5220, 5320, 5420, and 5520 Tractor Repair

TECHNICAL MANUAL
5220, 5320, 5420, and 5520 Tractor Repair

TM2048 15MAR02 (ENGLISH)

For complete service information also see:

5220, 5320, 5420, and 5520 Tractor Operation and Test	TM2049
Component Technical Manual 4045 Engine	CTM104
Component Technical Manual 4045 Mechanical Fuel System	CTM207
Component Technical Manual 3029 Engine	CTM125
Alternators and Starting Motors	CTM77

John Deere Augusta Works
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.

DX,TMIFC –19–29SEP98–1/1

Contents

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.

Section 10
General Information

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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

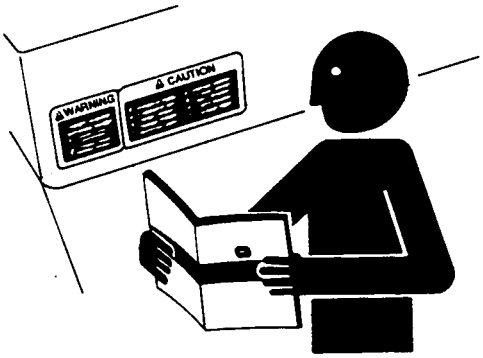
Follow Safety Instructions

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.

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 –19–03MAR93–1/1

Handle Fluids Safely—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.

TS227 –UN–23AUG88

DX,FLAME –19–29SEP98–1/1

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

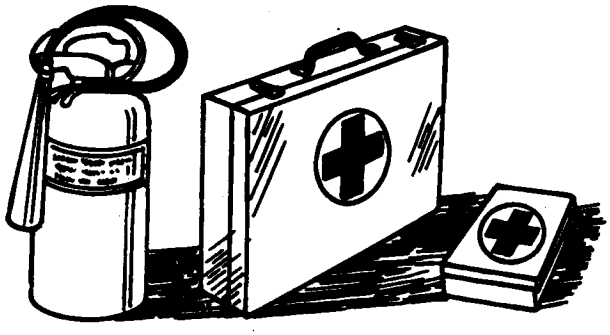
DX,SPARKS –19–03MAR93–1/1

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

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:

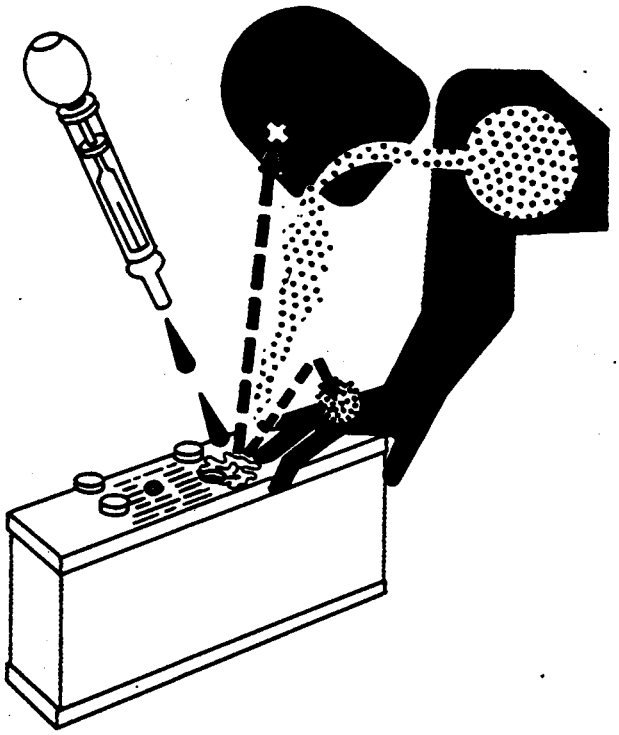
1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves.
3. Avoiding breathing fumes when electrolyte is added.
4. Avoiding spilling or dripping electrolyte.
5. Use proper jump start procedure.

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.



