John Deere Agriculture

7130, 7230 Premium Tractor Repair

REPAIR MANUAL

Covered models: USA models 7130 Premium, 7230 Premium

TM400119, November 2013

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Foreword

This Repair Manual applies to the following tractor types:

7130 Premium and 7230 Premium

This manual is written for experienced technicians. 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 initial section of this manual and the cautions presented throughout the text of the manual.

CAUTION:

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.

Technical Manuals are concise service 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.

Section 05 - SAFETY

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Group 05 - Safety Measures

Safety Information

CAUTION:

The safety measures are to be followed!

Recognize Safety Information

Safety-alert symbol

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.

”Important” Information

Information marked as IMPORTANT points out problems that may lead to machine damage. By following the directions given, these problems can be avoided.

”Note” Information

When marked with NOTE the information given is more detailed or contains restrictions to directions given previously. On the other hand useful information may be given belonging to certain instructions without being directly connected to them.

Prevent Machine Runaway

Machinery Runaway

Avoid possible injury or death from machinery runaway.

Do not start engine by shorting across starter terminals. Machine will start in gear if normal circuitry is bypassed.

NEVER start engine while standing on ground. Start engine only from operator’s seat, with transmission in neutral or park.

Handle Fluids Safely—Avoid Fires

Avoid Fires

When you work around fuel, do not smoke or work near heaters or other fire hazards.

Store flammable fluids away from fire hazards. Do not incinerate or puncture pressurized containers.

Make sure machine is clean of trash, grease, and debris.

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

Prevent Battery Explosions

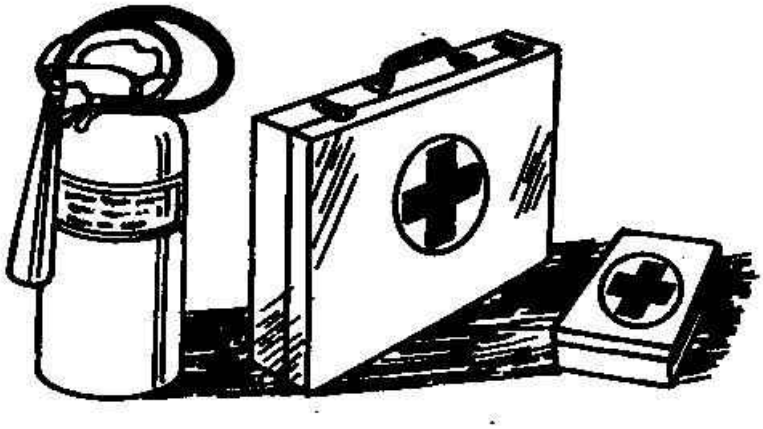
Battery Explosions

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).

Prepare for Emergencies



First Aid Kit

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.

Prevent Acid Burns

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.

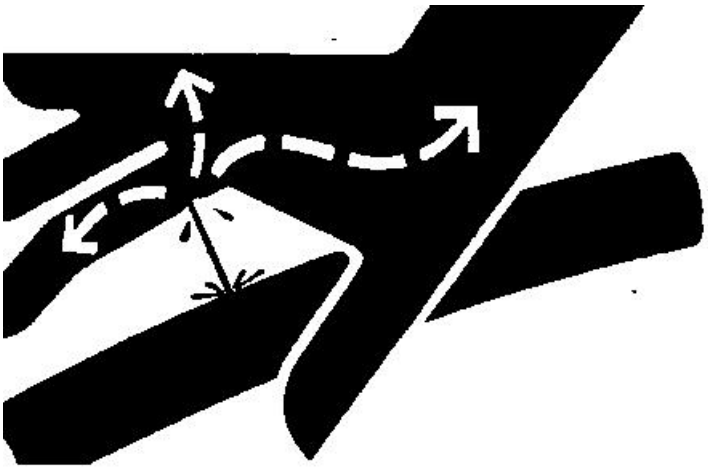
If you spill acid on yourself:

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.

Avoid High-Pressure Fluids



High Pressure

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.

