6415 and 6615 Tractors

OPERATOR'S MANUAL
6415 and 6615 Tractors

OMCQ56722 Issue E8 (ENGLISH)

CALIFORNIA
Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

If this product contains a gasoline engine:

⚠ WARNING

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

The State of California requires the above two warnings.

John Deere Montenegro
World Edition
LITHO IN U.S.A.

DCY

OMCQ56722

Introduction

Foreword

READ THIS MANUAL carefully to learn how to operate and service your machine correctly. Bodily injury or damage to the machine may occur if this procedure is not followed. This manual and safety signs on your machine may also be available in other languages (see your John Deere dealer to order).

THIS MANUAL SHOULD BE CONSIDERED a permanent part of your machine and it should accompany the machine if sold.

MEASUREMENTS in this manual are given in both metric and customary U.S. unit equivalents. Use only correct replacement parts and fasteners. Metric and inch fasteners may require a specific metric or inch wrench.

RIGHT-HAND AND LEFT-HAND sides are determined with reference to the direction of forward travel.

WRITE PRODUCT IDENTIFICATION NUMBERS (P.I.N.) in the Specification or Identification Numbers 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. File the identification numbers in a secure place, not in the machine.

SETTING FUEL INJECTION BEYOND PUBLISHED factory specifications, or any other modification made with the purpose of increasing engine power, will result in loss of warranty cover for the machine.

BEFORE DELIVERING THIS MACHINE, your dealer performed a predelivery inspection. The machine was first used operationally after the dealer had carried out the Technical Delivery and monitored the machine during its first few hours of operation. Before completing 750 operating hours or 12 months of use, schedule a post-sales inspection by your dealer to tune the machine to perform at its best.

This machine was designed solely for use in regular agricultural operations or similar such operations ("INTENDED USE"). Use in any other way is considered as contrary to the intended use. The manufacturer accepts no liability for damage or injury resulting from misuse, and these risks must be borne solely by the user. Compliance with and strict adherence to the conditions of operation, service and repair as specified by the manufacturer also constitute essential elements for the intended use.

THIS MACHINE SHOULD BE OPERATED, serviced and repaired only by persons familiar with all its particular characteristics and acquainted with the relevant safety rules (accident prevention). Accident prevention regulations, all other generally recognized regulations on safety and occupational medicine and the road traffic regulations must be observed at all times. Any arbitrary modifications carried out on this machine will relieve the manufacturer of all liability for any resulting damage or injury.

ML70882,0000735 –19–25MAR08–1/1

Edition

May 2007

LT04177,000001E –19–07MAR08–1/1

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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.

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General View

CQ224133 –UN–27JUL05

6415 Tractor

CQ224134 –UN–27JUL05

6615 Tractor

OU83340,0000516 –19–26JUL05–1/1

Safety

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

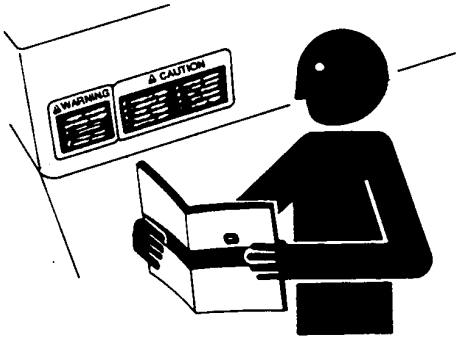
Follow Safety Instructions

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

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.

⚠ DANGER

⚠ WARNING

⚠ CAUTION

TS187 –19–30SEP88

DX,SIGNAL –19–03MAR93–1/1

Prevent Machine 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.

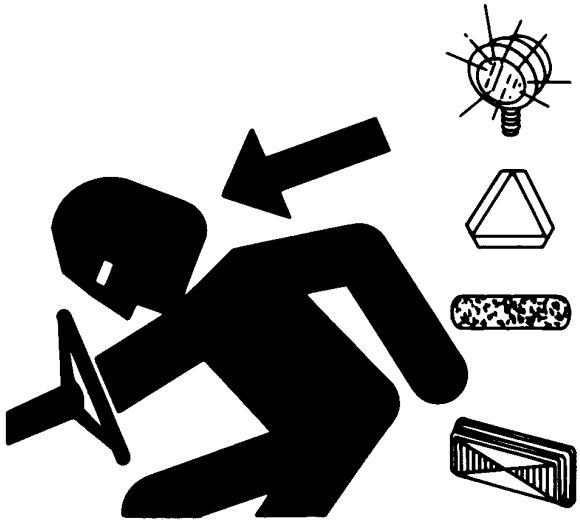
TS177 –UN–11JAN89

DX,BYPAS1 –19–29SEP98–1/1

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

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

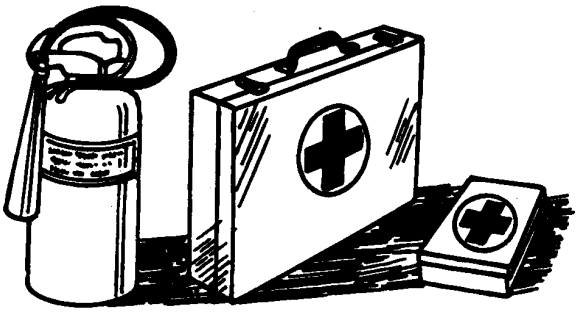
DX,AIR –19–17FEB99–1/1

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.



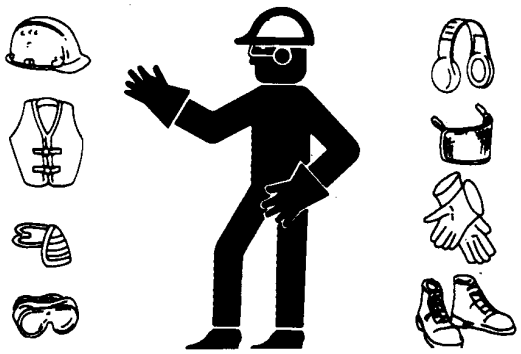
TS291 –UN–23AUG88

DX,FIRE2 –19–03MAR93–1/1

Wear Protective Clothing

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

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



TS206 –UN–23AUG88

DX,WEAR2 –19–03MAR93–1/1

Avoid Contact with Pesticides

This enclosed cab does not protect against inhaling harmful pesticides. If pesticide use instructions require respiratory protection, wear an appropriate respirator inside the cab.

Before leaving the cab, wear personal protective equipment as required by the pesticide use instructions. When re-entering the cab, remove protective equipment and store either outside the cab in a closed box or some other type of sealable container or inside the cab in a pesticide resistant container, such as a plastic bag.

Clean your shoes or boots to remove soil or other contaminated particles prior to entering the cab.

TS220 –UN–23AUG88

TS272 –UN–23AUG88

DX,CABS –19–03MAR93–1/1

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.

TS202 –UN–23AUG88

DX,FIRE1 –19–03MAR93–1/1

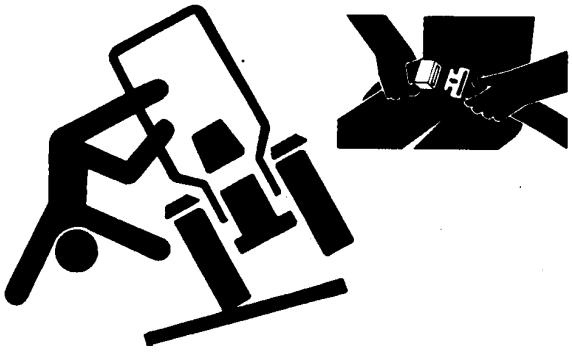
Use Seat Belt Properly

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.

Replace entire seat belt if mounting hardware, buckle, belt, or retractor show signs of damage.

Inspect seat belt and mounting hardware at least once a year. Look for signs of loose hardware or belt damage, such as cuts, fraying, extreme or unusual wear, discoloration, or abrasion. Replace only with replacement parts approved for your machine. See your John Deere dealer.



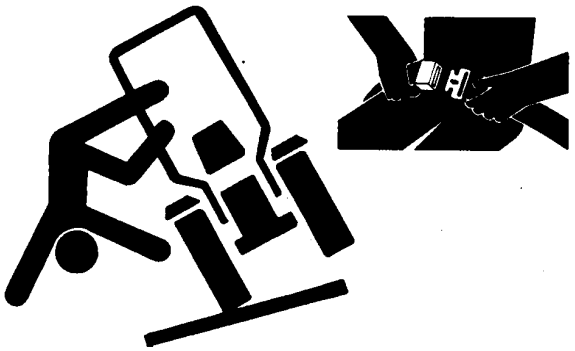
TS205 –UN–23AUG88

DX,ROPS1 –19–29OCT07–1/1

Use Foldable ROPS and Seat Belt Properly

If this tractor is equipped with a foldable ROPS, keep the ROPS in the fully extended and locked position. If the tractor is ever operated with ROPS folded (e.g., to enter a low building), drive with extreme caution. Do NOT use seat belt with the ROPS folded.

Return the ROPS to the raised, fully extended and locked position as soon as the tractor is operated under normal conditions. Always fasten your seat belt when the ROPS is fully extended and locked.



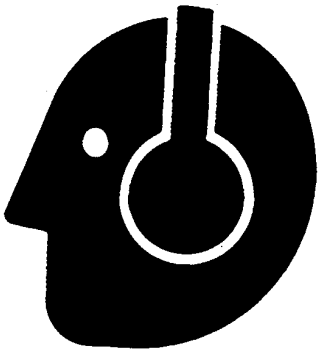
TS205 –UN–23AUG88

DX,FOLDROPS –19–31AUG99–1/1

Protect Against Noise

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.



TS207 –UN–23AUG88

DX,NOISE –19–03MAR93–1/1

Service Cooling System Safely

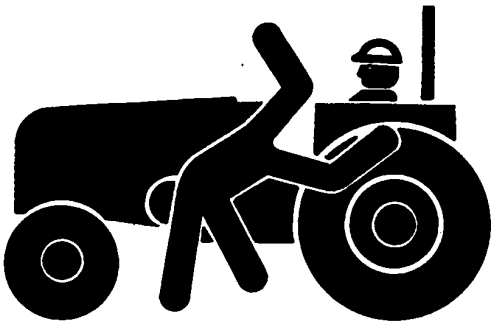
Explosive release of fluids from pressurized cooling system can cause serious burns.

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.

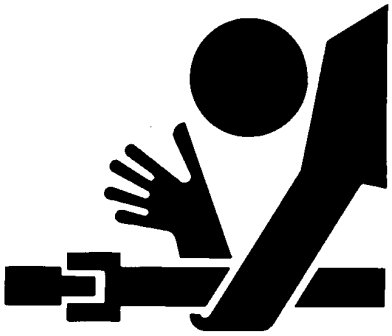
TS281 –UN–23AUG88

DX,RCAP –19–04JUN90–1/1

Operating the Tractor Safely



TS213 –UN–23AUG88



TS276 –UN–23AUG88

Careless use of the tractor can result in unnecessary accidents. Be alert to hazards of tractor operation. Understand causes of accidents and take every precaution to avoid them. Most common accidents are caused from:

- Tractor roll-over
- Improper starting procedures
- Crushing and pinching during hitching
- Collisions with other motor vehicles
- Entanglement in PTO shafts
- Falling from tractor

Avoid accidents by taking the following precautions:

Before leaving the tractor, apply the handbrake and put the transmission in NEUTRAL (or in PARK position, if equipped). Leaving transmission in gear with engine stopped will NOT prevent tractor from moving.

Be sure everyone is clear of tractor and attached equipment before starting engine.

Never try to get on or off a moving tractor.

When tractor is left unattended, apply the handbrake and put the transmission in NEUTRAL or PARK position, lower implements to the ground, stop the engine and remove the key.

Never go near an operating PTO or an operating implement.

If a seat belt is equipped, always fasten it in a ROPS-equipped tractor.

LX,HAZARD,S –19–02JAN03–1/1

Store Attachments Safely

Stored attachments such as dual wheels, cage wheels, and loaders can fall and cause serious injury or death.

Securely store attachments and implements to prevent falling. Keep playing children and bystanders away from storage area.

TS219 –UN–23AUG88

DX,STORE –19–03MAR93–1/1

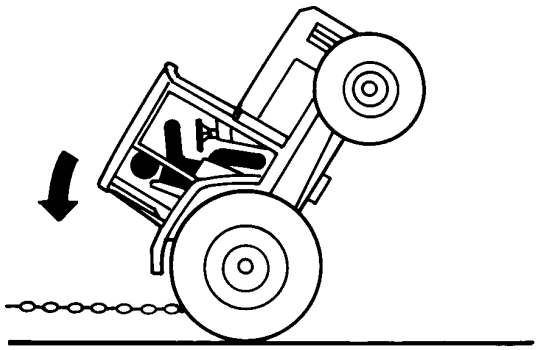
Freeing a Mired Machine

Attempting to free a mired machine can involve safety hazards such as the mired tractor tipping rearward, the towing tractor overturning, and the tow chain or tow bar (a cable is not recommended) failing and recoiling from its stretched condition.

Back your tractor out if it gets mired down in mud. Unhitch any towed implements. Dig mud from behind the rear wheels. Place boards behind the wheels to provide a solid base and try to back out slowly. If necessary, dig mud from the front of all wheels and drive slowly ahead.

If necessary to tow with another unit, use a tow bar or a long chain (a cable is not recommended). Inspect the chain for flaws. Make sure all parts of towing devices are of adequate size and strong enough to handle the load.

Always hitch to the drawbar of the towing unit. Do not hitch to the front pushbar attachment point. Before moving, clear the area of people. Apply power smoothly to take up the slack: a sudden pull could snap any towing device causing it to whip or recoil dangerously.



TS1645 –UN–15SEP95

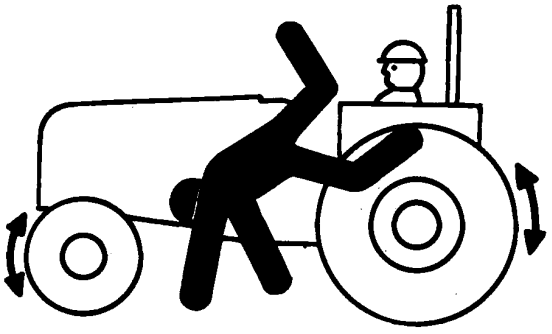
TS263 –UN–23AUG88

DX,MIRED –19–07JUL99–1/1

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.



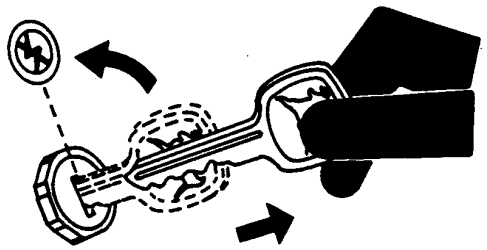
TS290 –UN–23AUG88

DX,RIDER –19–03MAR93–1/1

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.



TS230 –UN–24MAY89

DX,PARK –19–04JUN90–1/1

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.

TS1644 –UN–22AUG95

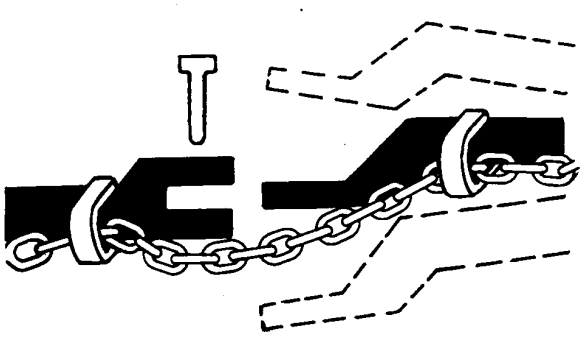
DX,PTO –19–12SEP95–1/1

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.

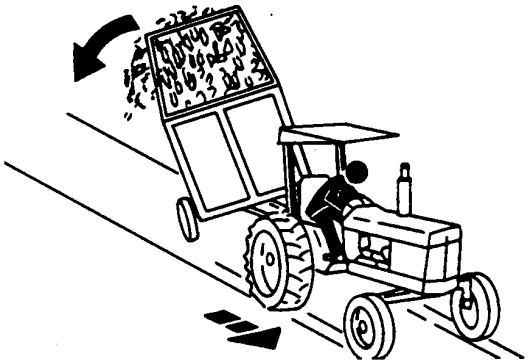
See your John Deere dealer for a chain with a strength rating equal to or greater than the gross weight of the towed machine. Do not use safety chain for towing.



TS217 –UN–23AUG88

DX,CHAIN –19–03MAR93–1/1

Tow Loads Safely



TS216 –UN–23AUG88

Stopping distance increases with speed and weight of towed loads, and on slopes. Towed loads with or without brakes that are too heavy for the tractor or are towed too fast can cause loss of control. Consider the total weight of the equipment and its load.

Observe these recommended maximum road speeds, or local speed limits which may be lower:

- If towed equipment does not have brakes, do not travel more than 32 km/h (20 mph) and do not tow loads more than 1.5 times the tractor weight.
- If towed equipment has brakes, do not travel more than 40 km/h (25 mph) and do not tow loads more than 4.5 times the tractor weight.

Ensure the load does not exceed the recommended weight ratio. Add ballast to recommended maximum for tractor, lighten the load, or get a heavier towing unit. The tractor must be heavy and powerful enough with adequate braking power for the towed load. Use additional caution when towing loads under adverse surface conditions, when turning, and on inclines.

DX,TOW –19–02OCT95–1/1

Practice Safe Maintenance

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.