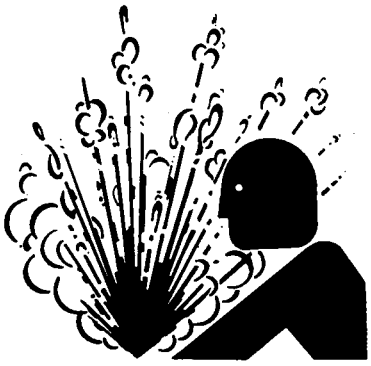
TS203 –UN–23AUG88

DX,POISON –19–21APR93–1/1

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

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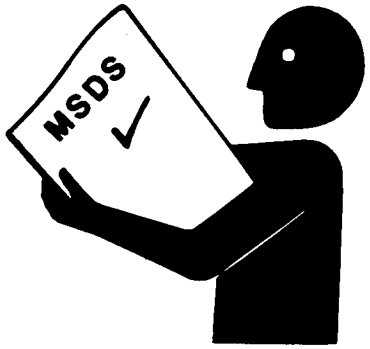
Handle Chemical Products Safely



TS1132 –UN–26NOV90

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.

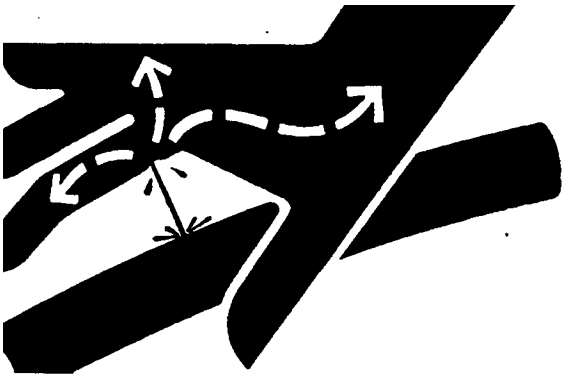
A Material Safety Data Sheet (MSDS) provides specific details on chemical products: physical and health hazards, safety procedures, and emergency response techniques.

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.)

DX,MSDS,NA –19–03MAR93–1/1

Avoid High-Pressure Fluids



X9811 –UN–23AUG88

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.

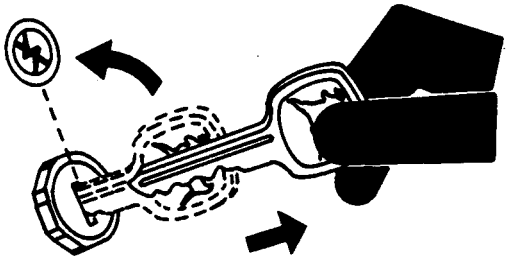
If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.

DX,FLUID –19–03MAR93–1/1

Park Machine Safely

Before working on the machine:

- Lower all equipment to the ground.
- Shift transmission to PARK.
- Engage park brake if equipped.
- Stop the engine and remove the key.
- Disconnect the battery ground strap.
- Hang a "DO NOT OPERATE" tag in operator station.



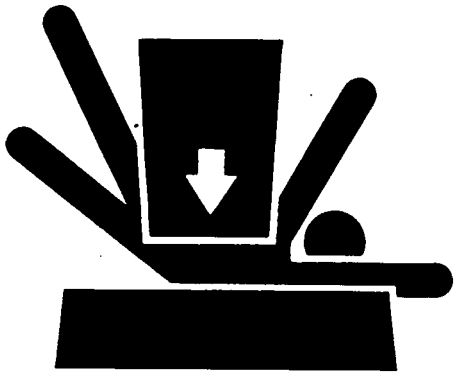
TS230 –UN–24MAY89

CED,OUO1085,7 –19–26JUL00–1/1

Support Machine Properly

Always lower the attachment or implement to the ground before you work on the machine. If you must work on a lifted machine or attachment, securely support the machine or attachment.

Do not support the machine on cinder blocks, hollow tiles, or props that may crumble under continuous load. Do not work under a machine that is supported solely by a jack. Follow recommended procedures in this manual.