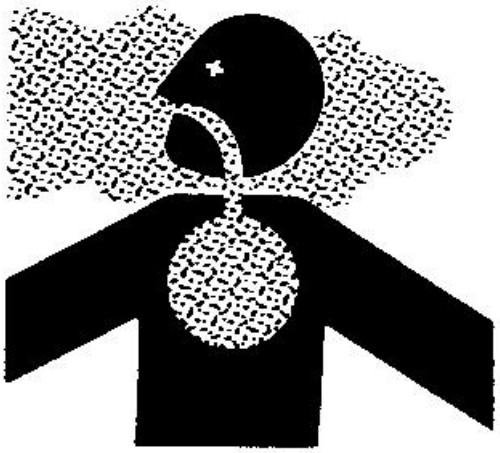
Service Cooling System Safely

Cooling System

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.

Remove Paint Before Welding or Heating



Toxic Fumes

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.

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

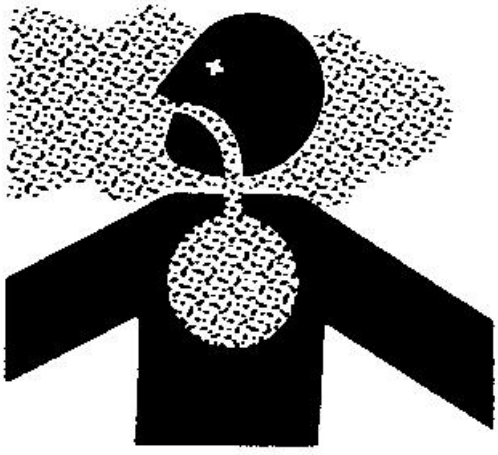
Dispose of paint and solvent properly.

Avoid Heating Near Pressurized Fluid Lines

Flammable Spray

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.

