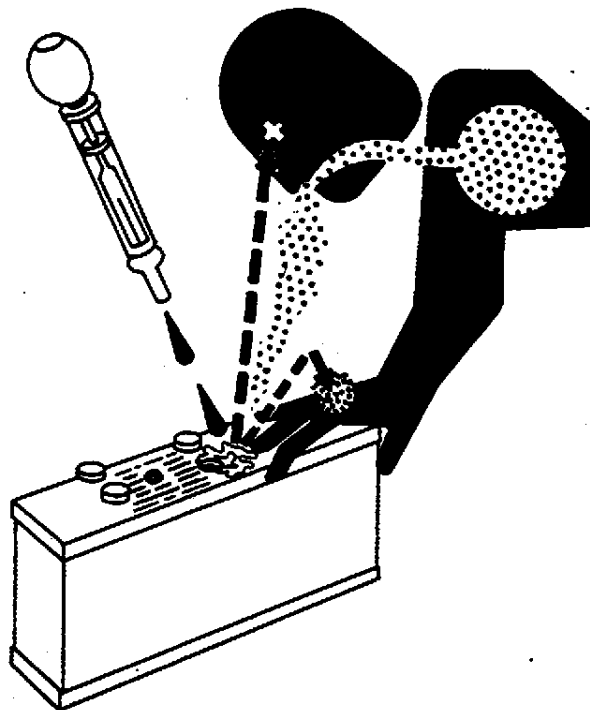
1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves.
3. Avoiding breathing fumes when electrolyte is added.
4. Avoiding spilling or dripping electrolyte.
5. Use proper jump start procedure.

If you spill acid on yourself:

1. Flush your skin with water.
2. Apply baking soda or lime to help neutralize the acid.
3. Flush your eyes with water for 10—15 minutes. Get medical attention immediately.

If acid is swallowed:

1. Drink large amounts of water or milk.
2. Then drink milk of magnesia, beaten eggs, or vegetable oil.
3. Get medical attention immediately.



DX, POISON -19-04JUN90

TS203 -UN-23AUG88

PREVENT BATTERY EXPLOSIONS

Keep sparks, lighted matches, and open flame away from the top of battery. Battery gas can explode.

Never check battery charge by placing a metal object across the posts. Use a volt-meter or hydrometer.

Do not charge a frozen battery; it may explode. Warm battery to 16°C (60°F).



DX, SPARKS -19-04JUN90

TS204 -UN-23AUG88



PRACTICE SAFE MAINTENANCE

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

Never lubricate or service 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 -19-04JUN90

TS218 -UN-23AUG88

STAY CLEAR OF ROTATING DRIVELINES

Entanglement in rotating driveline can cause serious injury or death.

Keep tractor master shield and driveline shields in place at all times. Make sure rotating shields turn freely.

Wear close fitting clothing. Stop the engine and be sure PTO driveline is stopped before making adjustments, connections, or cleaning out PTO driven equipment.



DX,PTO -19-04JUN90

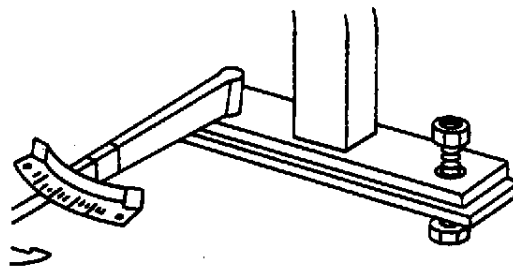
TS198 -UN-23AUG88



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.