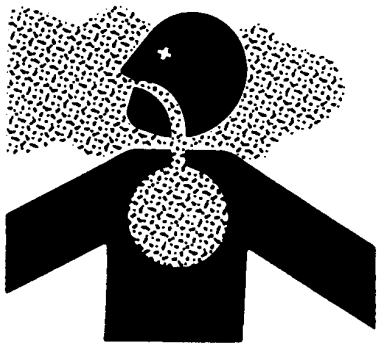
On self-propelled equipment, disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.

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

TS218 –UN–23AUG88

DX,SERV –19–17FEB99–1/1

Remove Paint Before Welding or Heating



TS220 –UN–23AUG88

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.

DX,PAINT –19–24JUL02–1/1

Protect Against High Pressure Spray

TS1343 –UN–18MAR92

Spray from high pressure nozzles can penetrate the skin and cause serious injury. Keep spray from contacting hands or body.

If an accident occurs, see a doctor immediately. Any high pressure spray 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,SPRAY –19–16APR92–1/1

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

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

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.

TS952 –UN–12APR90

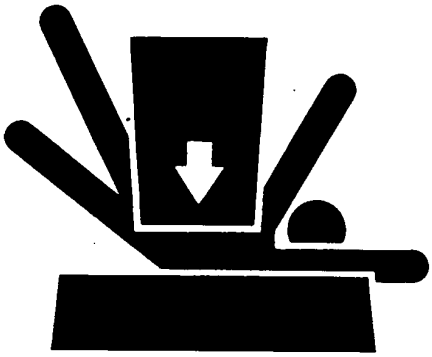
DX,TIRECP –19–24AUG90–1/1

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

Dispose of Waste Properly

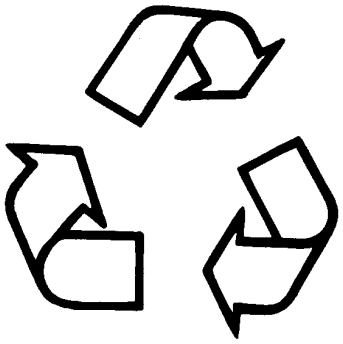
Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with John Deere equipment include such items as oil, fuel, coolant, brake fluid, filters, and batteries.

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

Keep Proof of Ownership

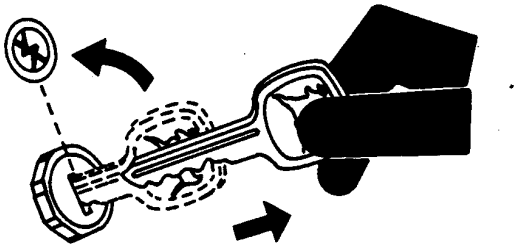
1. Maintain in a secure location an up-to-date inventory of all product and component serial numbers.
2. Regularly verify that identification plates have not been removed. Report any evidence of tampering to law enforcement agencies and order duplicate plates.
3. Other steps you can take:
   - Mark your machine with your own numbering system
   - Take color photographs from several angles of each machine

TS1680 –UN–09DEC03

DX,SECURE1 –19–18NOV03–1/1

Keep Machines Secure

1. Install vandal-proof devices.
2. When machine is in storage:
   - Lower equipment to the ground
   - Set wheels to widest position to make loading more difficult
   - Remove any keys and batteries
3. When parking indoors, put large equipment in front of exits and lock your storage buildings.
4. When parking outdoors, store in a well-lighted and fenced area.
5. Make note of suspicious activity and report any thefts immediately to law enforcement agencies.
6. Notify your John Deere dealer of any losses.



TS230 –UN–24MAY89

DX,SECURE2 –19–18NOV03–1/1

Safety Labels

Pictorial Safety Signs

At several important places of this machine safety signs are affixed intended to signify potential danger. The hazard is identified by a pictorial in a warning triangle. An adjacent pictorial provides information how to avoid personal injury. These safety signs, their placement on the machine and a brief explanatory text are shown below.

TS231 –19–07OCT88

LX,LABEL 002079 –19–02MAY92–1/1

Warning

This decal is located at the PTO shield plate.

Do not touch any moving part. Wait until all moving parts have stopped moving.

CQ264370 –UN–11APR08

AG,LT04177,19 –19–06MAY08–1/1

Warning — Consult Operator's Manual

This Operator's Manual contains important information necessary for safe machine operation.

Carefully observe all safety rules to avoid accidents.

CQ281097 –UN–06MAY08

LT04177,000003A –19–06MAY08–1/1

Warning — Operator's Platform

Do not transport passengers on fenders, risk of crushing.

CQ281098 –UN–06MAY08

LT04177,000003D –19–07MAY08–1/1

Warning — Moving Parts

This decal indicates a hazardous situation.

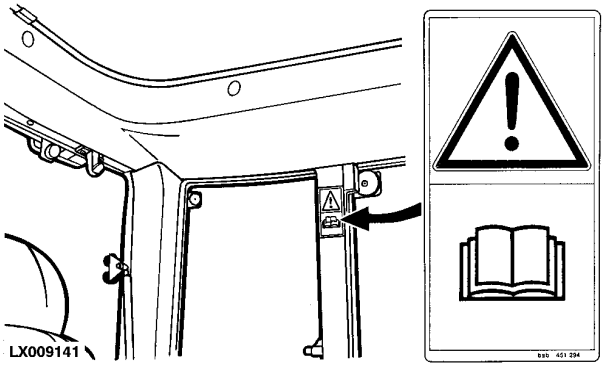
Keep away from operational zone of hydraulic lift arms.

CQ281102 –UN–26MAY08

LT04177,0000043 –19–26MAY08–1/1

Caution — Consult Operator's Manual

This Operator's Manual contains important information necessary for safe machine operation. Carefully observe all safety rules to avoid accidents.



LX009141 –UN–04JAN95

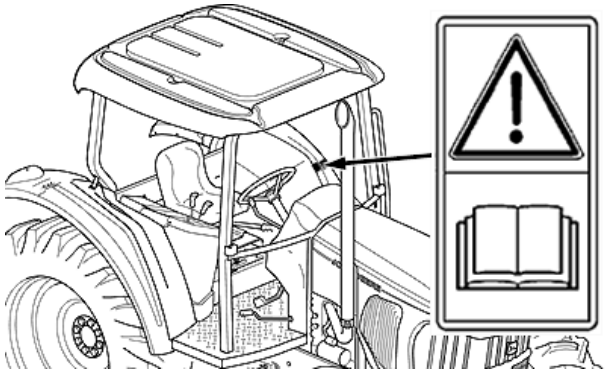
LT04177,000003C –19–06MAY08–1/1

Decal Location — Consult Operator's Manual

Tractors with open operator's station:

The Operator's Manual contains important information necessary for safe machine operation.

Carefully observe all safety rules to avoid accidents.

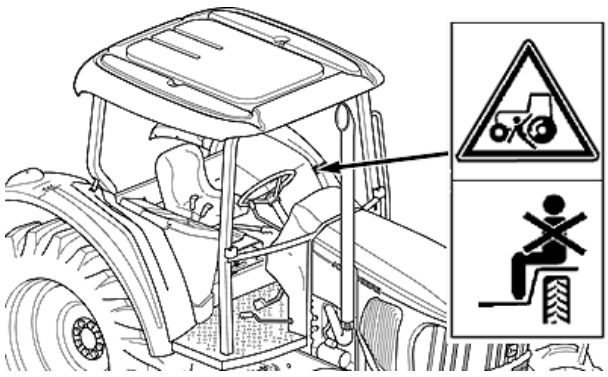


CQ281101 –UN–07MAY08

LT04177,0000040 –19–07MAY08–1/1

Warning — Operator's Platform

Do not transport passengers on fenders, risk of crushing.

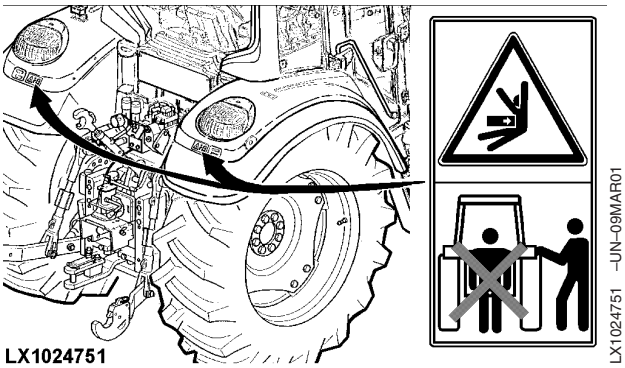


CQ281100 –UN–07MAY08

LT04177,000003B –19–07MAY08–1/1

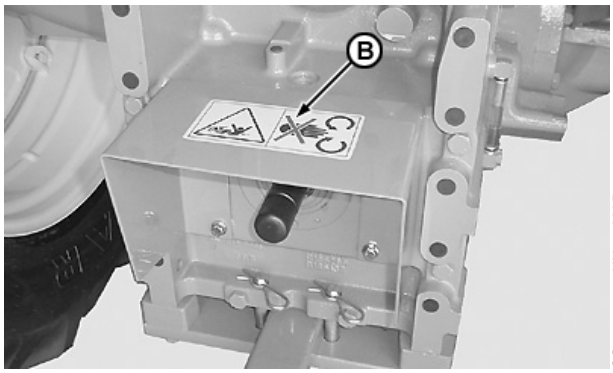
Remote Control Rockshaft

Keep away from operational zone of hydraulic three-point hitch when operating hitch arms.



LT04177,0000042 –19–22MAY08–1/1

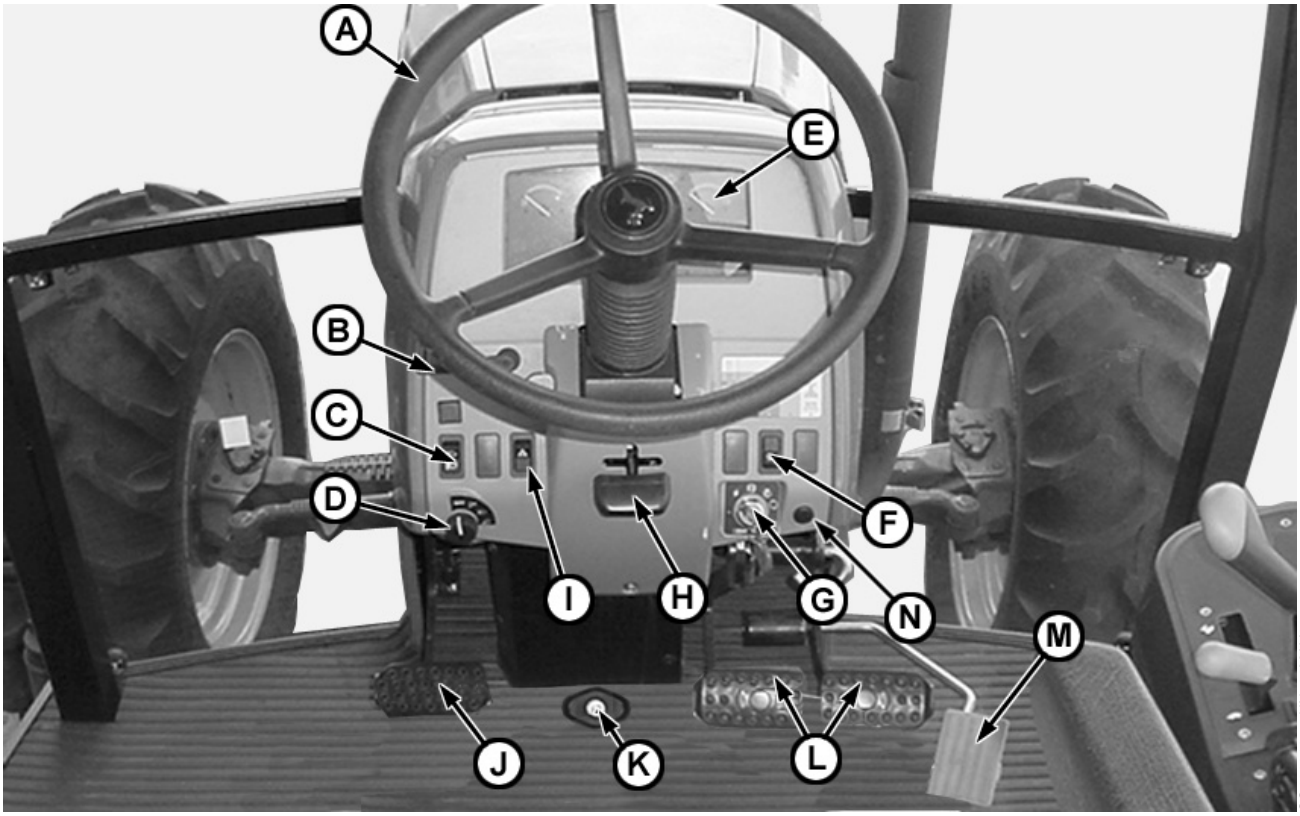
External Safety Sign — Rear



B—Power TakeOff - rotating shaft

LT04177,0000037 –19–09APR08–1/1

Tractor Controls



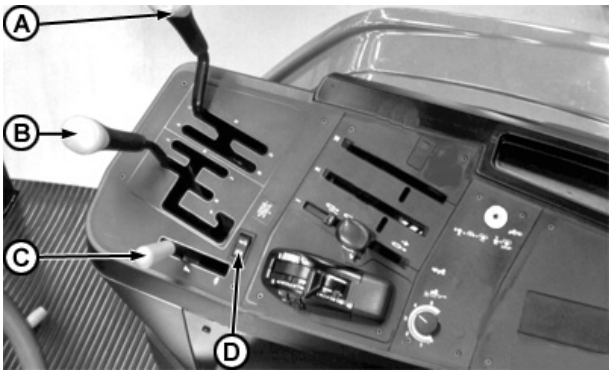
Tractor Controls

A—Steering wheel
B—Turn signal lever
C—Full and low beam switch
D—Lights rotary switch
E—Instrument panel
F—Rear work light switch
G—Main switch
H—Lever for steering column adjustment
I—Hazard warning lights switch
J—Clutch pedal
K—Differential lock switch
L—Brake pedals
M—Foot throttle
N—Horn button (if equipped)

ML70882,000043F –19–09MAY05–1/1

Tractor Controls with SYNCROPLUS™ Transmission

A—Range shift lever
B—Gearshift lever
C—Hand throttle
D—Front wheel drive switch



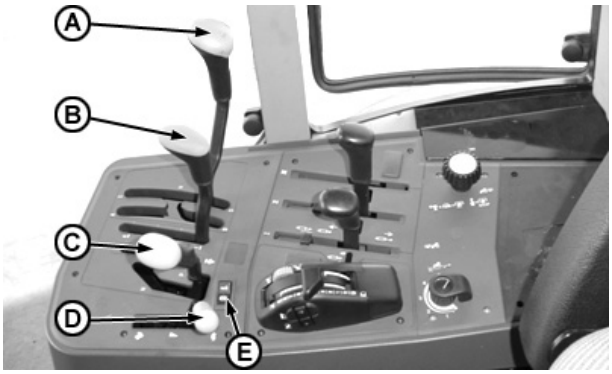
SYNCROPLUS Transmission

SYNCROPLUS is a registered trademark of the Deere & Company

OU83340,0000519 –19–02JUN04–1/1

Tractor Controls with POWRQUAD™ Transmission

A—Range shift lever
B—Gearshift lever
C—Reversing and PARK lever
D—Hand throttle
E—Front wheel drive switch



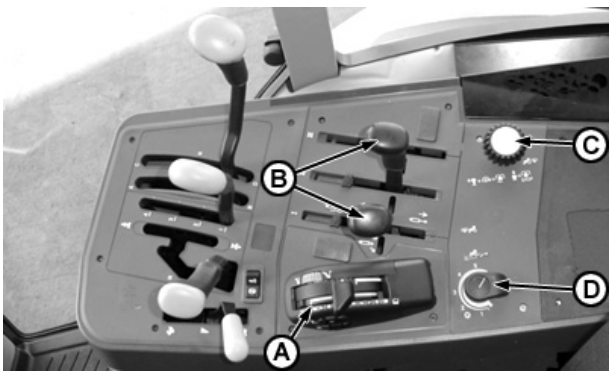
POWRQUAD transmission

PowrQuad is a registered trademark of the Deere & Company

OU83340,0000518 –19–02JUN04–1/1

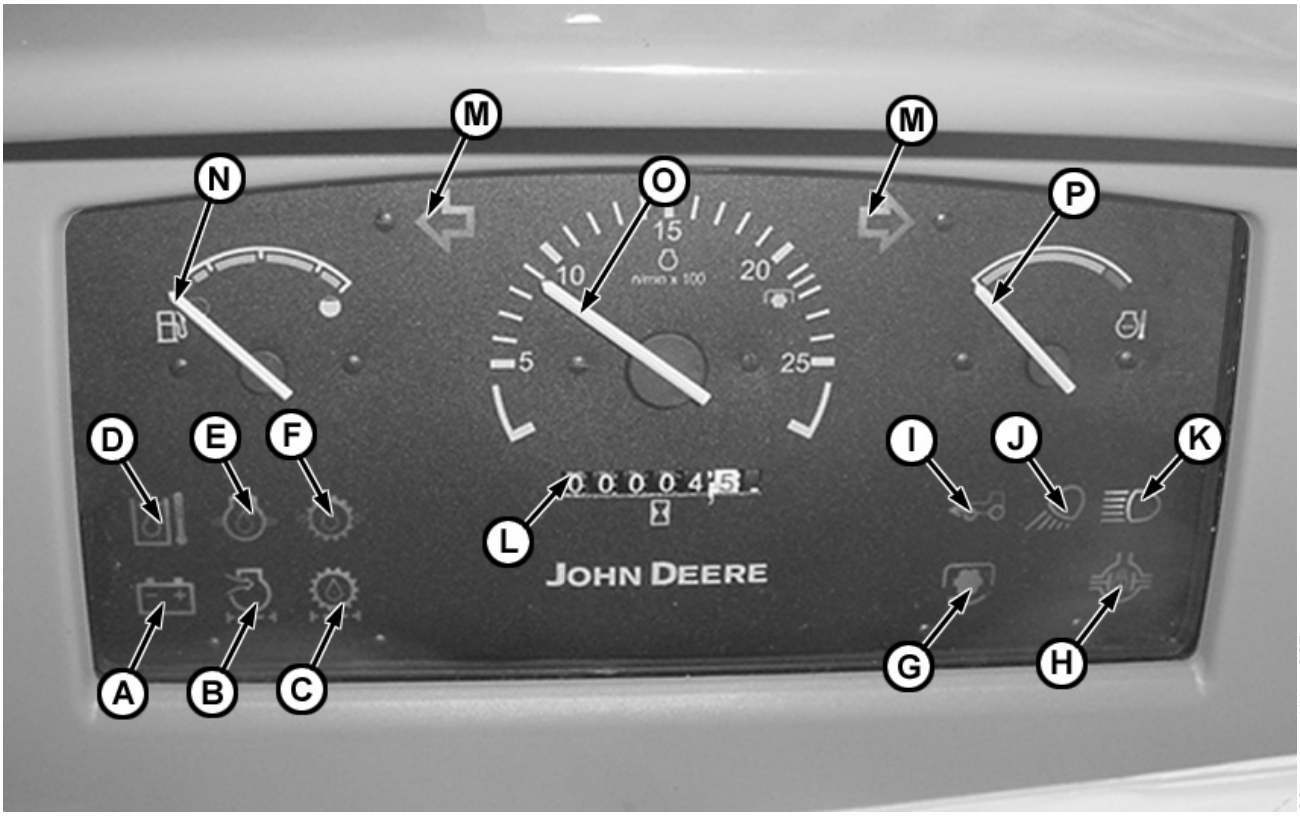
Implement Controls

A—Rockshaft control unit
B—Selective control lever
C—PTO switch
D—Sensitivity control