Work In Ventilated Area

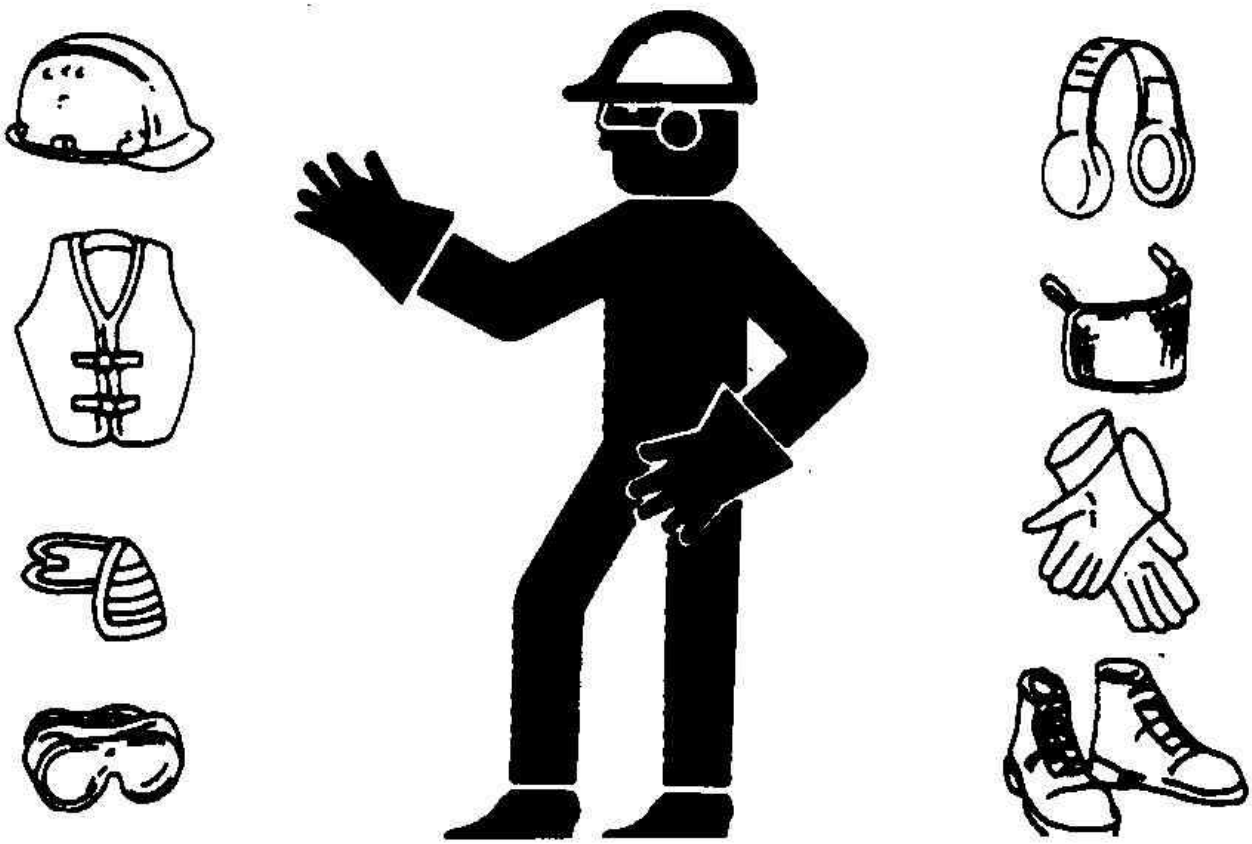


Engine exhaust fumes

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.

Wear Protective Clothing



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.

Practice Safe Maintenance

Keep Area Clean

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

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

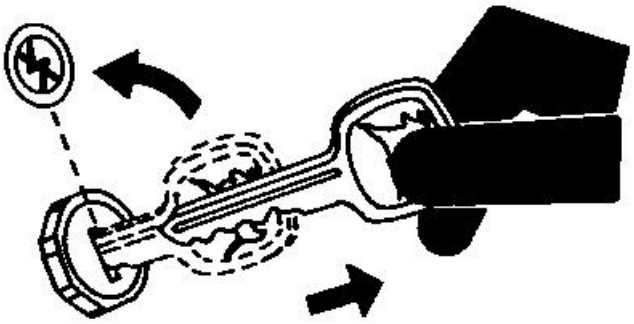
Securely support any machine elements that must be raised for service work.

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

On self-propelled equipment, disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.

On towed implements, disconnect wiring harnesses from tractor before servicing electrical system components or welding on machine.

Park Machine Safely

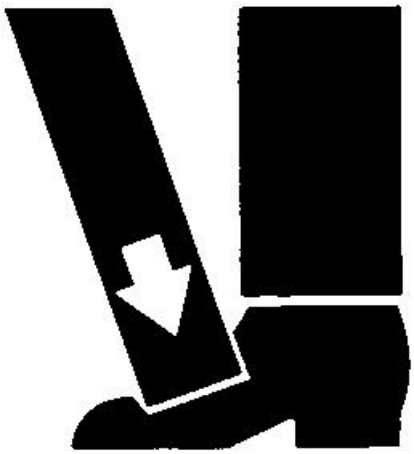


Remove the Key

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.

Use Proper Lifting Equipment

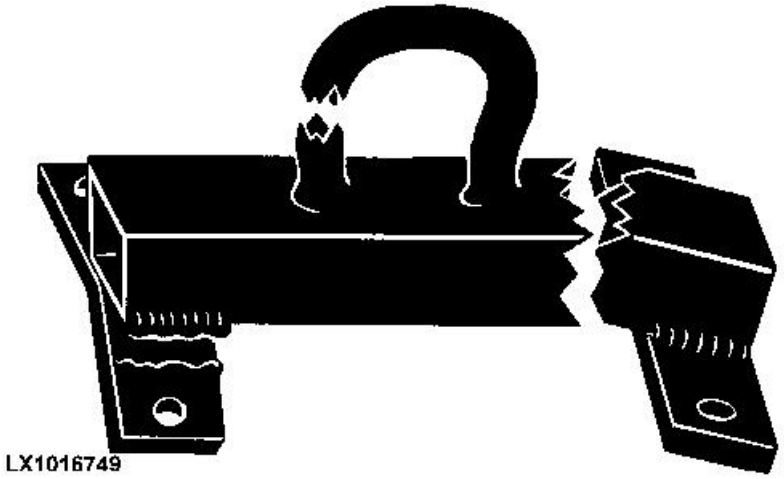


Proper Lifting Equipment

Lifting heavy components incorrectly can cause severe injury or machine damage.