TS229 –UN–23AUG88

CED,OUO1085,8 –19–26JUL00–1/1

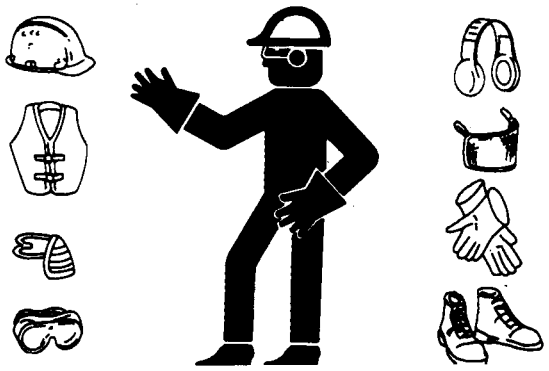
Wear Protective Clothing

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.



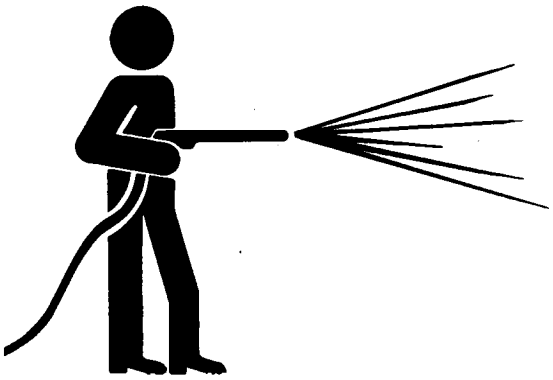
TS206 –UN–23AUG88

DX,WEAR –19–10SEP90–1/1

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.



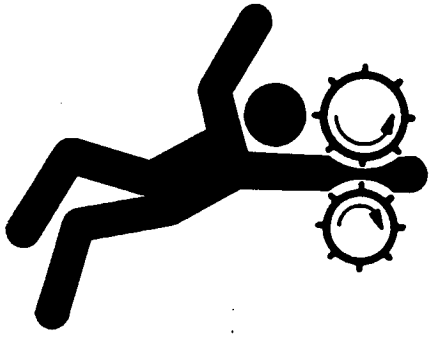
T6642EJ –UN–18OCT88

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.



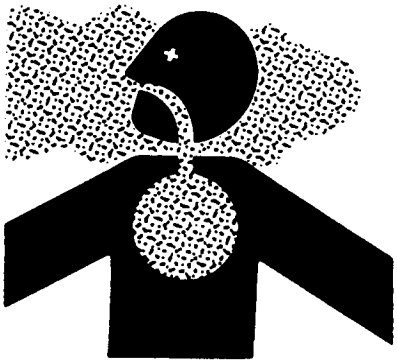
TS228 –UN–23AUG88

DX,LOOSE –19–04JUN90–1/1

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

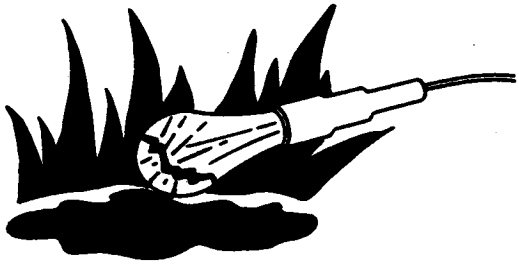


TS220 –UN–23AUG88

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.