OU83340,00005AC –19–06APR05–1/1

Instruments



- **A-** Battery charge warning light: If light comes on with engine running, this indicates a defect in the alternator. Check alternator cables.
- **B-** Air filter restriction warning light: If light comes on with engine running, the air cleaner element must be cleaned or replaced.
- **C-** Transmission oil filter restriction warning light: This light comes on when the transmission oil filter is clogged or the oil temperature is too low.
- **D-** Hydraulic oil temperature warning light: This warning light comes on when the transmission/hydraulic oil temperature is too high.
- **E-** Engine oil pressure warning light: If this light comes on with the engine running, stop the engine and check the engine oil level.
- **F-** Transmission oil pressure warning light[1]: If this warning light glows, transmission/hydraulic oil pressure is too low. See your John Deere dealer immediately.
- **G-** PTO engaged warning light: This light comes on when the PTO is engaged.
- **H-** Differential lock engaged warning light: This light comes on when the differential lock is engaged.
- **I-** Front wheel drive engaged warning light: Light comes on when front wheel drive is engaged.
- **J-** Work lights warning light: Light comes on when work lights are ON.
- **K-** Full beam warning light: Light comes on whenever full beams are engaged.
- **L-** Hour Meter: Records the operating hours of the tractor.

[1]*For Powr Quad transmission only*

Continued on next page

- **M-** Turn signal warning light: The intermittent light indicates the direction that the tractor will take when the turn signal or hazard warning lights lever is engaged.
- **N-** Fuel gauge: Displays fuel level in tank.
- **O-** Tachometer: Indicates engine speed (rpm).
- **P-** Engine temperature gauge: Indicates engine coolant temperature.

NOTE: **Light test:***On starting engine, all warning lights should come on for approx. one second. If this is not the case, a defective bulb or blown fuse may be the cause. Inspect and replace parts as necessary.*

ML70882,0000440 –19–23AUG06–2/2

Fuel Gauge

The fuel gauge indicates if the fuel tank is full (filled circle) or empty (unfilled circle).

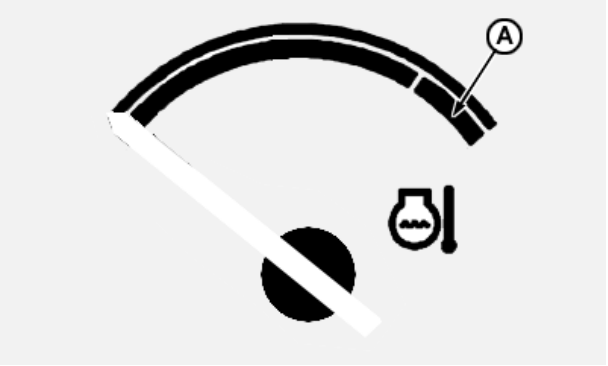
When the pointer draws close to the unfilled circle, refill with fuel.

ML70882,0000442 –19–06APR05–1/1

Engine Temperature Gauge

When pointer reaches range (A) it means that the engine is overheated. Immediately reduce load. If by any chance this does not occur, immediately stop the engine and verify the cause of overheating (low level of coolant or dirty radiator, for example).

See your John Deere dealer.

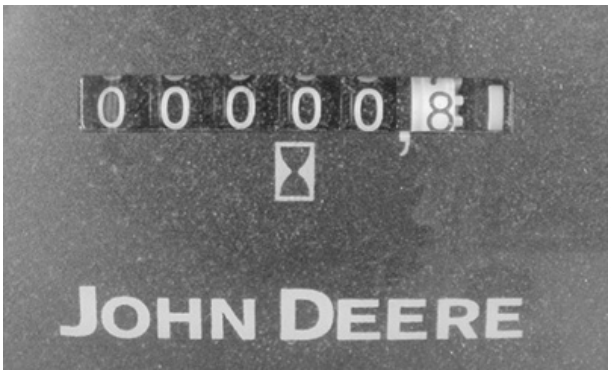


Engine temperature gauge

ML70882,0000441 –19–26JUL05–1/1

Hour Meter

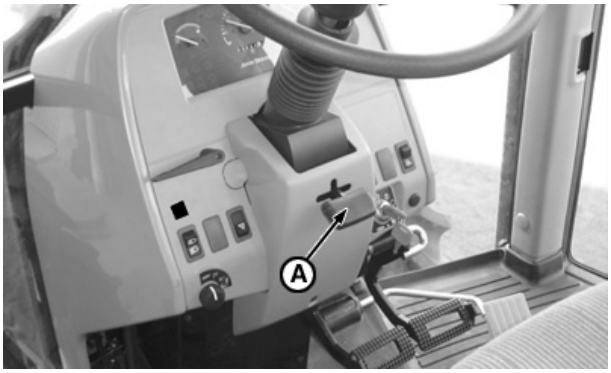
The hour meter records the number of operating hours of the engine, functioning also as a guide for scheduled services.



ML70882,0000443 –19–25OCT04–1/1

Steering Column Adjustment

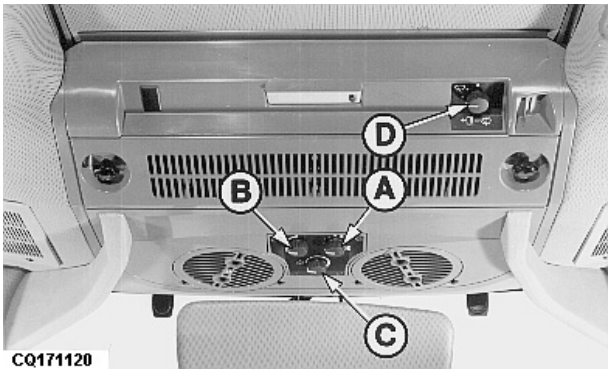
Push lever (A) upwards and adjust steering column to required angle.



OU83340,000051D –19–02JUN04–1/1

Heater, Air-Conditioning, and Windshield Wiper Controls

- A — Blower switch
- B — Heater regulator
- C — Air-conditioning regulator
- D — Windshield wiper switch

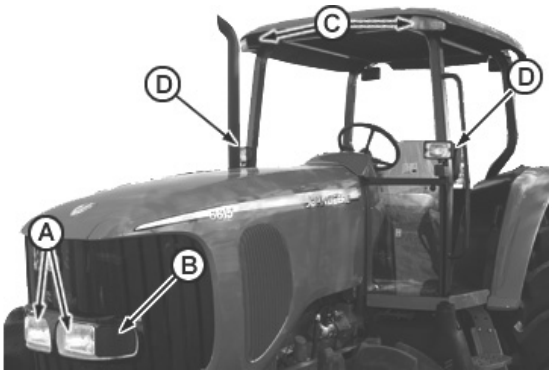


AG,LT04177,32 –19–12SEP98–1/1

Lights

Lights

A—Headlights
B—Protective plastic case
C—Turn signal lights
D—Front roof work lights
E—Rear roof work lights
F—Reverse Lights (If Equipped), rear lights, brake lights and turn signal lights



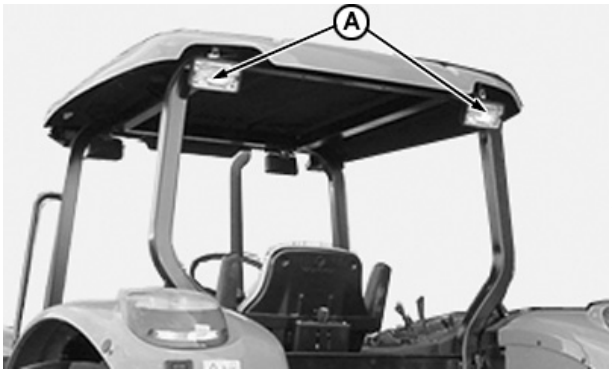
CQ259190 –UN–20OCT06

CQ227390 –UN–25OCT04

ML70882,0000444 –19–18JAN06–1/1

Rear Work Light Adjustment

1. Loosen the light clamping bolt (A).
2. Adjust light as required.
3. Retighten bolt (A).



CQ227400 –UN–25OCT04

ML70882,0000445 –19–16JUN06–1/1

Lights Rotary Switch

The rotary switch for lights (A) can be set to the following positions:

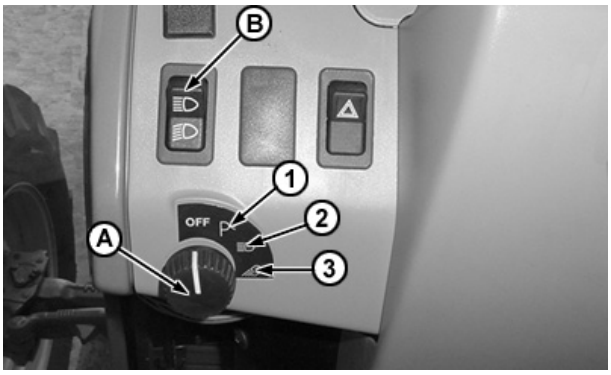
- OFF = Light functions OFF
- 1 = Parking lights ON
- 2 = Front service lights ON
- 3 = Headlights and field service lights ON

Switch headlights to “full beam” or “dipped beam” position using switch (B).

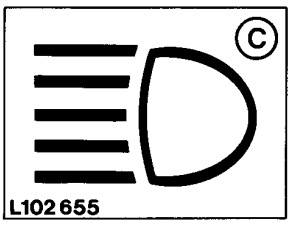
- Switch downwards = Dipped beam
- Switch upwards = Full beam

Indicator light (C) will come on when headlight switch is in “full beam” position.

NOTE: Rear service lights (if installed) come on when rotary switch (A) is in position (3) and when switch (D) is engaged.



CQ224140 –UN–25OCT04



L102655 –UN–15AUG94

CQ224141 –UN–25OCT04

ML70882,0000468 –19–05NOV04–1/1

Hazard Lights Switch

If any problem occurs while driving the tractor on public roads, switch on hazard lights (A).

CQ224142 –UN–25OCT04

OU83340,000051F –19–06APR05–1/1

Turn Signal Lever

Lever positions (A):

- Down = **Left-hand** turn signal
- Up = **Right-hand** turn signal

CQ279880 –UN–07JUN07

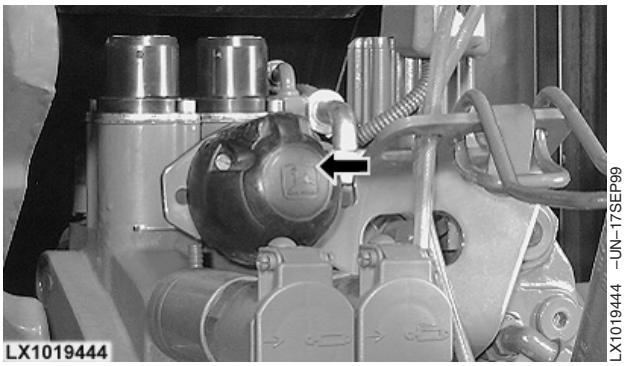
LT04177,000013E –19–07JUN07–1/1

Electric Socket for Trailer (Option)

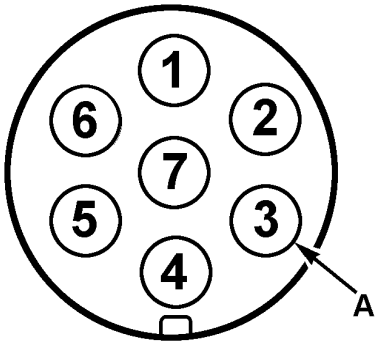
The socket allows lights, turn signals and other electrical equipment on a trailer or implement to be connected. Always use additional lighting on a mounted implement, when it uses turn signals and other lights on rear of tractor.

NOTE: Suitable plugs can be obtained from your John Deere dealer.

Terminal (A) is the ground connection.



LX1019444 –UN–17SEP99



LX1019770

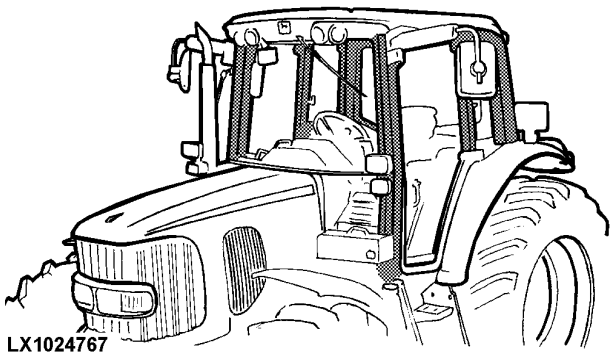
LX1019770 –UN–17NOV00

ML70882,0000469 –19–05NOV04–1/1

Roll-Over Protective Structure (ROPS)

CAUTION: Check that all parts are correctly mounted. In the event that the roll-over protective structure (ROPS) is removed or its connections loosen, retighten all bolts with the appropriate torque before operating the tractor again.

The protection provided by the Roll-Over Protective Structure (ROPS) will be reduced if the structure suffers structural damage, such as those caused by the tractor rolling over, or if the overall shape is altered by welding or by a strong impact. The Roll-Over Protective Structure (ROPS) must always be replaced if subject to any of the irregularities referred to above.



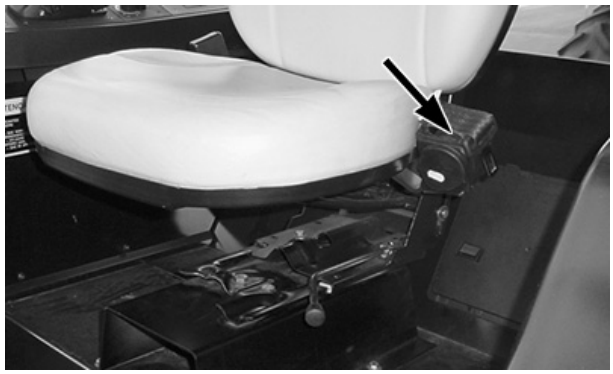
OU83340,00004AC –19–25OCT04–1/1

Seat Belt Use

CAUTION: Always use the seat belt. This shall reduce the probability of serious injury in the event of an accident or if the tractor rolls over.

To ensure that the operator maintains a correct sitting position, the seat belt must be adjusted against the operator's abdomen.

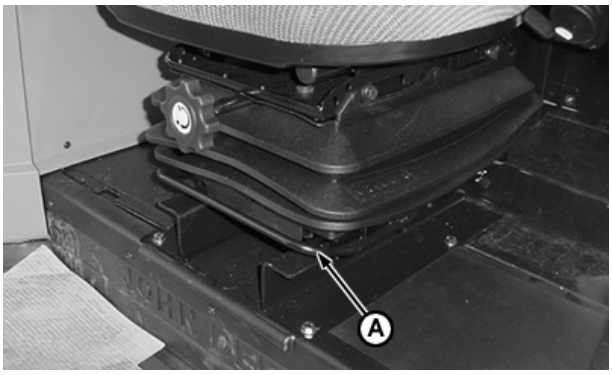
To adjust the seat belt, pull it out to its full length then adjust the seat belt by drawing the end through the buckle.



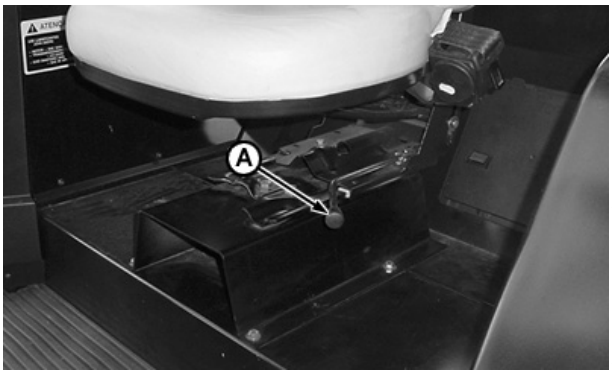
ML70882,0000447 –19–25OCT04–1/1

Horizontal Position of the Operator's Seat

Move lever (A) upwards and slide seat forward or backward to desired position.