Follow recommended procedure for removal and installation of components in the manual.

Construct Dealer-Made Tools Safely

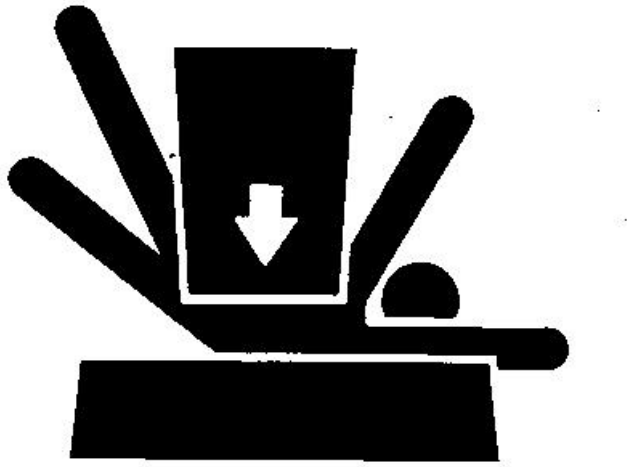


Construct Dealer-Made Tools Safely

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.

Support Machine Properly



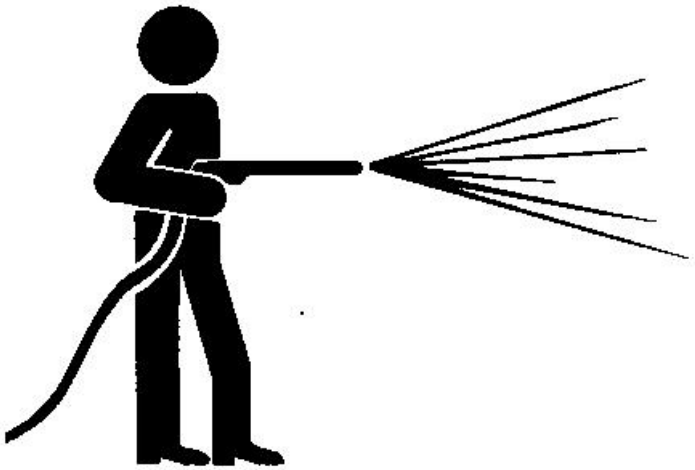
Support Properly

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.

Work in Clean Area



Clean Work Area

Before starting a job:

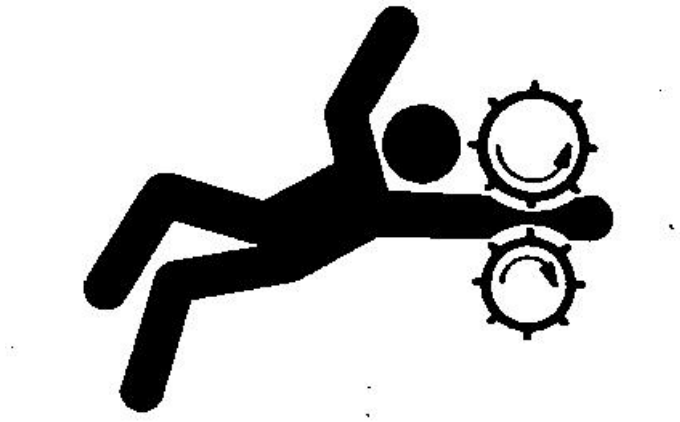
- Clean work area and machine.
- Make sure you have all necessary tools to do your job.
- Have the right parts on hand.
- Read all instructions thoroughly; do not attempt shortcuts.

Illuminate Work Area Safely

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.