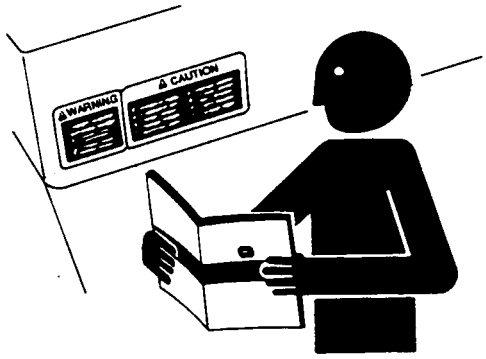


TS223 –UN–23AUG88

DX,LIGHT –19–04JUN90–1/1

Replace Safety Signs

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



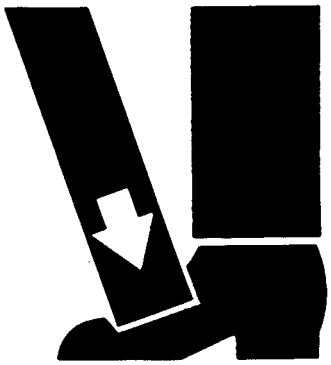
TS201 –UN–23AUG88

DX,SIGNS1 –19–04JUN90–1/1

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.



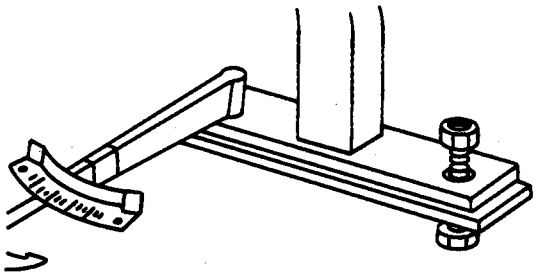
TS226 –UN–23AUG88

DX,LIFT –19–04JUN90–1/1

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 –19–03MAR93–1/1

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Service Tires Safely

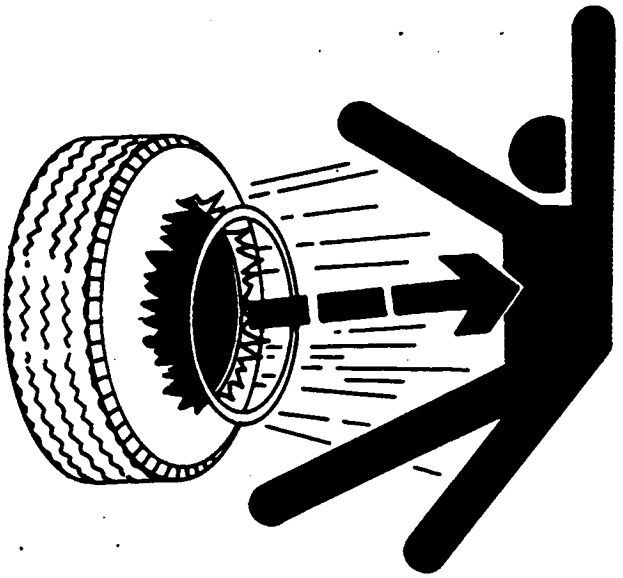
Explosive separation of a tire and rim parts can cause serious injury or death.

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

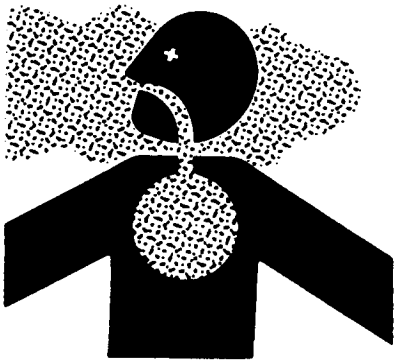
Avoid Harmful Asbestos Dust

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

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

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

Keep bystanders away from the area.



TS220 –UN–23AUG88

DX,DUST –19–15MAR91–1/1

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 be accidentally cut when heat goes beyond the immediate flame area.

TS953 –UN–15MAY90

DX,TORCH –19–03MAR93–1/1

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 76 mm (3 in.) from area to be affected by heating.
- If you sand or grind paint, avoid breathing the dust. Wear an approved respirator.
- If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.

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

Dispose of paint and solvent properly.

TS220 –UN–23AUG88

DX,PAINT –19–03MAR93–1/1

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Use Proper Tools

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

Use power tools only to loosen threaded parts and fasteners.

For loosening and tightening hardware, use the correct size tools. DO NOT use U.S. measurement tools on metric fasteners. Avoid bodily injury caused by slipping wrenches.

Use only service parts meeting John Deere specifications.