Tractor with Cab



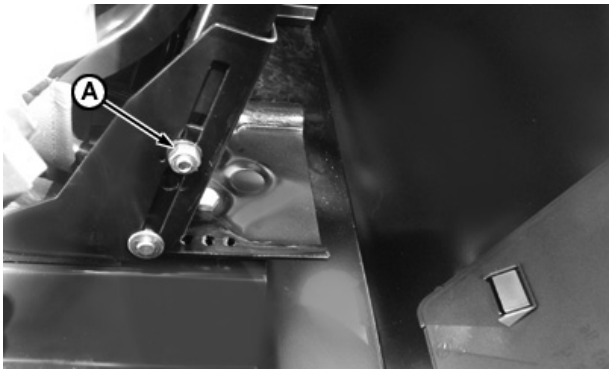
Tractor with platform

ML70882,0000448 –19–25OCT04–1/1

Vertical Position of the Operator's Seat—Tractors with Platforms

Loosen nut (A) on both sides of seat and adjust to desired height.

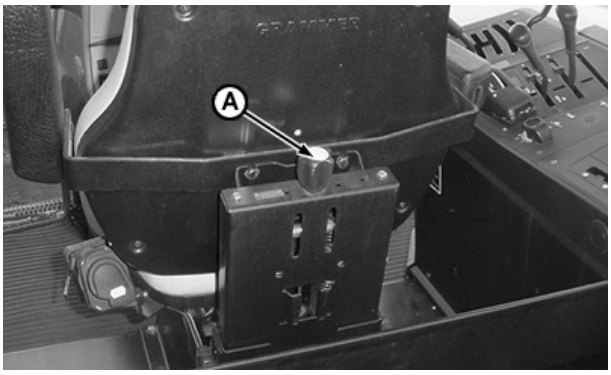
Tighten nuts (A).



ML70882,000044A –19–16JUN06–1/1

Adjusting Seat Suspension

Turn adjustment handle (A) to compensate for operator's weight.



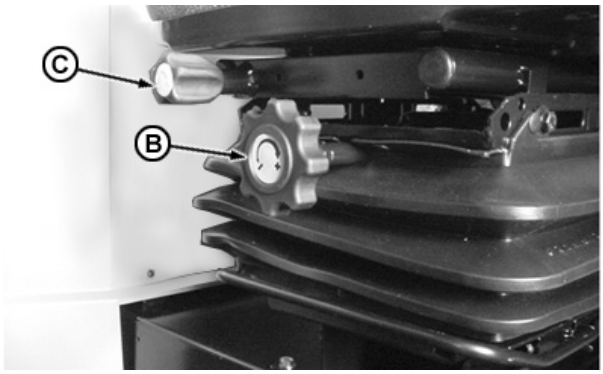
Tractor with platform

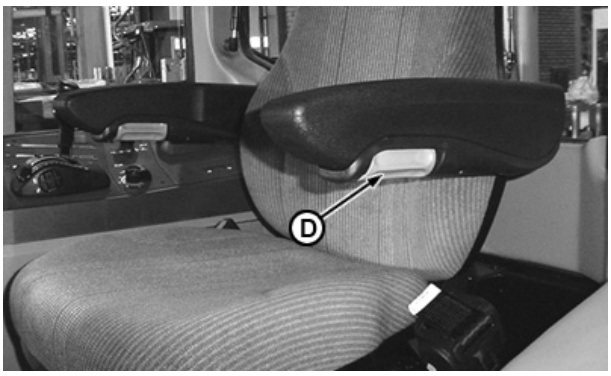
ML70882,0000449 –19–25OCT04–1/2

Turn adjustment handle (B) to compensate for operator's weight.

Adjust handle (C) to recline or straighten cushion back, to obtain a more comfortable position.

Adjust handle (D) for a more comfortable armrest position.





ML70882,0000449 –19–25OCT04–2/2

Operator's Manuals (option)

Use compartment (A) to store Tractor Operator's Manuals. Whenever in doubt do not hesitate to consult the manuals.

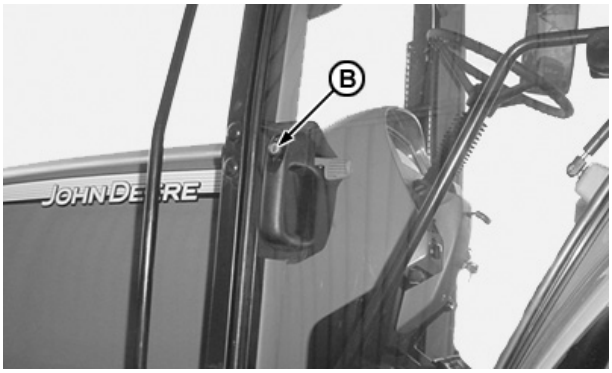
CQ209850 –UN–07NOV01

OU83340,000058B –19–14JUL04–1/1

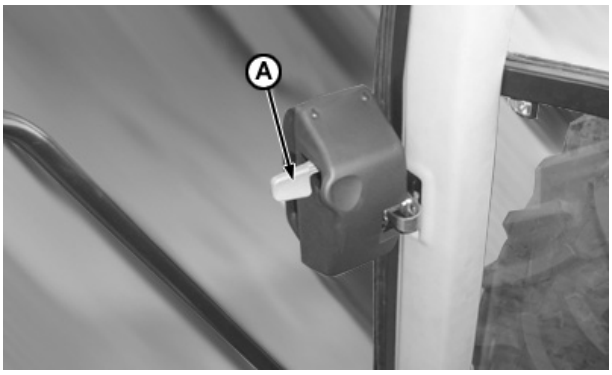
Opening Door

Use the key supplied with your tractor to unlock the door. Then press the button (B).

The door is opened from the inside by pushing lever (A) backwards.



CQ224153 –UN–25OCT04



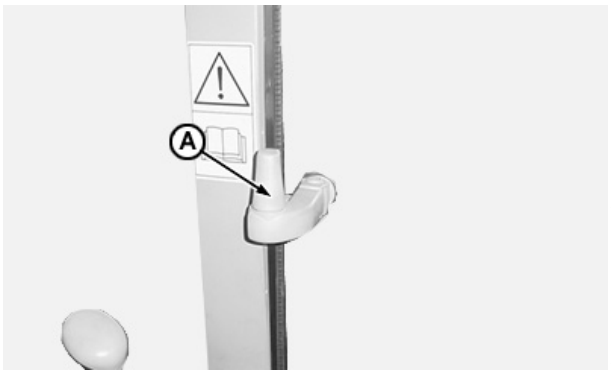
CQ224144 –UN–11MAY05

OU83340,0000566 –19–06APR05–1/1

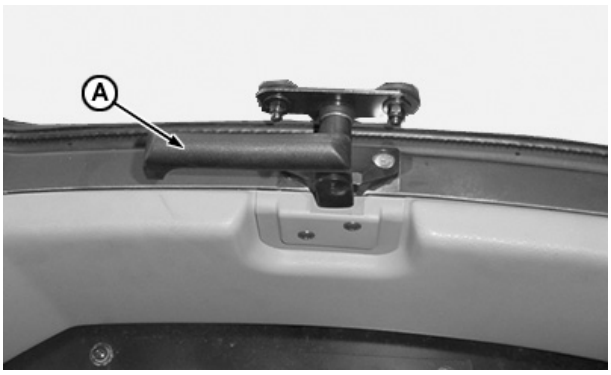
Opening Windows

The side and rear windows can be opened.

Open windows by means of handles (A).



RH window



Rear window

ML70882,000044C –19–09MAY05–1/1

Windshield Wiper and Washer System

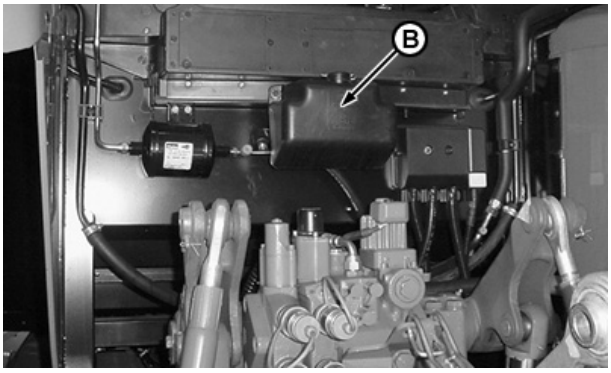
The windshield wiper switch (A) has two positions:

1. Slow
2. Fast

To activate washer system press switch (A).

Check and refill the reservoir (B) of the windshield washer when required.

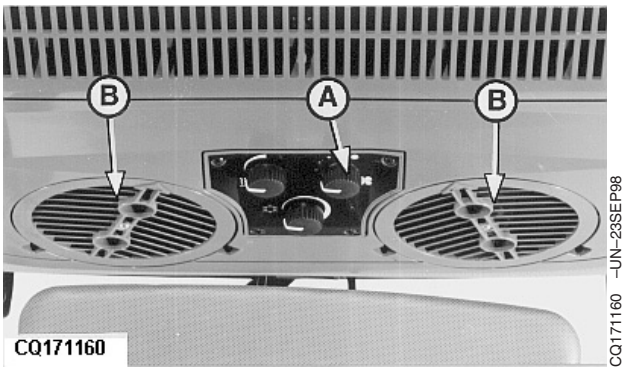
NOTE: Rear window handle has to be locked in order to operate rear windshield wiper (if equipped). Consult "Opening Windows" for further information.



ML70882,000044D –19–09MAY05–1/1

Fan and Air Louvers

The fan has four selectable speeds on switch (A). Airflow can be directed as required using the air louvers (B).

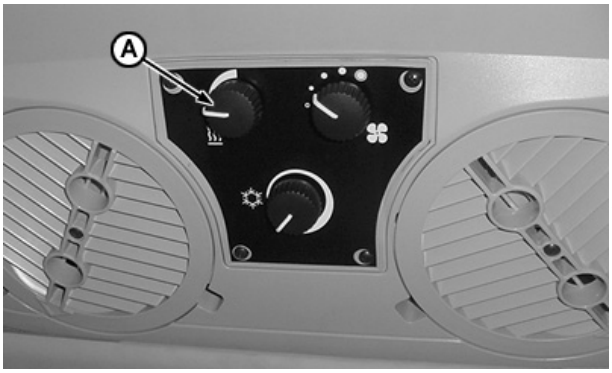


ML70882,000046A –19–16JUN06–1/1

Heater

Heating is adjusted through potentiometer (A). To increase temperature, turn potentiometer clockwise.

Set blower and louvers to required positions.

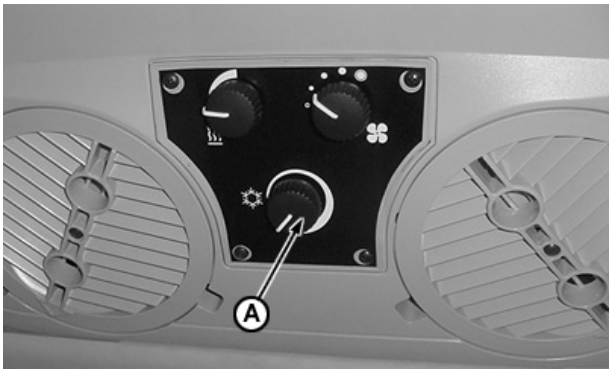


ML70882,000044E –19–23JUN06–1/1

Air Conditioning System

Adjust air conditioning by means of the indicated knob. Turn the button to the right-hand side to lower temperature.

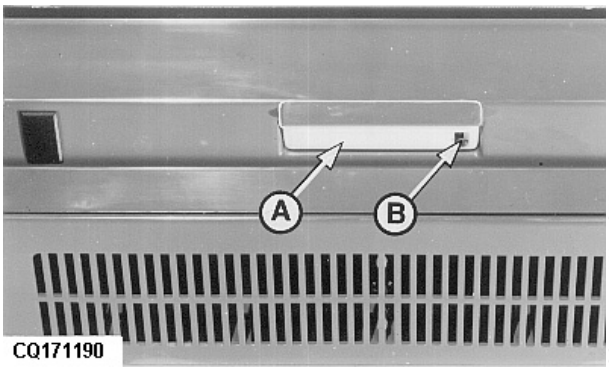
IMPORTANT: Engage the air conditioning system several times during the year, including during cold seasons, for at least 5 minutes so that all of the mobile parts of the system, such as the air compressor, are lubricated.



ML70882,000044F –19–18JAN06–1/1

Dome Light

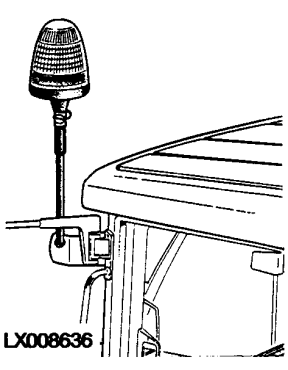
The dome light (A) is operated via switch (B).

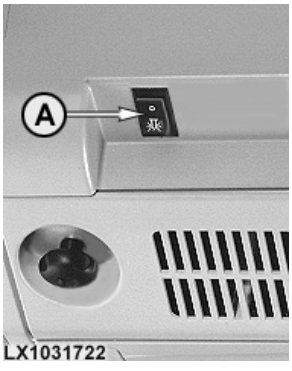


AG,LT04177,50 –19–12SEP98–1/1

Intermittent Indicator Light (option)

The intermittent indicator light (not authorized in all countries) should be used when driving extremely slowly and when tractor width is excessive. It is turned on by switch (A) located on cab ceiling.





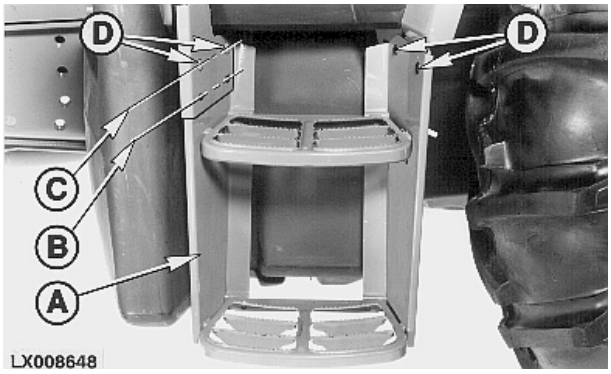
ML70882,0000450 –19–25OCT04–1/1

Adjusting Access Step Height

Remove bolts (D). Move access step to desired position. Reinsert and tighten bolts (D).

Execute procedure in the same way for RH side (if equipped).

A—Step
B—Lower position
C—Upper position
D—Bolts



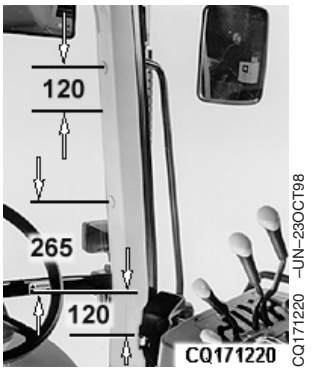
ML70882,0000451 –19–09MAY05–1/1

Installation of Monitors and Instruments

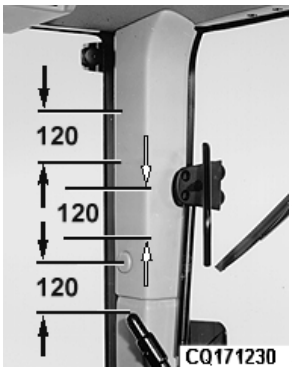
There are a number of locations in the cab where it is possible to install monitors and/or instruments:

- Front right post
- Center posts
- Rear right post

NOTE: The distance between the anchorage bolt holes is 120 mm (4.72 in.); M10 thread.



CQ171220 –UN–23OCT98

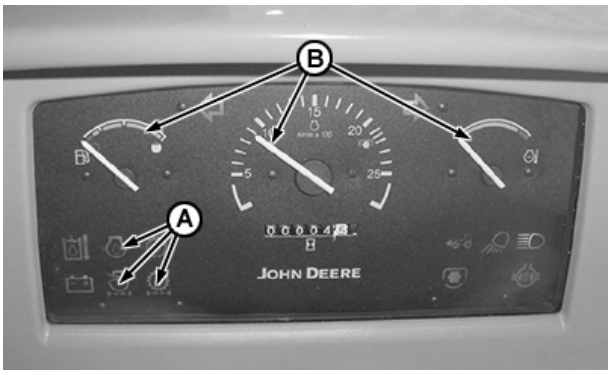


CQ171230 –UN–23OCT98

AG,LT04177,51 –19–06APR05–1/1

Break-In Period

Closely Monitor Engine Performance



CQ209801 –UN–26OCT04

IMPORTANT: Engine is ready for normal operation. Be extra cautious during the first 100 operating hours, until you become thoroughly familiar with the sound and feel of your new tractor. Give each detail due consideration and stay alert.

Warm up tractor with care. Check warning lights (A) and indicators (B). Avoid unnecessary engine idling. The following recommendations should be **strictly followed** when breaking in engine:

1. Maintain engine oil level between the maximum and minimum marks on the dipstick and change the oil after the first 90 to 110 hours of operation.
2. Subject the engine to moderate to heavy loads at different speeds.
3. If the engine was subjected to light load for a relatively prolonged period or if within the first 100 hours of operation oil had to be added, **a longer break-in period is required.** In these situations change the engine oil and filter at 100 hours and begin a new break-in period for another 100 hours, using special oil for breaking-in or a “fine” oil and follow the above procedures.
4. Check oil level more often during this period.

IMPORTANT: During the first 100 hours do not top up oil unless the oil level is below the minimum mark on the dipstick.