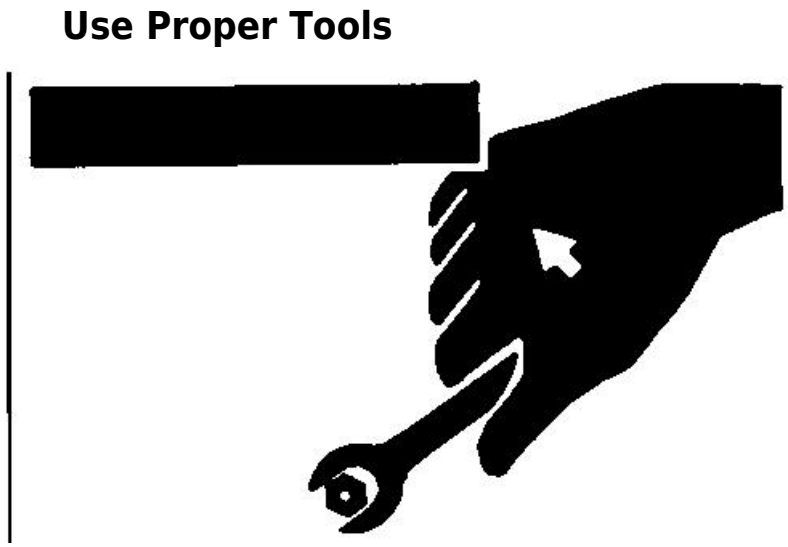
Service Machines Safely



Moving Parts

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.



Proper Tools

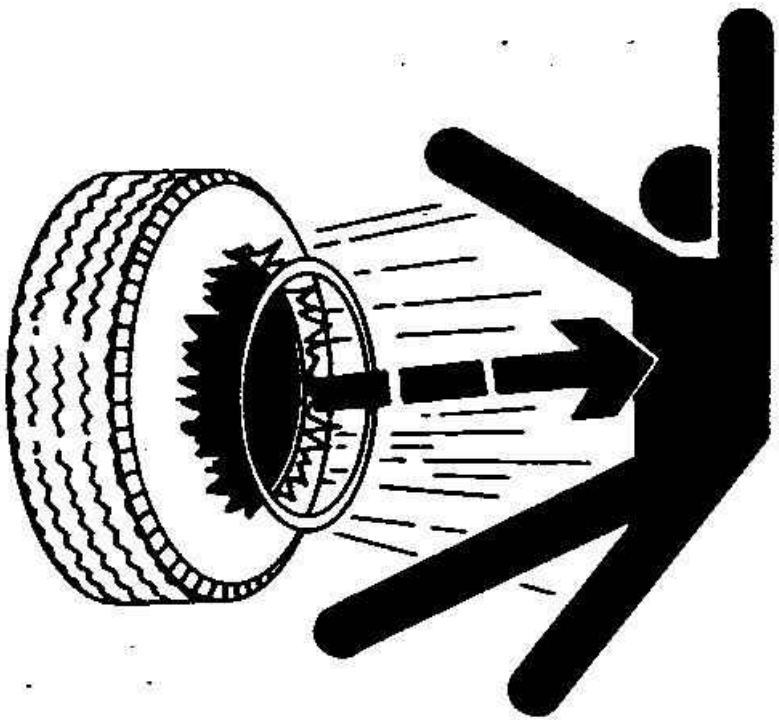
Use tools appropriate to the work. Makeshift tools and procedures can create safety hazards.

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.

Service Tires Safely



Explosive Tire and Rim Parts

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

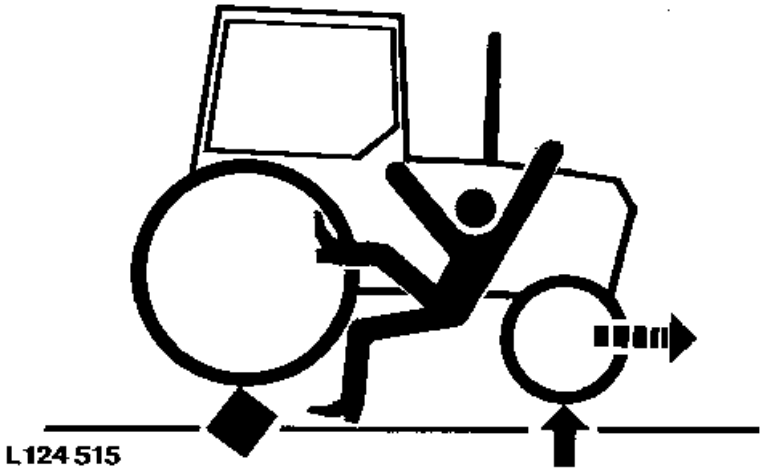
Do not attempt to mount a tire unless you have the proper equipment and experience to perform the job.