TS779 –UN–08NOV89

DX,REPAIR –19–17FEB99–1/1

Dispose of Waste Properly

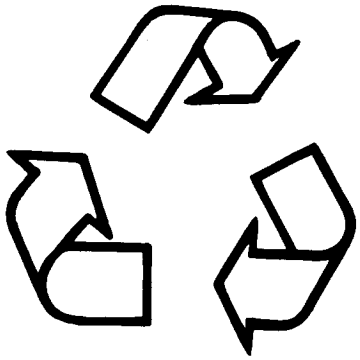
Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with John Deere equipment include such items as oil, fuel, coolant, brake fluid, filters, and batteries.

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

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

Machine Specifications 5220 and 5320

NOTE: Specifications and design subject to change without notice.

5220 Tractor

Item	Measurement	Specification
Engine	Make	John Deere
	Type	Diesel
	Model	PE3029DLV53
	Aspiration	Natural
	Horsepower	40 kW (53 hp)
	Rated Engine Speed	2400 rpm
	Operating Range	1600—2400 rpm
	Number of Cylinders	3
	Displacement	2.9 L (179 cu in.)
	Bore and Stroke	106 x 110 mm (4.19 x 4.33 in.)
	Compression Ratio	17.8:1
	Fast Idle	2625 ± 25 rpm
	Slow Idle	825 ± 25 rpm
	Start Aid	Air Intake Heater (Optional)
	Firing Order	1-2-3
	Timing	18° BTDC
	Lubrication	Pressurized
	Cooling	Liquid Cooled
	Air Cleaner	Dry Type w/Safety Element
	Engine Shutoff	Key Switch
Fuel System	Type	Direct Injection
	Injection Pump Type	Rotary w/Electric Shutoff
Electrical System	Type	12 Volt
	Battery Size	950 Cold Cranking Amps
	Alternator Without Cab	40 Amp
	Alternator With Cab	60 Amp

Continued on next page

Item	Measurement	Specification
Drive Train	Transmission Type	CollarShift (Standard) SyncShuttle™ (Optional) SyncShuttle™ with Shiftable 540/540E PTO (Optional) PowrReverser™ (Optional)
	Number of Speeds	9 Forward, 3 Reverse (SyncShuttle™) 12 Forward, 12 Reverse (PowrReverser™)
	Final Drive	Planetary
	Clutch	Dual, Dry Multi-Disk, Wet (PowrReverser™)
Steering/Brakes	Steering	Hydrostatic Power
	Brakes	Wet Disk Self-Equalizing Self-Adjusting
Hydraulic System	Type	Open Center
	Working Pressure	18,995—19,695 kPa (190—197 bar) (2,755—2,855 psi)
	Pump Type	Tandem Gear
	Capacity	(68.8 L/min 18.2 gpm)
	Hitch Lift Capacity at 610 mm (24 in.) Behind Hitch Balls	1530 kg (3374 lb)
	Lift Control Type	Position and Depth

Continued on next page

Item	Measurement	Specification
Rear PTO[1]	Type	Fully Independent
	Horsepower (Standard Mode)	34 kW (45 hp)
	Speed (540 Standard Mode) @ 2400 rpm Engine Speed	540 rpm
	Speed (540E Economy Mode) @ 1700 rpm Engine Speed	540 rpm
Capacities	Fuel Tank (Straddle Mount)	68 L (18 gal)
	Fuel Tank (Isolated Open Operator Station and Cab Tractors)	102.2 L (27 gal)
	Cooling System	9.5 L (10 qt)
	Engine Crankcase w/Filter	8.5 L (9 qt)
	Hydraulic System	With CollarShift or SyncShuttle™ Transmission 38 L (10 gal) With PowrReverser™ Transmission 43.5 L (11.5 gal)
	MFWD Wheel Hubs	0.6 L (0.63 qt)
	MFWD Differential Housing	5 L (5.3 qt)

[1]540E Economy Mode available only on SyncSuttle™ Transmission.