During the break-in period of new or rebuilt engines only use special break-in oil or SAE 10W - 30 oil.

Do not use normal oil of the type SAE 15W-40. These oils are not appropriate for breaking-in of engine.

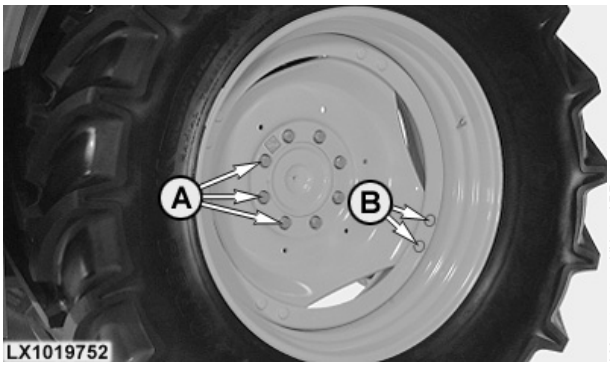
Frequently check the level of engine oil, coolant, hydraulic system / transmission and front wheel drive oil. Stay attentive to leaks.

ML70882,0000452 –19–03JUL06–1/1

After First 10 Hours of Operation

Retighten Rear Wheel Attaching Nuts/Bolts

Specification	
Rear wheel bolts—Torque A	400 N.m (290 lb-ft)
Torque B	200 N.m (145 lb-ft)



LT04177,0000140 –19–05FEB08–1/3

Retighten Front Wheel Bolts and Attaching Nuts

Specification	
Four-wheel drive - front wheel bolts—Torque A	300 N.m (220 lb-ft)
Torque B	250 N.m (185 lb-ft)

(Torques may vary, depending on tractor use)

LT04177,0000140 –19–05FEB08–2/3

Retighten Attaching Bolts of Operator's Platform or Cab

Check all operator's platform or cab attaching screws for tightness.

Specified torques are as follows:

Specification	
Front bolts—Torque	220 N.m (160 lb-ft)
Rear bolts—Torque	200 N.m (140 lb-ft)

LT04177,0000140 –19–05FEB08–3/3

Service During Break-In Period

Within first 10 hours of operation:

- Carry out the daily and 10 hour services. (See “Service—Daily or Every 10 hours” section).

IMPORTANT: Check the torque of the wheel nuts during the first 10 hours of operation of the tractor, and then at regular intervals.

- Tighten wheel bolts. (See “Treads, Wheels and Tires” section).

After First 50 Hours of Operation:

- Tighten wheel bolts. (See “Treads, Wheels and Tires” section).
- Check alternator/fan belt tension and tighten all clamps of air intake and cooling system hoses.
- Carry out the 50 hour service. (See “Service—Every 50 hours” section).

After First 100 Hours of Operation:

- Change the transmission/hydraulic system oil filter element (see Service—Every 750 hours section).
- Change engine oil and filter (see Service—Every 250 hours section).

ML70882,0000454 –19–05JUL06–1/1

Daily Service Before Starting Engine

NOTE: Park tractor on level ground before executing checks.

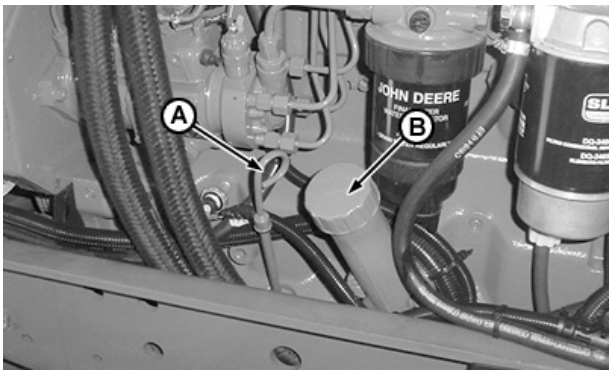
1. Check engine oil level. Clean dipstick (A) and reinsert fully. Withdraw it again and check oil level.
   The window for safe operation of engine is when the oil level is between the upper and lower marks of the dipstick (see arrow). Do not operate the engine if oil level is below minimum mark. If it is, add oil through filler neck (B).
2. Drain water and sediment deposits from fuel filter at drain screw.
3. Lubricate the following points every 10 hours if operating the tractor in extremely wet or excessively muddy conditions.
   - Front axle pivot pin
   - Steering column transmission axle.
   - Ends of coupling bar.

   Use SD Polyurea Grease, or similar.

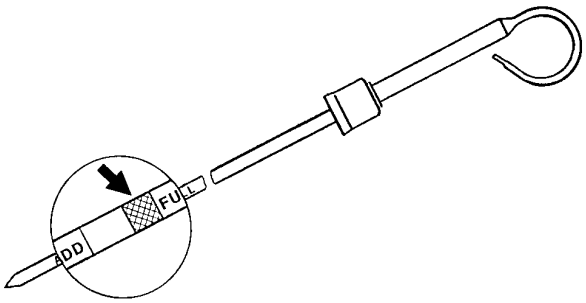
4. Check hydraulic oil level of transmission. Withdraw dipstick and clean it. Insert dipstick fully.
   Oil level should be between the marks on the dipstick. If level is low add oil.
5. Check coolant level of radiator expansion tank. If the engine is cold and coolant level is below MIN, add coolant to expansion tank until level is between MIN and MAX marks.

IMPORTANT: Reconnect vent hose in expansion tank cap.

For further details, see “Fuel, Lubricants, Coolant” section.



CQ224147 –UN–03NOV04



FD000047

FD000047 –UN–13MAR96

ML70882,0000455 –19–23JUN06–1/1

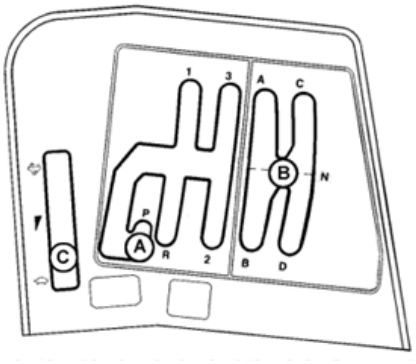
Before Starting Up Engine—Transmission

CAUTION: Never operate the engine in a closed building. Make sure there is sufficient ventilation. Danger of asphyxiation!

1. Shut off PTO.
2. Move gear shift lever (A) to "P".
3. Put range shift lever (B) in neutral position.
4. Move hand throttle lever (C) to a medium speed setting (first third of lever travel).
5. Move rockshaft lever to "lower" position.
6. Turn master key one position to the right.
7. Check fuel gauge. See if tractor has fuel.
8. Start up engine. As soon as engine starts, release key.

NOTE: DO NOT operate the starter for more than 30 seconds. Turn main key to "zero" position. Wait at least one minute before attempting to start again.

Do not adjust hand throttle lever during initial warming up. Let the engine run for a few minutes, prolonging the warm-up period for as long as necessary.



Tractor with SYNCROPLUS transmission

CQ1771091 –UN–26OCT04

LT04177,0000141 –19–05JUL07–1/1

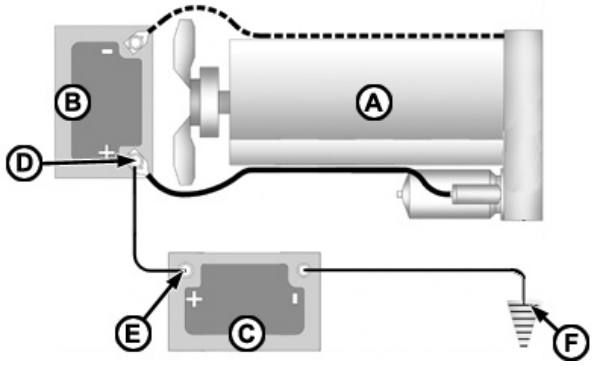
Using a Booster Battery

IMPORTANT: If this procedure is necessary, do not directly connect booster battery cables (C) to terminals of weak battery (B). This may damage the batteries or even cause an explosion.

Use cables terminated in “crocodile” clips, and with sufficient current carrying capacity.

Procedure

1. Connect one cable between the (+) terminals (D and E) of batteries (B and C).
2. Connect one end of the other cable to the (-) terminal of booster battery (C) and attach the other end to a ground connection, e.g.: engine housing, chassis.
3. Start up engine.



A—Engine
B—Weak Battery
C—Booster Battery
D—Positive Terminal of Weak Battery
E—Positive Terminal of Booster Battery
F—Ground Connection

OU83340,00003F6 –19–21NOV03–1/1

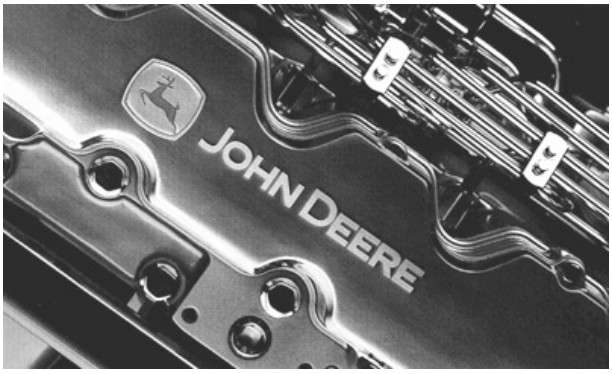
Warming Up the Engine

IMPORTANT: Do not operate the engine on full load until it has fully warmed up. Allowing the engine to idle at low rpm uses fuel inefficiently and can cause a build-up of carbon in the engine.

Do not place tractor under full load until engine is properly warmed up. To warm up the engine, run with hand throttle halfway open until operating temperature is reached.

If the tractor is stopped with the engine running for three to four minutes, or more, the engine speed must not be lower than 1200 rpm.

NOTE: The engine must run at a speed above slow idle until the cooling system temperature surpasses 20°C (68°F).

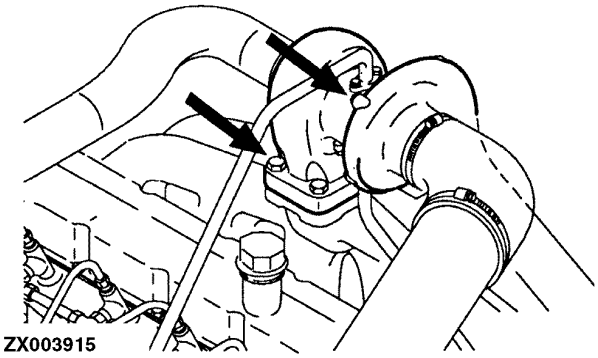


OU83340,0000597 –19–26JUL05–1/1

Engines with Turbocharger

Most damage to the turbocharger is caused by not following the correct procedure when starting and shutting off the engine. After starting up the engine and before shutting it off, let the engine run for at least 30 seconds without load.

IMPORTANT: If the engine "stalls" when being operated, restart it IMMEDIATELY. This will prevent the turbocharger from overheating.



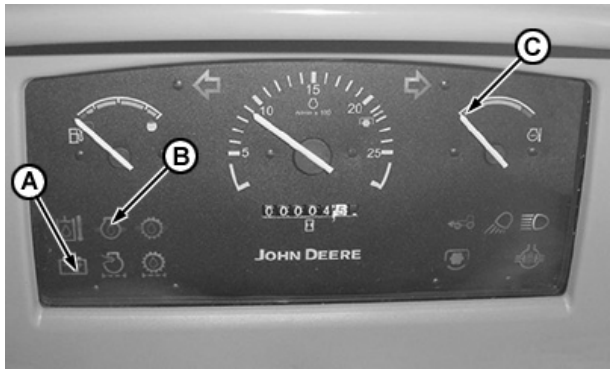
OU83340,0000598 –19–17JUL04–1/1

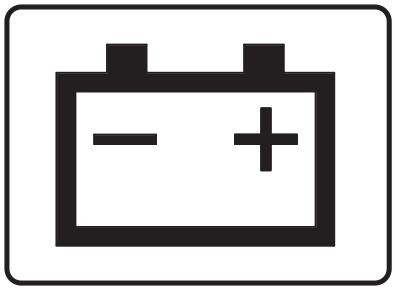
Instrument Check After Starting Up Engine

IMPORTANT: If charging system warning light (A) or oil pressure warning light (B) fail to go out or coolant temperature gauge (C) indicates engine overheating, stop engine and determine the cause.

Battery warning light (A) comes on when the output voltage (charge) of alternator is low. The light should come on when key switch is activated and go out when engine begins running.

If the light remains on for more than 5 seconds while engine is running normally, turn off engine and determine the cause. If the cause is not insufficient voltage or a snapped fan belt, see your John Deere dealer.





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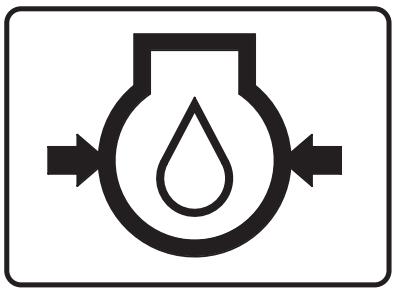
OU83340,00004B4 –19–23JUN06–1/3

Oil pressure warning light (B) will glow if engine oil pressure is low. The light should come on when key switch is activated and go out when engine begins running.

IMPORTANT: Never run engine on insufficient oil. If the light remains on for more than 5 seconds during normal operation of the engine, shut off engine and determine the cause.

If insufficient oil is not the cause, see your John Deere dealer.

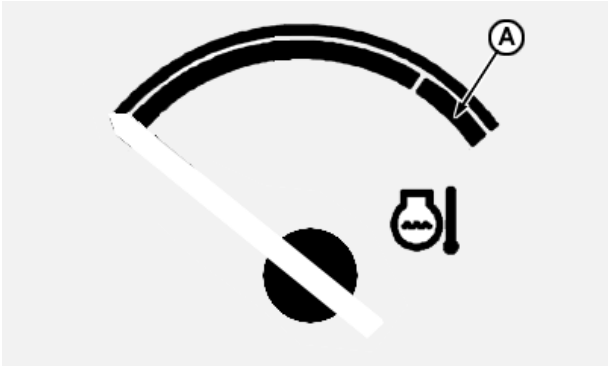


CQ224782 –UN–09JUL04

OU83340,00004B4 –19–23JUN06–2/3

If the thermometer needle indicates excessive heating, region (A), then shut off the engine and determine the cause.

Check radiator additive and water level when engine cools. Also check that the honeycombed radiator grid is not obstructed. Check fan belt tension. If all these checks do not resolve the problem, consult your John Deere dealer.



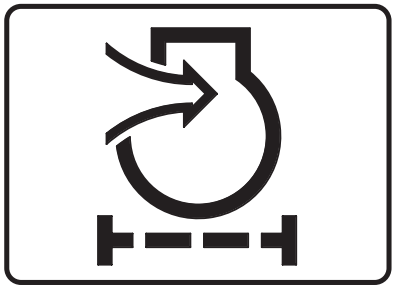
CQ209752 –UN–11MAY05

OU83340,00004B4 –19–23JUN06–3/3

Air Filter Restriction Warning Light

The warning light comes on if the air filter is blocked. Service the air filter as soon as possible.

The light should come on momentarily when the key is slowly turned to start up position.



CQ224783 –UN–09JUL04

OU83340,0000567 –19–06APR05–1/1

Fuel Level Check

Stop the tractor to fill up the fuel tank before the needle of the fuel gauge (A) reaches the empty mark (unfilled circle).

IMPORTANT: Only use diesel. See "Fuel and Lubricants" section for fuel specifications.

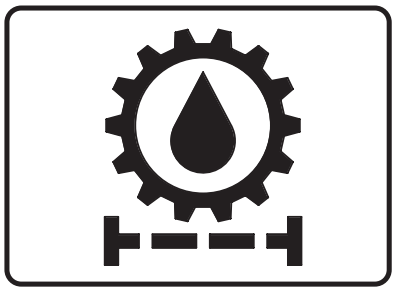
CQ209751 –UN–25OCT04

OU83340,00004B6 –19–01MAR04–1/1

Transmission Oil Filter Restriction Warning Light

This warning light comes on when the transmission oil filter is plugged.

NOTE: If the light remains on even after the oil has heated up, replace the transmission oil and hydraulic system filters.



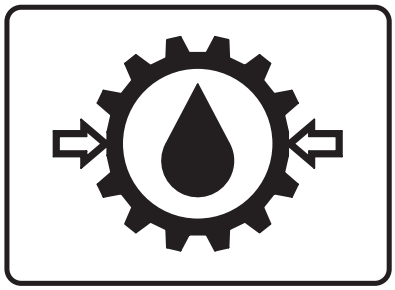
CQ171111 –UN–09JUL04

OU83340,00004B7 –19–01MAR04–1/1

Transmission Oil Pressure Warning Light

The transmission oil pressure warning light comes on when there is a drop in pressure of the transmission oil.

IMPORTANT: When the transmission oil pressure warning light comes on stop the tractor immediately, otherwise damage to the transmission may occur. Seek immediate technical assistance from your John Deere dealer.



CQ224781 –UN–09JUL04

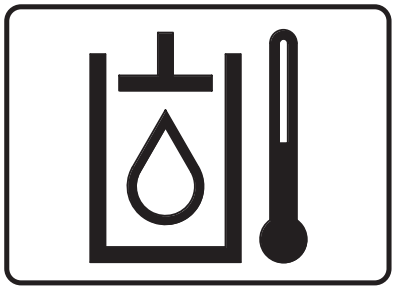
OU83340,0000599 –19–17JUL04–1/1

Transmission Oil Temperature Warning Light

The transmission oil temperature warning light comes on when the transmission oil overheats.

If the light comes on, stop the tractor and determine the cause.

If problem still exists contact your John Deere dealer.