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.

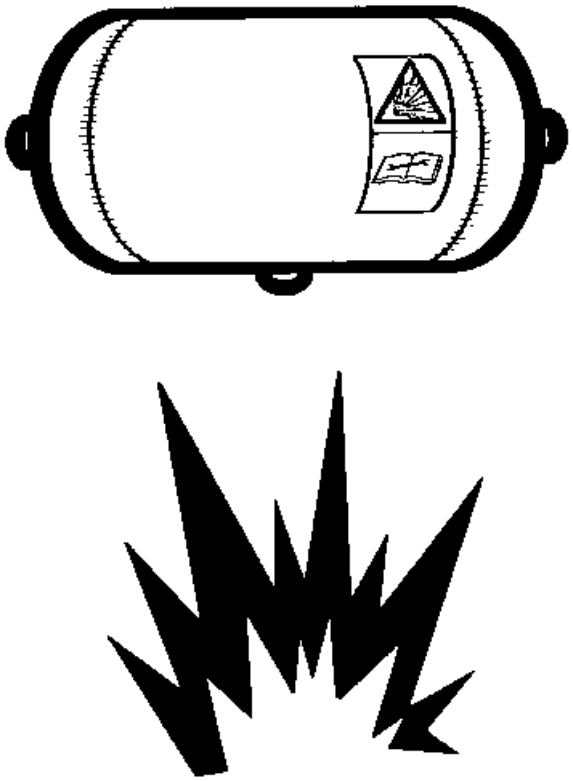
Service Front-Wheel Drive Tractor Safely



Support Front and Rear Wheels

When servicing front-wheel drive tractor with the rear wheels supported off the ground and rotating wheels by engine power, always support front wheels in a similar manner. Loss of electrical power or transmission/ hydraulic system pressure will engage the front driving wheels, pulling the rear wheels off the support if front wheels are not raised. Under these conditions, front drive wheels can engage even with switch in disengaged position.

Safety Information - Air Brake System



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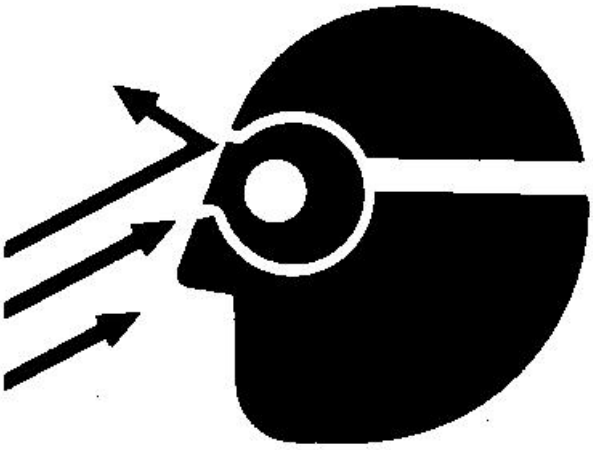
Compressed air tank

CAUTION:

Compressed air tank is pressurized!

Always relieve pressure before working on the air brake system. Do not carry out any welding jobs on the air brake system.