Continued on next page

5320 Tractor

Item	Measurement	Specification
Engine	Make	John Deere
	Type	Diesel
	Model	PE3029TLV52
	Aspiration	Turbocharged
	Horsepower	48 kW (64 hp)
	Rated Engine Speed	2400 rpm
	Operating Range	1600—2400 rpm
	Number of Cylinders	3
	Displacement	2.9 L (179 cu in.)
	Bore and Stroke	106 x 110 mm (4.19 x 4.33 in.)
	Compression Ratio	17.8:1
	Fast Idle	2625 ± 25 rpm
	Slow Idle	825 ± 25 rpm
	Start Aid	Air Heater (Optional)
	Firing Order	1-2-3
	Timing	7° BTDC
	Lubrication	Pressurized
	Cooling	Liquid Cooled
	Air Cleaner	Dry Type w/Safety Element
	Engine Shutoff	Key Switch
Fuel System	Type	Direct Injection
	Injection Pump Type	Rotary w/Electric Shutoff
Electrical System	Type	12 Volt
	Battery Size	950 Cold Cranking Amps
	Alternator Without Cab	40 Amp
	Alternator With Cab	60 Amp
Drive Train	Transmission Type	CollarShift (Standard) SyncShuttle™ (Optional) SyncShuttle™ with Shiftable 540/540E PTO (Optional) PowrReverser™ (Optional)
	Number of Speeds	9 Forward, 3 Reverse (SyncShuttle™) 12 Forward, 12 Reverse (PowrReverser™)
	Final Drive	Planetary
	Clutch	Dual, Dry Multi-Disk, Wet (PowrReverser™)

Continued on next page

Item	Measurement	Specification
Steering/Brakes	Steering	Hydrostatic Power
	Brakes	Wet Disk Self-Equalizing Self-Adjusting
Hydraulic System	Type	Open Center
	Working Pressure	18,995—19,685 kPa (190—197 bar) (2,755—2,855 psi)
	Pump Type	Tandem Gear
	Capacity	68.8 L/min (18.2 gpm)
	Hitch Lift Capacity at 610 mm (24 in.) Behind Hitch Balls	1530 kg (3374 lb)
	Lift Control Type	Position and Depth
Rear PTO[2]	Type	Fully Independent
	Horsepower (Standard Mode)	41 kW (55 hp)
	Speed (540 Standard Mode) @ 2400 rpm Engine Speed	540 rpm
	Speed (540E Economy Mode) @ 1700 rpm Engine Speed	540 rpm
Capacities	Fuel Tank (Straddle Mount)	68 L (18 gal)
	Fuel Tank (Isolated Open Operator Station and Cab Tractors)	102.2 L (27 gal)
	Cooling System	9.5 L (10 qt)
	Engine Crankcase w/Filter	8.5 L (9 qt)
	Hydraulic System	With CollarShift or SyncShuttle™ Transmission 38 L (10 gal) With PowrReverser™ Transmission 43.5 L (11.5 gal)
	MFWD Wheel Hubs	0.6 L (0.63 qt)
	MFWD Differential Housing	5 L (5.3 qt)

[2]540E Economy Mode available only on SyncShuttle™ Transmission.

OUO1023,0000316 –19–26FEB02–5/5

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Machine Specifications 5420 and 5520

NOTE: Specifications and design subject to change without notice.

5420 Tractor

Item	Measurement	Specification
Engine	Make	John Deere
	Type	Diesel
	Model	PE4045DLV51
	Aspiration	Natural
	Horsepower	60 kW (81 hp)
	Rated Engine Speed	2400 rpm
	Number of Cylinders	4
	Displacement	4.5 L (274 cu in.)
	Bore and Stroke	106.5 x 127 mm (4.19 x 5.00 in.)
	Compression Ratio	17.6:1
	Fast Idle	2625 ± 25 rpm
	Slow Idle	825 ± 25 rpm
	Start Aid	Air Heater (Optional)
	Firing Order	1-3-4-2
	Timing	9° BTDC
	Lubrication	Pressurized
	Cooling	Liquid Cooled
	Air Cleaner	Dry Type w/Safety Element
	Engine Shutoff	Key Switch
Fuel System	Type	Direct Injection
	Injection Pump Type	Rotary w/Electric Shutoff
Electrical System	Type	12 Volt
	Battery Size	950 Cold Cranking Amps
	Alternator Without Cab	40 Amp
	Alternator With Cab	65 Amp