TS212 -UN-23AUG88

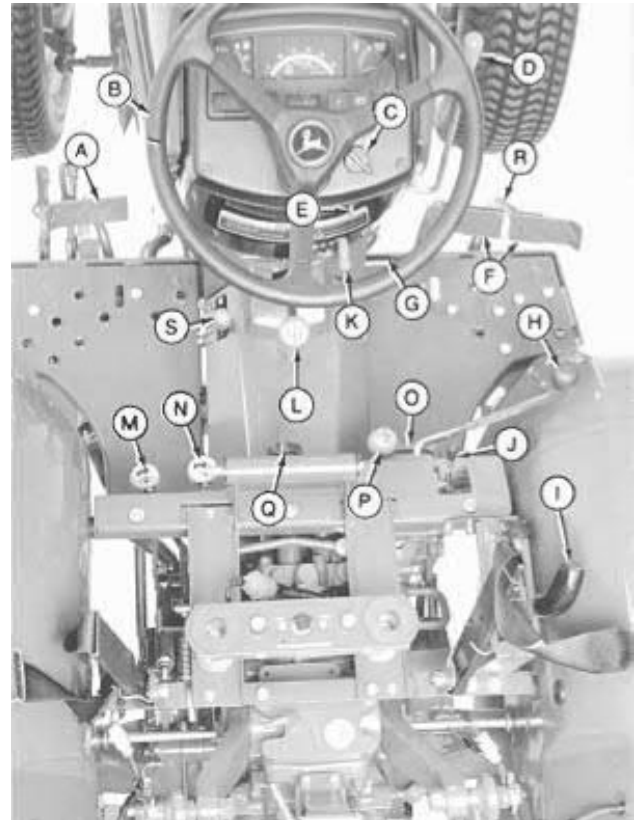
DX,ROPS3 -19-04JUN90

Controls and Instruments

TRACTOR CONTROLS

NOTE: Seat is removed for illustrative purpose.

- A—Clutch Pedal
- B—Steering Wheel
- C—Light Switch
- D—Engine Speed Control Lever
- E—Ignition Key Switch
- F—Brake Pedals
- G—Foot Throttle
- H—SCV (Selective Control Valve) Lever
- I—Rockshaft Control Lever
- J—SCV Lever Lock
- K—Park Brake Lever
- L—Transmission Shift Lever
- M—Mid PTO (Power-Take-Off) Lever
- N—Rear PTO (Power-Take-Off) Lever
- O—Differential Lock Pedal
- P—Range Shift Lever
- Q—Rockshaft Speed-of-Drop Lock Valve
- R—Brake Latch
- S—Optional Mechanical Front Wheel Drive Lever

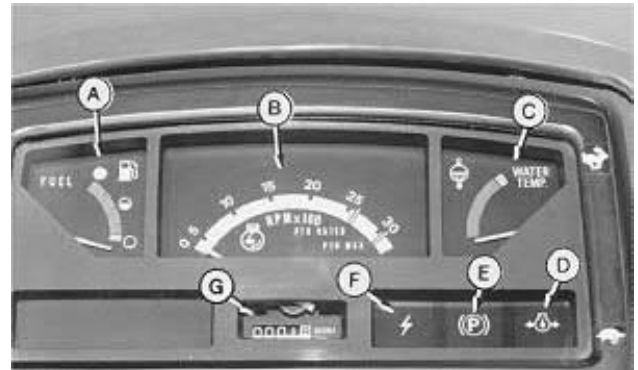


MX,CTGD,A -19-09OCT90

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INSTRUMENTS

- A—Fuel Gauge
- B—Tachometer
- C—Coolant Temperature Gauge
- D—Oil Pressure Indicator
- E—Park Brake Indicator
- F—Charging System Indicator
- G—Hour Meter



MX,CTGD,B -19-09OCT90

M61508 -UN-26SEP88

Operating the Engine

BEFORE STARTING ENGINE

CAUTION: Before starting engine inside a building, be sure there is plenty of ventilation.

1. Open hood and check engine oil and coolant levels. See Service section.
2. Open fuel shut-off valve. Check fuel filter sediment bowl. See Service section.
3. If temperature is below 40°F (4°C), see Cold Weather Starting in this section.

MX,OEGD,A -19-09OCT90

STARTING ENGINE

IMPORTANT: To prevent engine damage, DO NOT use starting fluid to start engine.

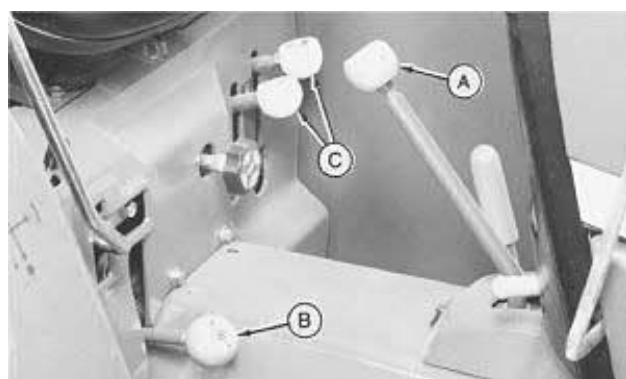
1. Lock both brake pedals (A) together with brake pedal latch (B).
2. Lift park brake lever (C) and push brake pedals (A) down to lock park brake. Remove foot from pedals. Pedals should stay down.