Avoid Eye Contact With Radar

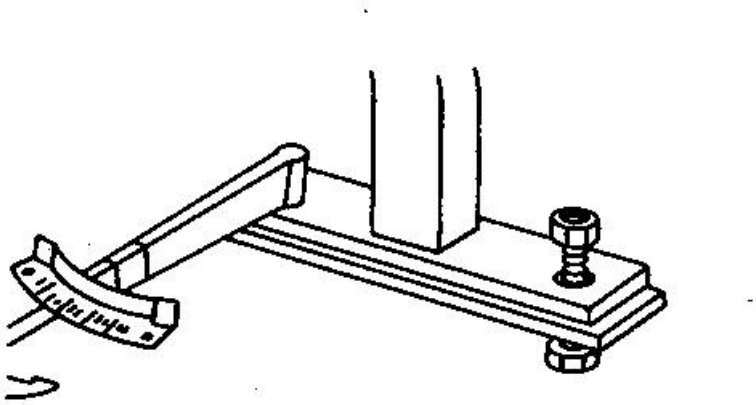


Avoid Eye Contact With Radar

Radar ground speed sensor emits a very low intensity microwave signal. It will not cause any ill effects during normal use.

Although intensity is low, DO NOT look directly into face of sensor while in operation, to avoid any possible eye damage.

Keep ROPS Installed Properly



Roll-Over Protective Structure

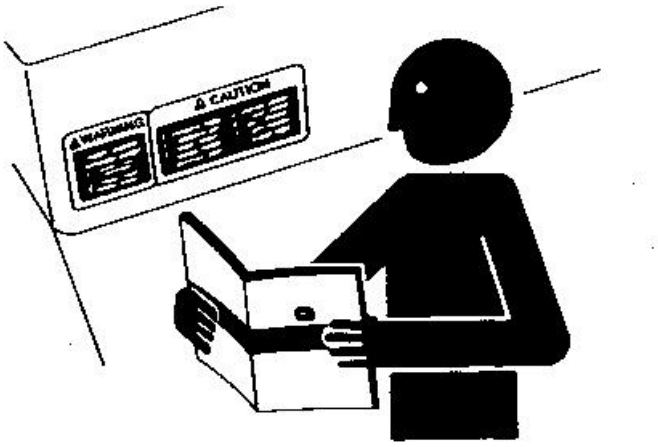
Make certain all parts are reinstalled correctly if the roll-over protective structure (ROPS) is loosened or removed for any reason. Tighten mounting bolts to proper torque.

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.

The seat is part of the ROPS safety zone. Replace only with John Deere seat approved for your tractor.

Any alteration of the ROPS must be approved by the manufacturer.

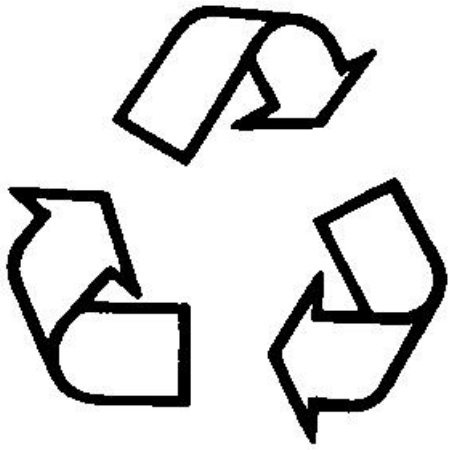
Replace Safety Signs



Safety Signs

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

Dispose of Waste Properly



Recycle Waste

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.

Live With Safety

Safety Systems

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

Safety Measures on Electronic Control Units

CAUTION:

Before installing test equipment on tractor, always shut off the engine and turn off key switch.

CAUTION:

Always engage the park lock when performing tests with the engine running.

CAUTION:

When testing is performed with the engine running, there is a risk of injury from rotating parts.

IMPORTANT:

Do not use a test lamp on any control unit. Only use a multimeter (JT05791A/JDG1478).

IMPORTANT:

To protect electronic circuits, disconnect the battery and alternator before performing any welding on the tractor.