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Item	Measurement	Specification
Drive Train	Transmission Type	CollarShift SyncShuttle™ (Optional) SyncShuttle™ with Shiftable 540/540E PTO (Optional) PowrReverser™ (Optional)
	Number of Speeds	9 Forward, 3 Reverse (SyncShuttle™) 12 Forward, 12 Reverse (PowrReverser™)
	Final Drive	Planetary
	Clutch	Dual, Dry Multi-Disk, Wet (PowrReverser™)
Steering/Brakes	Steering	Hydrostatic Power
	Brakes	Wet Disk Self-Equalizing Self-Adjusting
Hydraulic System	Type	Open Center
	Working Pressure	18,995—19,685 kPa (190—197 bar) (2,755—2,855 psi)
	Pump Type	Tandem Gear
	Capacity	85 L/min (22.5 gpm)
	Hitch Lift Capacity at 610 mm (24 in.) Behind Hitch Balls	1530 kg (3374 lb)
	Lift Control Type	Position and Depth

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Item	Measurement	Specification
Rear PTO[1]	Type	Fully Independent
	Horsepower	48 kW (65 hp)
	Speed (540 Standard Mode) @ 2400 rpm Engine Speed	540 rpm
	Speed (540E Economy Mode) @ 1700 rpm Engine Speed	540 rpm
Capacities	Fuel Tank (Straddle Mount)	68 L (18 gal)
	Fuel Tank (Isolated Open Operator Station and Cab Tractors)	102.2 L (27 gal)
	Cooling System	10.8 L (11.4 qt)
	Engine Crankcase w/Filter	8.5 L (9 qt)
	Hydraulic System	With CollarShift or SyncShuttle™ Transmission 38 L (10 gal) With PowrReverser™ Transmission 43.5 L (11.5 gal)
	MFWD Wheel Hubs	0.6 L (0.63 qt)
	MFWD Axle Housing	5 L (5.3 U.S. qt)

5520 Tractor

Item	Measurement	Specification
Engine	Make	John Deere
	Type	Diesel
	Model	PE4045TLV51
	Aspiration	Turbocharged
	Horsepower	66 kW (89 hp)
	Rated Engine Speed	2400 rpm
	Number of Cylinders	4
	Displacement	4.5 L (274 cu in.)
	Bore and Stroke	106 x 127 mm (4.19 x 5.00 in.)
	Compression Ratio	17.0:1
	Fast Idle	2625 ± 25 rpm
	Slow Idle	825 ± 25 rpm
	Start Aid	Air Heater (Optional)
	Firing Order	1-3-4-2
	Timing	8° BTDC
	Lubrication	Pressurized
	Cooling	Liquid Cooled
	Air Cleaner	Dry Type w/Safety Element
	Engine Shutoff	Key Switch

[1]Economy Mode available only on SyncShuttle™ Transmission.