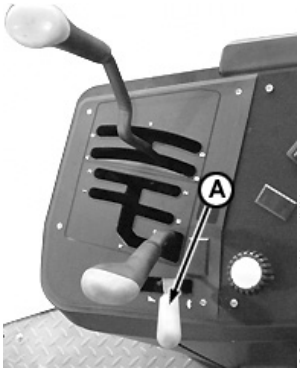
CQ224784 –UN–09JUL04

OU83340,0000568 –19–12JUL04–1/1

Changing Engine Speed

To increase engine speed, push hand throttle (A) forward. To temporarily increase engine speed, exceeding the speed fixed by the hand throttle, press down on foot throttle (B).

CAUTION: Whenever traveling on public roads, only use the foot throttle. Leave the hand throttle in the slow idle position.



CQ279893 –UN–08JUN07

Hand throttle

CQ224148 –UN–09JUN04

Foot throttle

LT04177,0000142 –19–08JUN07–1/1

Restarting Engine

If the engine is shut off when operating at high speed, restart it in order to prevent an abnormal build up of heat. Carry on working normally or operate the engine at slow speed for one or two minutes before shutting it off.

AG,LT04177,65 –19–26OCT04–1/1

Transporting Tractor

CAUTION: Never attempt to start the tractor by towing it!

The best way to transport a broken down tractor is on a flatbed carrier. Follow the instructions specified in section “Transport”.

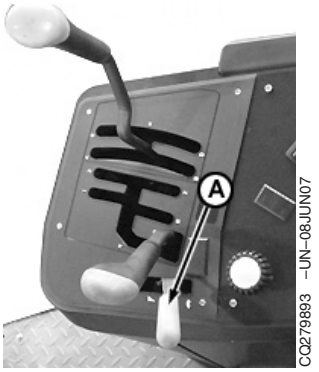
ML70882,0000457 –19–06APR05–1/1

Shutting Off the Engine

1. Move hand throttle (A) to the slow idle position (800 rpm). Let the engine run at slow idle for two minutes.

IMPORTANT: The engine oil will cool down certain engine parts. The sudden stalling of an excessively hot engine may cause serious damage to these parts, due to overheating or lack of lubrication.

2. Turn key switch to "OFF".



CAUTION: Prevent accidents! Always remove key and store it safely.

LT04177,0000143 –19–08JUN07–1/1

Do Not Exceed Maximum Speeds

N39084 –UN–30MAR89

CAUTION: Do not exceed safe ground speeds under any circumstances.

Reduce speed when operating in adverse weather conditions, on slopes or on terrain difficult to travel over.

The maximum ground speed for a tractor without ballast and without load, or when towing a load weighing less than the tractor itself, is 30 km/h (18.64 mph).

Reduce ground speed to 16 km/h (9.94 mph) when towing loads heavier than the tractor. Take special care within range D.

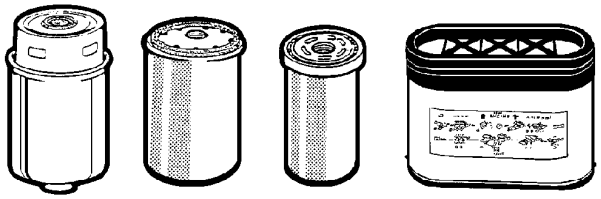
LT04177,0000159 –19–14JUN07–1/1

Reducing Fuel Consumption

Carry Out Correct Service

Replace the air, fuel, engine oil and hydraulic/transmission oil filters within the specified service periods (See “Service” section).

Only use genuine John Deere parts.



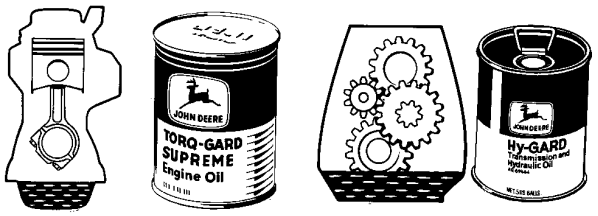
LX1031683

LX1031683 –UN–27MAR03

ML70882,0000459 –19–21JUN06–1/6

Only use recommended oils and lubricants (see “Fuel, Lubricants, Coolant” section).

Have your John Deere dealer regularly check your fuel system.



L103 642

L103642 –UN–15AUG94

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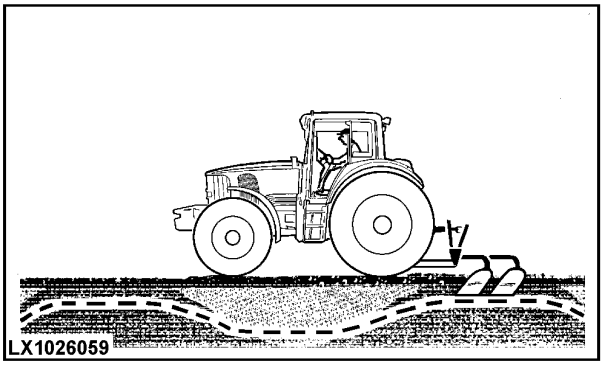
ML70882,0000459 –19–21JUN06–2/6

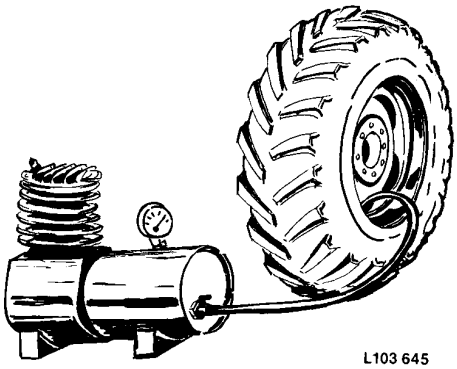
Have your John Deere dealer regularly check the hitch system.



ML70882,0000459 –19–21JUN06–3/6

Drive with Correct Tire Pressures

Adapt tire pressures to the type of work and terrain conditions. See your John Deere dealer.

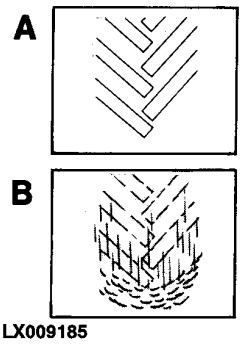


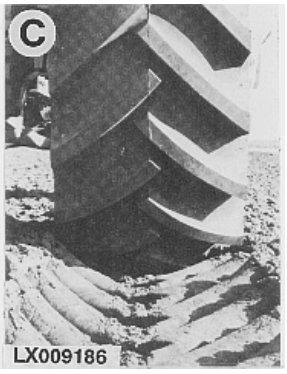
ML70882,0000459 –19–21JUN06–4/6

Choosing Correct Ballast

Choose the correct ballast to obtain a wheel slippage of between 8 and 12%. Use no more ballast than necessary and reduce ballast for light work.

A—Too much ballast
B—Too little ballast
C—Correct ballast





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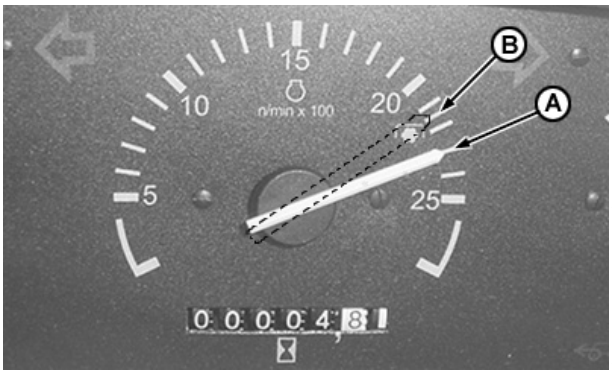
ML70882,0000459 –19–21JUN06–5/6

Selecting the Correct Gear

Always drive in the highest possible gear with reduced engine speed.

Choose a gear so that the engine speed (A) without load drops 150 to 250 rpm when the tractor is operating and the engine is under load (B).

NOTE: For light work, reduce engine speed to below 2000 rpm. Select a gear so that engine speed drops 200 to 300 rpm when operating.



ML70882,0000459 –19–21JUN06–6/6

Selecting Gears

The tractor can function in any gear at rated engine speeds between 1600 and 2400 rpm. Within these limits, the engine can support a full load. To work with light loads, use a higher gear and a lower engine speed as this saves fuel and reduces wear.

IMPORTANT: Avoid working for long periods at speeds below 6 km/h (3.73 mph) when the tractor is operating with maximum ballast and at maximum engine power.

AG,LT04177,71 –19–14SEP98–1/1

Calculated Tractor Ground Speeds

Speeds should be selected so as to avoid constant engine overload.

Ground speeds with engine running at nominal rpm are indicated on the following page.

To determine ground speed in relation to engine rpm, proceed as follows:

$$\frac{\text{Desired engine speed}}{\text{2300 rpm}} = \text{Conversion factor}$$

Conversion factor, multiplied by the ground speed indicated in attached table, gives the ground speed and rpm desired.

Example:

Ground speed at 2300 rpm, in accordance with speed chart: B3 = 8.2 km/h;
desired rpm: 1400 rpm

$$\frac{\text{1400 rpm}}{\text{2300 rpm}} = 0{,}61$$

8.2 km/h x 0.61 = 5 km/h

To determine engine speed at a defined ground speed, proceed as follows:

$$\frac{\text{Ground speed desired}}{\text{Chart ground speed}} = \text{Conversion factor}$$

Conversion factor multiplied by rpm gives the desired engine rpm

Example:

$$\frac{\text{5.5 km/h}}{\text{6.2 km/h}} = 0{,}89$$

2300 rpm x 0.89 = 2047 rpm

LT04177,0000062 –19–10JUL06–1/1

Tractor Speeds with PowrQuad Transmission

PowrQuad Transmission

Forward ground speeds at nominal engine speed of 2,300 rpm, with 18.4x38R1 and 23.1x30R1 tires.

6415 and 6615— 16 forward gears and 16 reverse gears				
Gear	Ground Speed (km/h)	Ground Speed (mph)	Reverse (km/h)	Reverse (mph)
A1	2,5	1.6	2,9	1.8
A2	3,0	1.9	3,5	2.2
A3	3,6	2.3	4,2	2.6
A4	4,3	2.7	5,2	3.3
B1	5,3	3.3	6,2	3.8
B2	6,3	3.9	7,4	4.6
B3	7,5	4.7	9,0	5.6
B4	9,3	5.8	10,9	6.8
C1	8,3	5.2	9,9	6.2
C2	10,1	6.3	11,9	7.4
C3	12,1	7.6	14,2	8.9
C4	14,7	9.2	17,4	10.9
D1	17,3	10.8	21,2	13.3
D2	20,9	13.0	25,5	15.9
D3	24,9	15.6	30,5	19.0
D4	30,6	19.1	37,4	23.4

Continued on next page

Additional gears with creeper transmission				
Gear	Ground Speed (km/h)	Ground Speed (mph)	Reverse (km/h)	Reverse (mph)
A1	0,23	0.14	0,27	0.17
A2	0,28	0.18	0,33	0.21
A3	0,33	0.21	0,39	0.24
A4	0,41	0.27	0,48	0.30
B1	0,46	0.28	0,55	0.34
B2	0,56	0.35	0,66	0.41
B3	0,67	0.42	0,79	0.49
B4	0,82	0.51	0,97	0.61
C1	0,75	0.47	0,90	0.56
C2	0,91	0.57	1,08	0.68
C3	1,09	0.68	1,29	0.81
C4	1,33	0.83	1,59	0.99

LT04177,000015C –19–18JUN07–2/2

Speeds for Tractor with SyncroPlus Transmission

SyncroPlus Transmission

Forward ground speeds at nominal engine speed of 2,300 rpm, with 18.4x38R1 and 23.1x30R1 tires.

6215, 6220, 6415 Classic and 6420 — 12 forward gears and 4 reverse gears Gear	Ground Speed (km/h)	Ground Speed (mph)
A1	2,2	1.4
A2	3,1	1.9
A3	4,1	2.6
B1	4,4	2.6
B2	6,2	3.9
B3	8,2	5.1
C1	7,2	4.5
C2	10,1	6.3
C3	13,4	8.4
D1	15,6	9.8
D2	21,8	13.6
D3	28,7	17.9
Reverse-A	2,7	1.7
Reverse-B	5,4	3.4
Reverse-C	8,8	5.5
Reverse-D	19,0	11.9

Continued on next page

Speeds with creeper transmission		
Gear	**Ground Speed (km/h)**	**Ground Speed (mph)**
A1	0,22	0,14
A2	0,31	0,19
A3	0,41	0,26
B1	0,44	0,27
B2	0,62	0,39
B3	0,82	0,51
C1	0,72	0,45
C2	1,02	0,63
C3	1,35	0,84
D1	Impossible	
D2	Impossible	
D3	Impossible	
Reverse-A	0,27	0,17
Reverse-B	0,54	0,34
Reverse-C	0,88	0,55
Reverse-D	Impossible	
Compatible front wheels Rear wheels 23.1-30R1		

Other tires available from manufacturer

Tire	Conversion factor
14.9-24	0,7
14.9-26	0,8
15.5-38	0,9
16.9-24	7,9
18.4-34	0,9
18.4-38	5,1
620/75R30R1	2,2
320/90R50R1	12,2

NOTE: Travel speeds indicated in the chart are theoretical. Actual speeds vary according to rolling circumference, load, tire pressure, tire make, grip etc. If exact speed is needed for specific uses it must be obtained by measuring.

LT04177,000015D –19–18JUN07–2/2

Gear Shifting SYNCROPLUS™ Transmission

Both ranges and gears are selected by the respective levers.

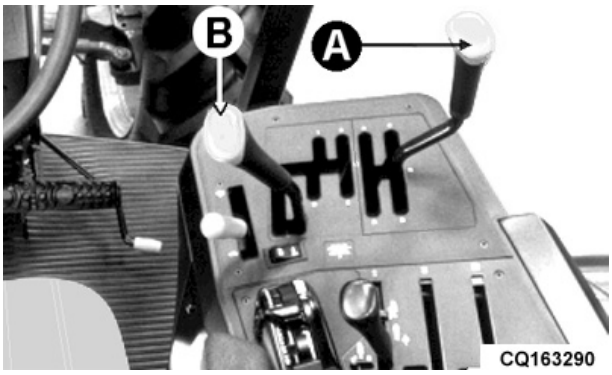
A - Ranges

B - Gears

To shift range or gear when traveling forwards, depress clutch pedal (D), without stopping tractor.

Where it is necessary to alternatively advance and reverse tractor, it is recommended that the tractor be brought to a complete stop before reverse travel is engaged.

IMPORTANT: To prevent unnecessary wear, never rest foot on the clutch pedal.



SYNCROPLUS is a registered trademark of the Deere & Company

ML70882,000046D –19–05NOV04–1/1

Gear Shifting POWRQUAD™ Transmission

Both ranges and gears are selected by the respective levers.

A - Ranges

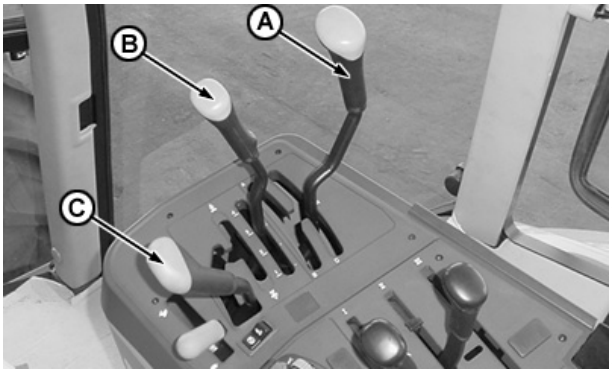
B - Gears

C - Reverser

The range is shifted by depressing clutch pedal (D). To shift gears and change direction of travel (reverser), no clutch pedal needs to be depressed.

IMPORTANT: To prevent unnecessary wear, never rest foot on the clutch pedal.

CAUTION: If the reverser lever is shifted with the engine running and a range engaged, the tractor will start to travel.



POWRQUAD is a registered trademark of the Deere & Company

ML70882,000046E –19–05NOV04–1/1

Engaging Creeper Transmission— If installed

Creeper transmission can be engaged in the following ranges: A, B and C.

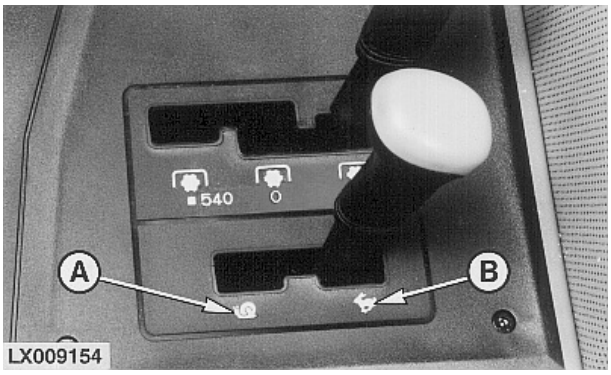
To engage or disengage creeper transmission, depress clutch pedal.

Engage creeper transmission as follows:

1. Select range.
2. Engage creeper transmission.

NOTE: Do not engage creeper transmission when engine speed exceeds 1,000 rpm.

IMPORTANT: Do not use creeper transmission with implements that penetrate into soil and so require increased power.



A—Creeper speed
B—Normal speed

OU83340,00005B2 –19–26OCT04–1/1

Differential lock

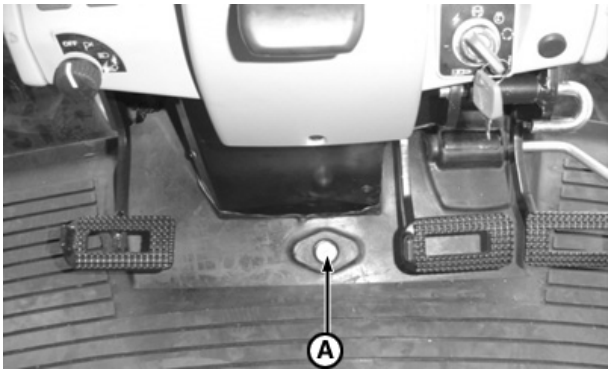
If wheel slip varies greatly between rear wheels, engage differential lock by means of knob (A).