MX,OEGD,B -19-09OCT90

NOTE: Mid PTO lever is optional equipment.

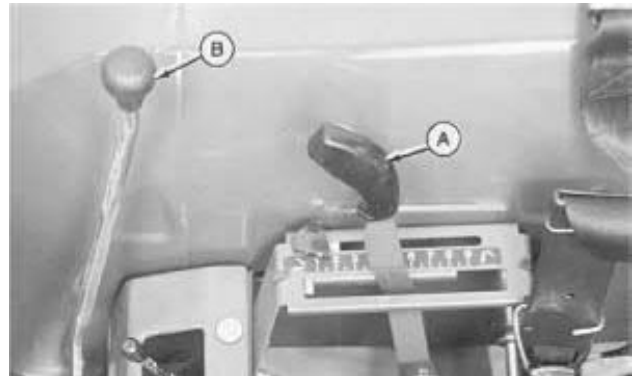
3. Place gear shift lever (A) and PTO lever(s) (C) in neutral position. Starter will not operate if gear shift lever and PTO lever(s) are not in neutral.



MX,OEGD,C -19-09OCT90

Operating the Engine

4. Lower all attaching equipment to the surface with rockshaft control lever (A) and/or optional SCV lever (B). See USING ROCKSHAFT CONTROL LEVER or USING OPTIONAL SCV LEVER in Driving the Tractor section.



MX,OEGD,D -19-09OCT90

M61511 -UN-26SEP88

5. Push engine speed lever (A) completely forward.

IMPORTANT: As soon as engine starts, pull speed control lever back so engine runs at 1200—1500 rpm. Do not run a cold engine at full throttle.



MX,OEGD,E -19-09OCT90

M61512 -UN-26SEP88

6. Turn key switch (A) clockwise to first position.

7. Check indicator lamps:

- Oil pressure indicator (B) will glow.
- Charging system indicator (C) will glow.
- Park brake indicator (D) will flash when park brake is locked.

If any indicator lamps do not light, check with your John Deere dealer.



MX,OEGD,F -19-09OCT90

M61513 -UN-26SEP88

M61514 -UN-26SEP88

8. Push clutch pedal (E) all the way down.



MX,OEGD,G -19-09OCT90

M61515 -UN-26SEP88

CAUTION: Avoid possible injury or death from a machine runaway.

1. Do not start engine by shorting across starter terminals. Machine will start in gear and move if normal circuitry is bypassed.
2. **NEVER** start engine while standing on ground. Start engine only from operator's seat with transmission in neutral.

9. Turn key switch (A) fully clockwise to engage starter. Release key when engine starts. If key is released before engine starts, wait until starter and engine stop turning before trying again.

IMPORTANT: Do not operate starter more than 20 seconds at a time. If engine does not start, wait at least two minutes before trying again. If engine does not start in four attempts, refer to Troubleshooting section.



MX,OEGD,H -19-09OCT90

M61513 -UN-26SEP88

10. Check indicator lamps (A and B) as soon as engine starts. If either oil pressure or charging system indicators glow longer than 5 seconds, stop the engine and determine the cause.

11. Remove foot from clutch pedal.

12. Operate engine at 1200—1500 rpm for several minutes. Do not accelerate or apply a load on the engine until it warms up.



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M61516 -UN-26SEP88



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COLD WEATHER STARTING USING THERMO-START SYSTEM

1. Turn key switch (A) counterclockwise and hold it there 10—30 seconds.
2. Quickly turn key switch clockwise to start position and start engine.



M61517
-UN-26SEP88

MX,OEGD,J -19-09OCT90

COLD WEATHER STARTING AIDS

RECOMMENDATIONS:

—Install optional engine block heater and hydraulic system oil heater if you operate tractor in temperatures below -15°F (-26°C).

See your John Deere dealer for these accessories.

MX,OEGD,J1 -19-09OCT90

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