Section 10 - GENERAL INFORMATION

Table of contents

Group 05 - Specifications

Specifications - Summary of References

Engine Specifications

up to Model Year 2009

Engine Specifications

Type ..... turbocharged diesel engine with intercooler
7130
- 2-valve HPCR 6068HRW72
- 4-valve HPCR 6068HRW73

7230
- 2-valve HPCR 6068HRW72
- 4-valve HPCR 6068HRW73

Engine power according to 97/68/EC at rated speed
- 7130 ..... 90 kW (121 hp)
- 7230 ..... 98 kW (131 hp)

Max. torque
7130
- 2-valve at 1600 rpm ..... 506 N˙m (373 lb-ft)
- 4-valve at 1700 rpm ..... 517 N˙m (381 lb-ft)

7230
- 2-valve at 1600 rpm ..... 554 N˙m (409 lb-ft)
- 4-valve at 1700 rpm ..... 562 N˙m (415 lb-ft)

Number of cylinders 6

Bore ..... 106 mm (4.19 in.)

Stroke ..... 127 mm (5.00 in.)

Displacement ..... 6.8 L (414 cu.in.)

Firing order 1-5-3-6-2-4

Compression ratio 17.0:1

Valve clearance
- intake valves ..... 0.36 mm (0.014 in.)
- exhaust valves ..... 0.46 mm (0.018 in.)

Thermostat
- opening temperature ..... 82°C (180°F)
- operating temperature (open) ..... 94°C (202°F)

Slow idle
- speed ..... 845 - 855 rpm

Fast idle
- speed ..... 2455 - 2465 rpm

Rated engine speed ..... 2300 rpm

Working speed range ..... 1300 - 2300 rpm

PTO power at rated PTO speed (factory measured, with 1000 rpm at PTO)
Standard
- 7130 ..... 75 kW (100 hp)
- 7230 ..... 82 kW (110 hp)

Intelligent Power Management (power boost)
- 7130 ..... 86 kW (115 hp)
- 7230 ..... 93 kW (125 hp)

from Model Year 2010

Engine Specifications

Type ..... turbocharged diesel engine with intercooler
7130
- 2-valve HPCR 4045HRW51
- 4-valve HPCR 4045HL81

7230
- 2-valve HPCR 6068HRW84
- 4-valve HPCR 6068HRW80

Engine power according to 97/68/EC at rated speed
- 7130 ..... 92 kW (123 hp)
- 7230 ..... 99 kW (133 hp)

Max. torque
7130
- 2-valve at 1500 rpm ..... 504 N˙m (372 lb-ft)
- 4-valve at 1600 rpm ..... 518 N˙m (382 lb-ft)

7230
- 2-valve at 1500 rpm ..... 541 N˙m (399 lb-ft)
- 4-valve at 1600 rpm ..... 557 N˙m (411 lb-ft)

Number of cylinders
- 7130 4
- 7230 6

Bore ..... 106 mm (4.19 in.)

Stroke ..... 127 mm (5.00 in.)

Displacement ..... 6.8 L (414 cu.in.)

Firing order
- 7130 1-3-4-2
- 7230 1-5-3-6-2-4

Compression ratio 17.0:1

Valve clearance
- intake valves ..... 0.36 mm (0.014 in.)
- exhaust valves ..... 0.46 mm (0.018 in.)

Thermostat
- opening temperature ..... 82°C (180°F)
- operating temperature (open) ..... 94°C (202°F)

Slow idle
- speed ..... 845 - 855 rpm

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- 7230 ..... 82 kW (110 hp)

Intelligent Power Management (power boost)
- 7130 ..... 86 kW (115 hp)
- 7230 ..... 93 kW (125 hp)

Cooling System

Cooling system

Type ..... pressurized system with two cooling circuits (high- and low-temperature circuits) with centrifugal pump and expansion tank.
Temperature control ..... thermostat and viscous fan drive

Electronic Fuel System with Common Rail (Denso)

Fuel System

Type ..... Common rail
Injection pressure ..... up to approx. 135 MPa (1350 bar; 19580 psi)

Air Intake System

Air intake system

Air cleaner ..... dry-type air cleaner, self-cleaned by pressure from the fan blade; with safety element

Electrical System

Electrical System

Battery ..... 12 V, 174 Ah
Alternator with overvoltage protection ..... 14 V, 120 A, 150 A, 200 A
Starting motor ..... 12 V, 3,0 kW (4.0 hp)
Ground connection ..... negative

Hydrostatic Steering System