To disengage differential lock, depress brake pedal or depress knob (A) again.

When differential lock is engaged, a warning light on the instrument panel will come on.

IMPORTANT: Avoid tight turns with the differential lock engaged, in order to prevent the premature wear of the assembly.

IMPORTANT: To prevent damage to differential lock assembly, DO NOT engage differential lock when one wheel is spinning and the other is completely stopped.



OU83340,0000521 –19–03JUN04–1/1

Using the Brakes

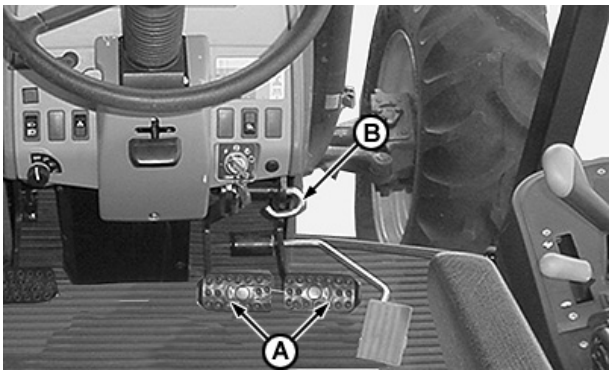
CAUTION: Before driving the tractor on public roads, couple brake pedals with locking pin (B).

Use brake pedals (A) individually to aid tight turns. Disconnect pedal locking pin (B) and depress only one pedal. To stop tractor, depress both brake pedals.

IMPORTANT: To avoid the premature wear of the assembly, do not drive the tractor with a foot resting on the brake pedals.

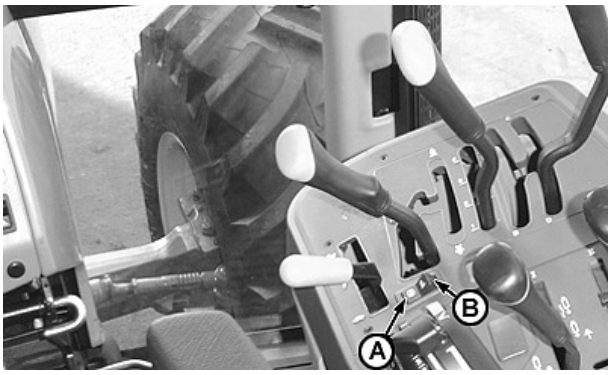
Reduce load speed when this is heavier than the tractor and does not possess its own braking system. Do not apply brakes suddenly. See the implement operator's manual for transport recommendations.

Take great care transporting loads on uneven terrain, around curves or when braking while traveling downhill.



OU83340,0000520 –19–03JUN04–1/1

Use of Front Wheel Drive



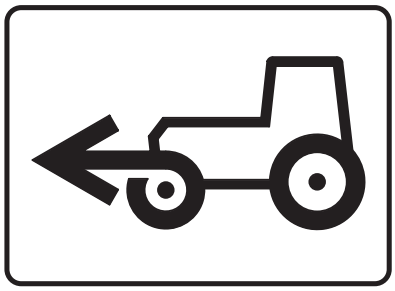
CQ224790 –UN–12JUL04

Front wheel drive can be engaged and disengaged in any forward or reverse gear, without the need to use the clutch, even when the tractor is under load.

When traveling over very flat surfaces or surfaces with loose gravel, reduce ground speed and ensure that the tractor is correctly ballasted in order to prevent wheel slip and loss of steering control. To obtain better control, engage the front wheel drive.

IMPORTANT: To extend front tire life, engage front-wheel drive only when needed. DO NOT engage front wheel drive when driving on roads.

DO NOT fit front wheels with chains. This may cause serious damage to the tractor.



CQ224785 –UN–09JUL04

To engage front wheel drive press switch (B).

A—Front-wheel drive off
B—Front wheel drive engaged

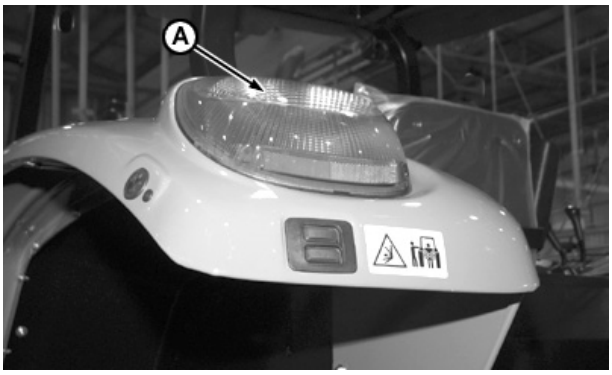
ML70882,000046F –19–05NOV04–1/1

Driving On Public Roads

IMPORTANT: When driving the tractor on public roads, take the following precautions:

CAUTION: NEVER turn on a rear work light while driving tractor on public roads, especially at night. A bright white light emanating from the rear of the tractor may confuse the drivers of vehicles approaching the tractor from the rear.

1. Before driving the tractor on a public road, ensure that all of the rear warning lights (A) are functioning correctly. Check if the lights are visible to other road users.
2. Engage the hazard warning lights switch (B) and ensure that the headlights are appropriately adjusted for use on a public road.
3. Take great care when traveling down slopes with loose gravel,so as to avoid wheel slip and loss of steering control. To reduce the probability of wheel slip, reduce ground speed and ensure that the tractor is correctly ballasted.
4. Disengage front wheel drive (C) when traveling on roads. Excessive front tire wear will result from transporting on hard surfaces with front wheel drive engaged.
5. Always use the turn-signal indicator whenever turning left or right. Do not forget to manually return lever (D) to center position after completing turn.
6. Always operate the tractor in an appropriate gear that allows safe control of the tractor to be maintained. Reduce speed on uneven ground or when negotiating tight turns, especially when transporting rear-mounted, heavy implements.
7. Before driving the tractor on public roads, couple brake pedals with locking pin (E). Avoid applying brakes suddenly.
8. Before traveling downhill, shift down to a low gear to control ground speed without the need for excessive brake use. Never travel downhill in neutral gear.

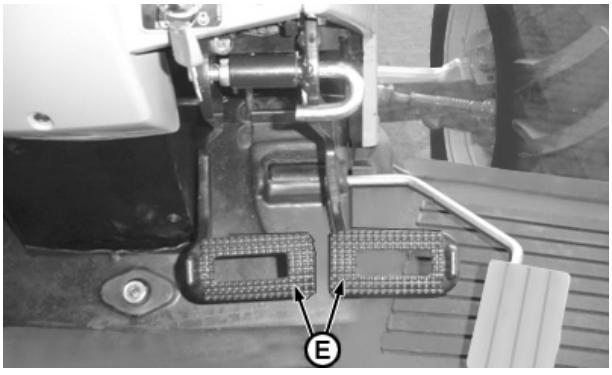


CQ224152 –UN–09MAY05

CQ224154 –UN–26OCT04

CQ220170 –UN–26OCT04

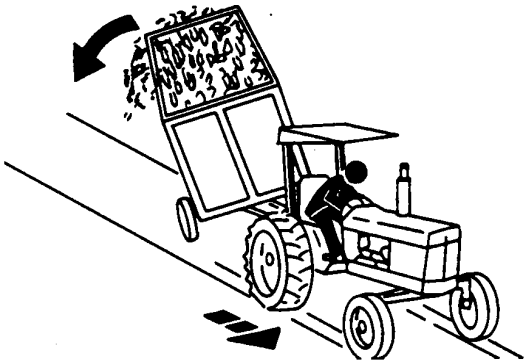
CQ220161 –UN–26OCT04



CQ224163 –UN–09NOV07

ML70882,0000470 –19–05NOV04–1/1

Tow Loads Safely



TS216 –UN–23AUG88

Stopping distance increases with speed and weight of towed loads, and on slopes. Towed loads with or without brakes that are too heavy for the tractor or are towed too fast can cause loss of control. Consider the total weight of the equipment and its load.

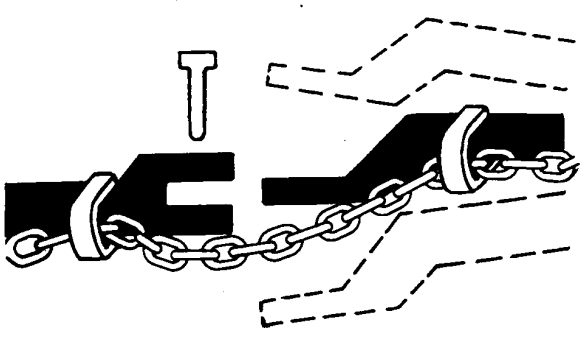
Observe these recommended maximum road speeds, or local speed limits which may be lower:

- If towed equipment does not have brakes, do not travel more than 32 km/h (20 mph) and do not tow loads more than 1.5 times the tractor weight.
- If towed equipment has brakes, do not travel more than 40 km/h (25 mph) and do not tow loads more than 4.5 times the tractor weight.

Ensure the load does not exceed the recommended weight ratio. Add ballast to recommended maximum for tractor, lighten the load, or get a heavier towing unit. The tractor must be heavy and powerful enough with adequate braking power for the towed load. Use additional caution when towing loads under adverse surface conditions, when turning, and on inclines.

DX,TOW –19–02OCT95–1/1

Use a Safety Chain



TS217 –UN–23AUG88

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.

DX,CHAIN –19–03MAR93–1/1

Stopping the Tractor

CAUTION: Always place the gearshift lever in the “PARK” position before leaving the machine. Leaving the transmission in gear with engine shut off will not always prevent the tractor from moving.

IMPORTANT: To avoid damage to the transmission, the tractor must have come to a complete stop before the gearshift lever is placed in the “PARK” position.

- Use the brakes to stop the tractor.
- Place range shift lever in neutral.
- Place gearshift lever in “P” position.
- Lower implement to the ground with the rockshaft control lever.
- Move hand throttle to slow idle position.
- Allow engine to run on slow idle for 1 to 2 minutes.

IMPORTANT: The engine oil will cool down certain engine parts. The sudden shutoff of an engine that is too hot may cause serious damage to these parts by overheating or lack of lubrication.

- Turn key switch to "OFF".

CAUTION: Prevent accidents! Always remove key and store it safely.

ML70882,0000471 –19–06APR05–1/1

Hydraulic Hitch and 3-Point Hitch

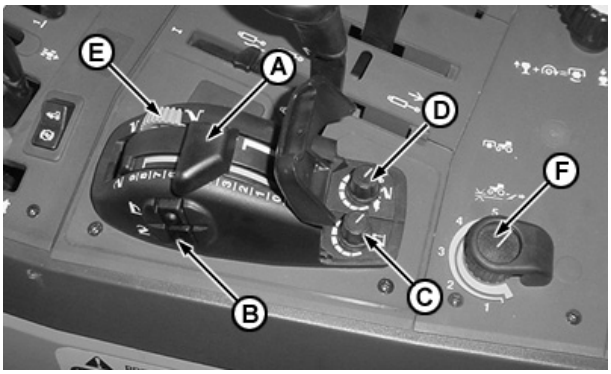
Matching Tractor Power to Towed Implement

IMPORTANT: It is necessary to adapt the tractor power to the size of certain implements. Excess power could damage the implement and, in turn, a very large implement could damage the tractor. (Refer to the operator's manual of the implement to determine the minimum and maximum power required before attaching the implement.)

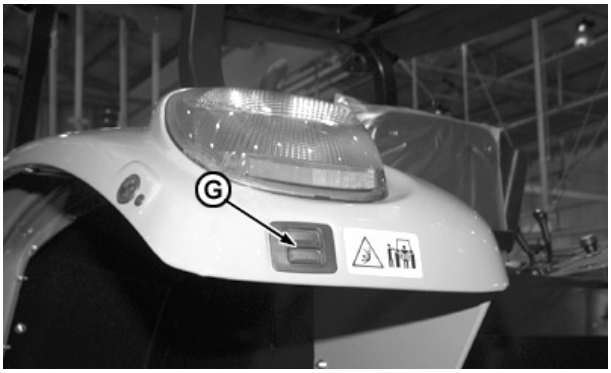
AG,LT04177,82 –19–14SEP98–1/1

Rockshaft Control

A—Hitch control lever
B—Raise/lower switch
C—Raise limit control potentiometer
D—Descent speed control potentiometer
E—Lever stop
F—Load/depth control potentiometer
G—External raise/lower knobs



CQ162511 –UN–28OCT04



CQ224155 –UN–09MAY05

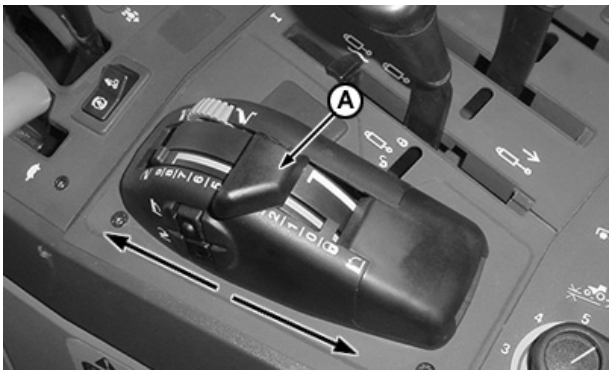
ML70882,0000472 –19–06APR05–1/1

Operating Rockshaft

Tractor lift system lever (A) is used to raise/lower the implement.

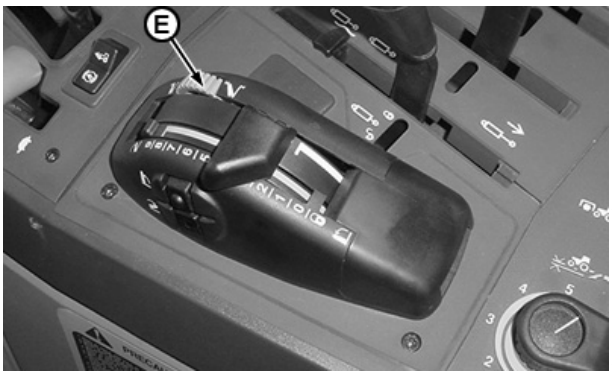
Move lever to “0” mark to raise implement.

Move lever to “9” mark to lower implement.



ML70882,0000473 –19–05NOV04–1/3

The tractor lift system limiter (E) permits the adjustment of minimum height values for the rockshaft.



ML70882,0000473 –19–05NOV04–2/3

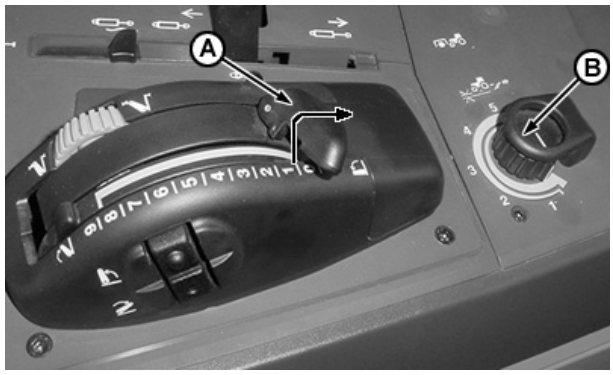
To transport implements totally suspended, move the lever to its rearmost position (beyond the “0” position) to lock the tractor lift system in the transport position.

Position “0”

Transport position

ML70882,0000473 –19–05NOV04–3/3

Dampening of Rockshaft



The tractor is equipped with a "Rockshaft Dampening Function", which protects the tractor from bumps when it is traveling with a raised implement.

To engage the dampening function:

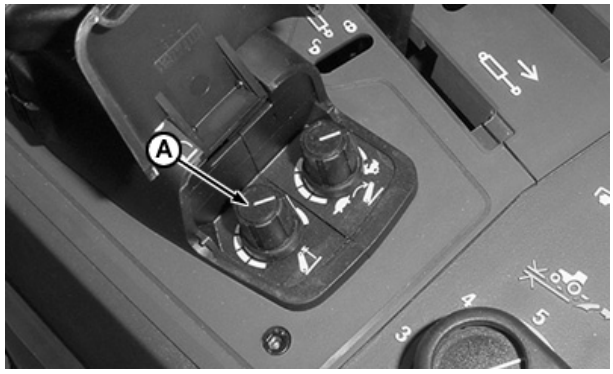
1. With the engine running, move the tractor lift system control lever (A) to the transport position.
2. Place the load/depth control potentiometer (B) in position 1.

Move the tractor lift system control lever forwards to disengage the rockshaft dampening function (to the “9” position).

NOTE: The rockshaft dampening function is also disengaged when external knobs are used and when the engine is shut off.

ML70882,0000474 –19–05NOV04–1/1

Adjusting Raise Limit



The raise limit control potentiometer (A) permits the adjustment of maximum height values for the rockshaft.

ML70882,0000475 –19–05NOV04–1/1

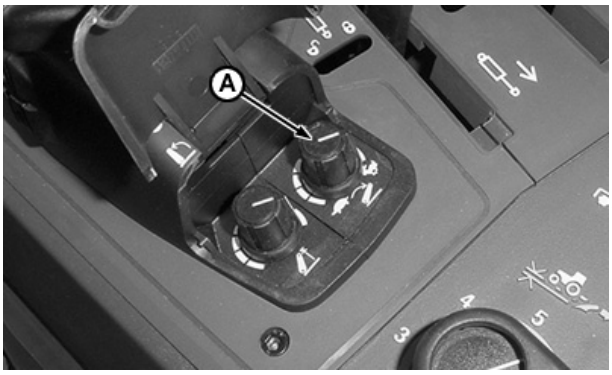
Adjusting Implement Rate of Drop

The descent speed of suspended implements is adjusted by knob (A).