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Item	Measurement	Specification
Fuel System	Type	Direct Injection
	Injection Pump Type	Rotary w/Electric Shutoff
Electrical System	Type	12 Volt
	Battery Size	950 Cold Cranking Amps
	Alternator Without Cab	40 Amp
	Alternator With Cab	65 Amp
Drive Train	Transmission Type	CollarShift (Standard) SyncShuttle™ (Optional) SyncShuttle™ with Shiftable 540/540E PTO (Optional) PowrReverser™ (Optional)
	Number of Speeds	9 Forward, 3 Reverse (SyncShuttle™) 12 Forward, 12 Reverse (PowrReverser™)
	Final Drive	Planetary
	Final Drive (Hi-Crop Drop Axle)	Gear Case
	Clutch	Dual, Dry Multi-Disk, Wet (PowrReverser™)
Steering/Brakes	Steering	Hydrostatic Power
	Brakes	Wet Disk Self-Equalizing Self-Adjusting
Hydraulic System	Type	Open Center
	Working Pressure	18,995—19,685 kPa (190—197 bar) (2,755—2,855 psi)
	Pump Type	Tandem Gear
	Capacity	85 L/min (22.5 gpm)
	Hitch Lift Capacity at 610 mm (24 in.) Behind Hitch Balls	1530 kg (3374 lb)
	Lift Control Type	Position and Depth

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Item	Measurement	Specification
Rear PTO[1]	Type	Fully Independent
	Horsepower	56 kW (75 hp)
	Speed (540 Standard Mode) @ 2400 rpm Engine Speed	540 rpm
	Speed (540E Economy Mode) @ 1700 rpm Engine Speed	540 rpm
Capacities	Fuel Tank (Straddle Mount)	83 L (22 gal)
	Fuel Tank (Isolated Open Operator Station and Cab Tractors)	102.2 L (27 gal)
	Cooling System	10.8 L (11.4 qt)
	Engine Crankcase w/Filter	8.5 L (9 qt)
	Hydraulic System (With Standard Rear Axle)	With CollarShift or SyncShuttle™ Transmission 38 L (10 gal) With PowrReverser™ Transmission 43.5 L (11.5 gal)
	Hydraulic System (With Hi-Crop Drop Axle)	CollarShift or SyncShuttle™ Transmission 64 L (17 gal) PowrReverser™ Transmission 70 L (18.5 gal)
	MFWD Wheel Hubs	0.6 L (0.63 qt)
	MFWD Axle Housing	5 L (5.3 qt)

[1]Economy Mode available only on SyncShuttle™ Transmission.

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Collar Shift and SyncShuttle™ Transmission Ground Speed Estimates

Speeds are calculated using 16.9-30, R1 rear tires. To calculate ground speeds for tractors equipped with rear tires other than 16.9-30, R1 tires, see Correction Factors for Other Tire Sizes in this section.

	Operating Range-Forward (1600 to 2400 Engine RPM)	
Gear	**mph**	**km/h**
A—1	0.85—1.28	1.37—2.06
A—2	1.23—1.85	1.98—2.97
A—3	1.68—2.52	2.70—4.05
B—1	2.01—3.02	3.24—4.86
B—2	2.91—4.36	4.68—7.02
B—3	3.96—5.95	6.38—9.57
C—1	5.53—8.29	8.90—13.34
C—2	7.98—11.97	12.84—19.26
C—3	10.88—16.32	17.51—26.27
R—1	1.43—2.15	2.31—3.46
R—2	3.38—5.07	5.44—8.17
R—3	9.29—13.93	14.95—22.43

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Collar Shift and SyncShuttle™ Creeper Transmissions Ground Speed Estimates

Speeds are calculated using 16.9-30, R1 rear tires. To calculate ground speeds for tractors equipped with rear tires other than 16.9-30, R1 tires, see Correction Factors for Other Tire Sizes in this section.

Gear	Higher Speed Creeper (1600 to 2400 Engine RPM)	Regular Speed Creeper (1600 to 2400 Engine RPM)
Creeper-1F	0.35—0.53 (mph) 0.56—0.84 (km/h)	0.15—0.22 (mph) 0.24—0.36 (km/h)
Creeper-2F	0.51—0.76 (mph) 0.81—1.22 (km/h)	0.21—0.32 (mph) 0.34—0.52 (km/h)
Creeper-3F	0.69—1.04 (mph) 1.11—1.66 (km/h)	0.29—0.43 (mph) 0.47—0.70 (km/h)
Creeper-1R	0.59—0.89 (mph) 0.95—1.43 (km/h)	0.25—0.37 (mph) 0.40—0.60 (km/h)

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