Turn to left to reduce descent speed.

Turn to right to increase descent speed.

NOTE: The rate of descent varies with the setting of knob (A) and the weight of the mounted implement. The heavier the implement, greater the descent speed.

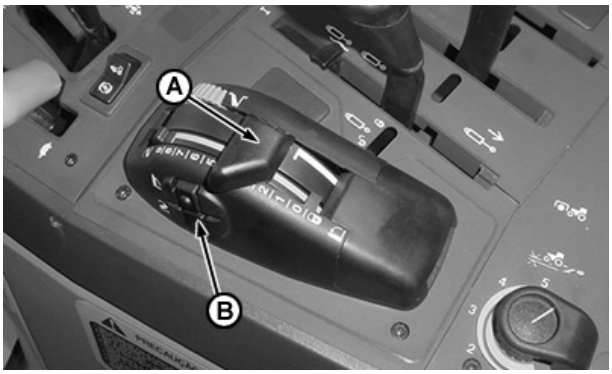


ML70882,0000476 –19–05NOV04–1/1

Rockshaft

The implement may be raised or lowered by rocker switch (B), irrespective of the setting of lever (A).

NOTE: Pressing the upper part of rocker switch (B) raises the implement to the height set by the height control limiter.



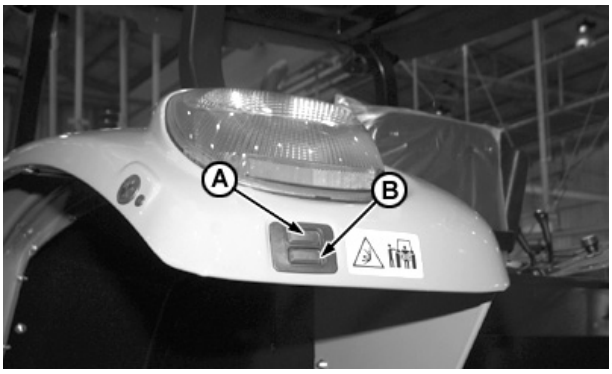
ML70882,0000477 –19–05NOV04–1/1

External Raise/Lower Switches

The external raise/lower knobs of the rockshaft are located on the rear mudguard to facilitate the coupling of implements. The speed of the rockshaft is slower than normal when the external raise/lower knobs are used. The external controls take precedence over the other controls.

To raise rockshaft, keep the upper knob (A) pressed down.

To lower rockshaft, keep the lower knob (B) pressed down.



ML70882,0000478 –19–05NOV04–1/1

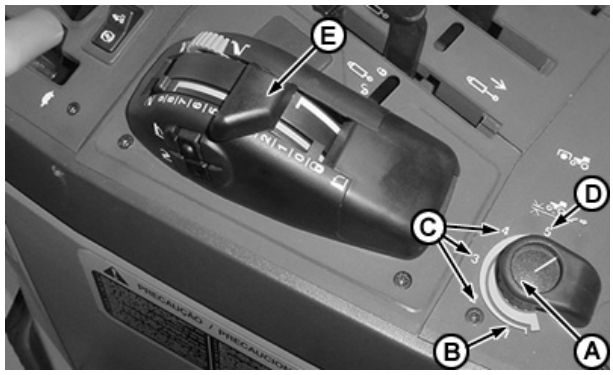
Adjusting Load/Depth Control

CAUTION: Before attaching implements to the three-point hitch, load/depth control (A) must be moved to position “1” (depth control) to prevent unintentional raising or lowering of the lifiting system.

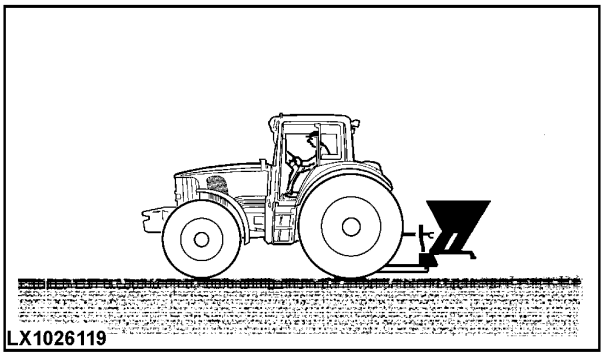
According to the selected position, the implement will ascend or descend, varying according to soil conditions.

Position “1” is for the lowest load/depth.

Position “5” is for the greatest load/depth.

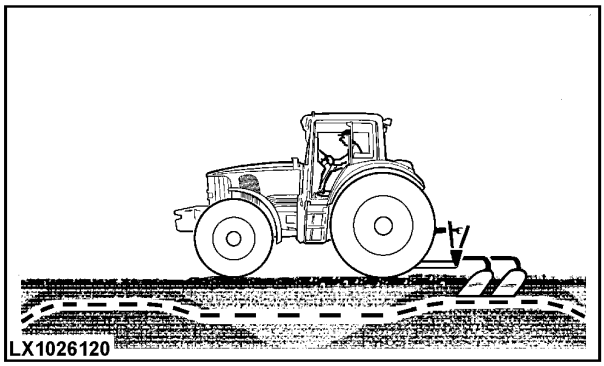


CQ162519 –UN–28OCT04



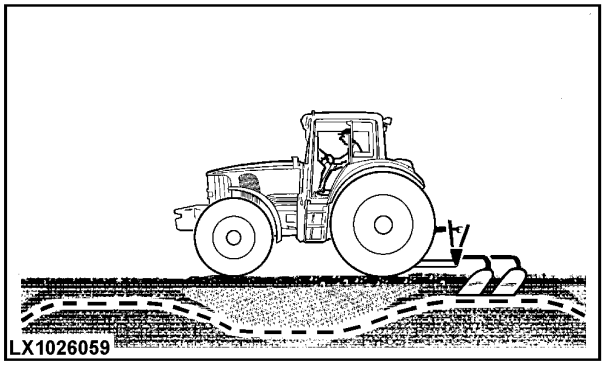
LX1026119 –UN–10MAY01

Position “1” (B)



LX1026120 –UN–10MAY01

Position “2—4” (C)



LX1026059 –UN–18MAY01

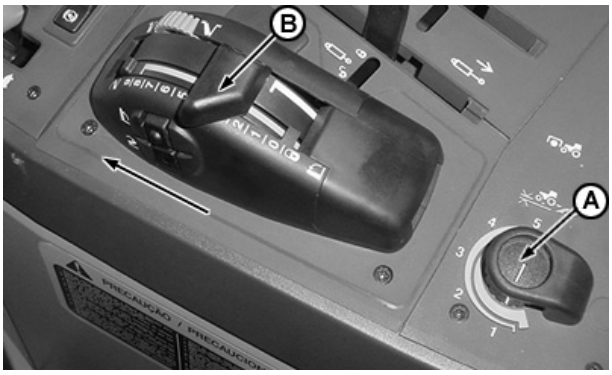
Position “5” (D)

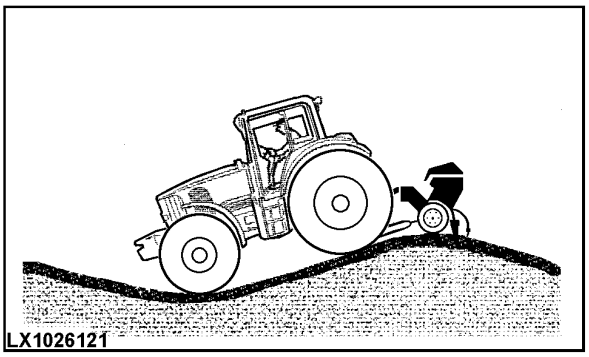
ML70882,0000479 –19–06APR05–1/1

Float Position

When the implement possess support wheels, controlled by the tractor lift system, the implement can move freely up and down, independent from the tractor, to allow it to follow ground contours.

To engage “float”, mode, set load/depth control potentiometer (A) to “1” and move hitch control lever (B) as far as it will go to the front.



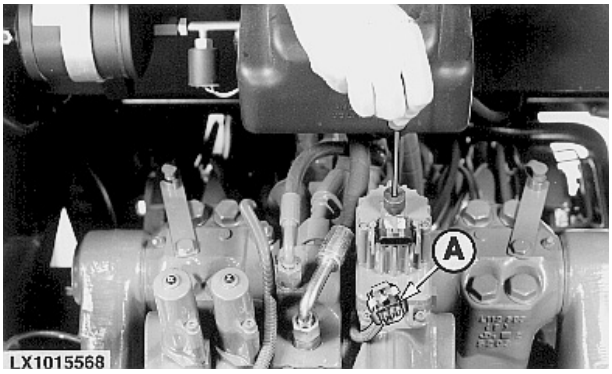


ML70882,000047A –19–05NOV04–1/1

Manual Engaging

In the event of an electrical failure, the tractor lift system can be operated as follows:

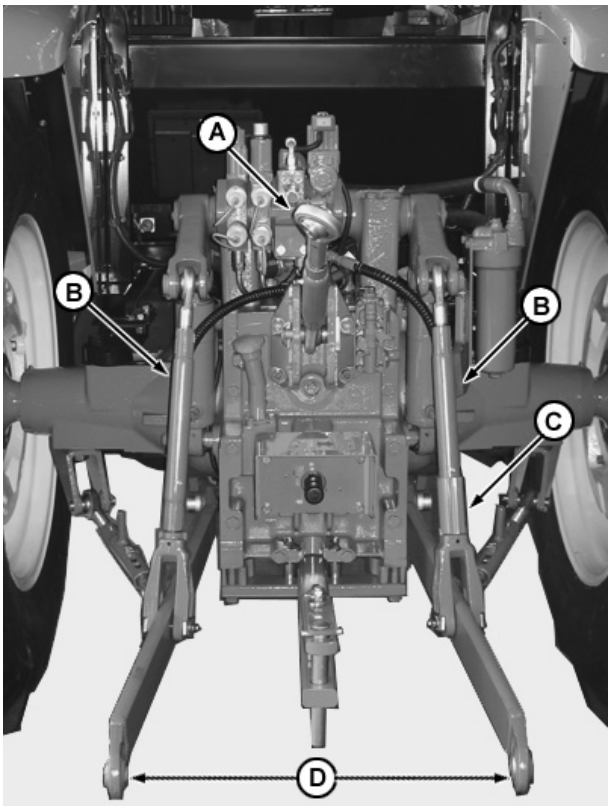
1. Remove plug (A).
2. Start up engine. Remove protective cap.
3. From the operator’s seat, press down on the screw with a screwdriver (as shown in illustration) until it slots into detent. Then turn clockwise until the tractor lift system rises.
4. Have your tractor repaired by your John Deere dealer.



ML70882,000047B –19–05NOV04–1/1

Three-Point Hitch

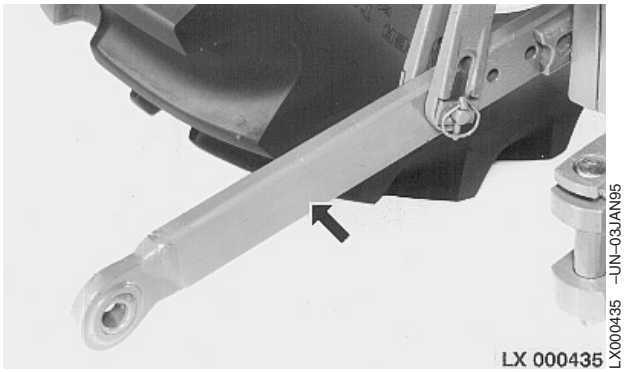
A—Center link arm
B—Leveling arm
C—Leveling arm adjustment crank
D—Lift arms



ML70882,000047C –19–18JAN06–1/1

Lift Arms—Flattened

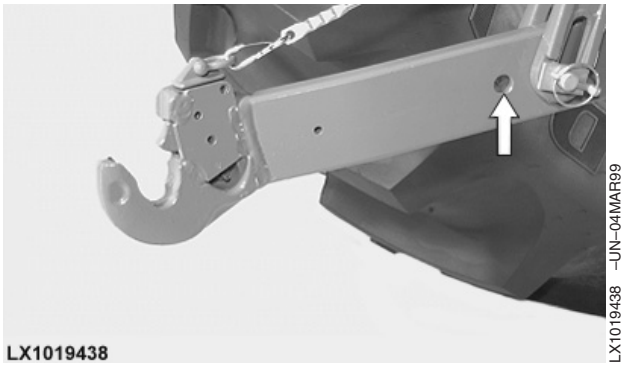
These lift arms can be used for category II equipment and accessories.



ML70882,000047E –19–05NOV04–1/1

Lift Arms—Quick Coupling

These lift arms can be used for category II and III equipment and accessories.



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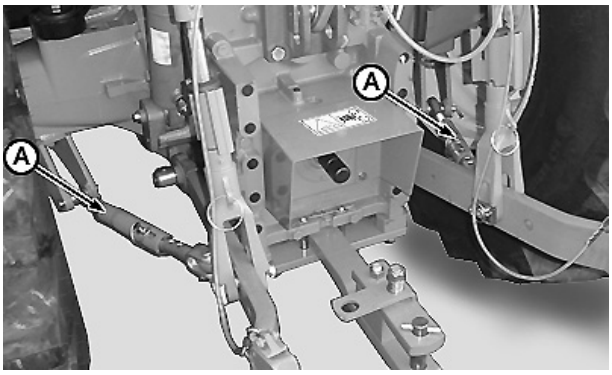
ML70882,000047F –19–23JUN06–1/3

NOTE: Implements can be attached to and removed from the lift arms without the driver having to leave the seat.

On very heavy, compact implements, the leveling arms can be attached at the rear hole in the lift arms. This reduces lifting height, but maximizes lifting force.



Attaching Implement

1. Adjust the lift arms to the hitching width for the specific implement by means of stabilizers (A).
2. With lift arms lowered, reverse tractor until the lift arm coupler hooks are below the implement hitch points.
3. Slowly raise lift arms until implement hitch points are engaged in coupler hooks and locked into position.
4. Adjust center link to required length and attach to upper attaching point of implement.

ML70882,000047F –19–23JUN06–2/3

IMPORTANT: Make absolutely certain that implement is correctly locked to coupler hooks.

Removal of implement

1. Lower implement to the ground.
2. Disconnect center link from implement and lock it in transport position.
3. Pull release cable (A) and lower lift arms until coupler hooks are fully clear of implement hitch pins.
4. Drive tractor forward, until it is completely clear of implement.

ML70882,000047F –19–23JUN06–3/3

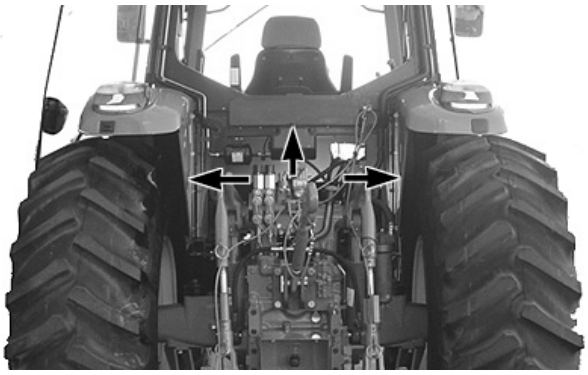
Coupling Implements to the Tractor Lift System

Be careful not to damage exposed parts of cab (see arrows) when attaching implements to tractor lift system.

CAUTION: Do not stand between tractor and implement unless parking brake is engaged.

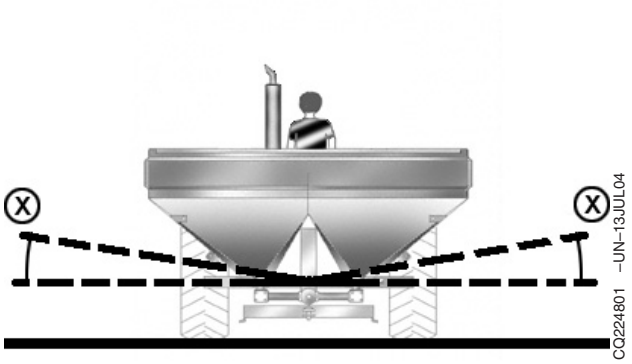
IMPORTANT: When attaching implements to the tractor lift system for the first time, conduct a trial to ensure that implement will not damage cab or platform in any position. Pay special attention to the maximum raised position of the lift arms.

When attaching an implement, first make sure that the tractor lift system load/depth control is set to “1” (depth control).



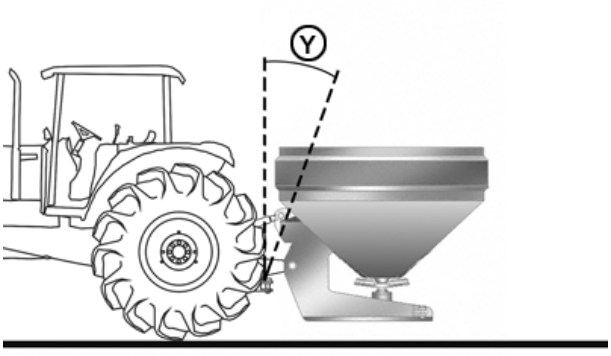
ML70882,0000480 –19–05NOV04–1/1

Leveling Implement



Side-to-Side Leveling

To carry out the side-to-side leveling (X) of the implement, use the lift arm adjustment cranks.



Front to-Rear Leveling

To carry out the front-to-rear leveling (Y) of the implement, use the center link arm.

ML70882,0000481 –19–18JAN06–1/1

Adjusting Center Link Arm

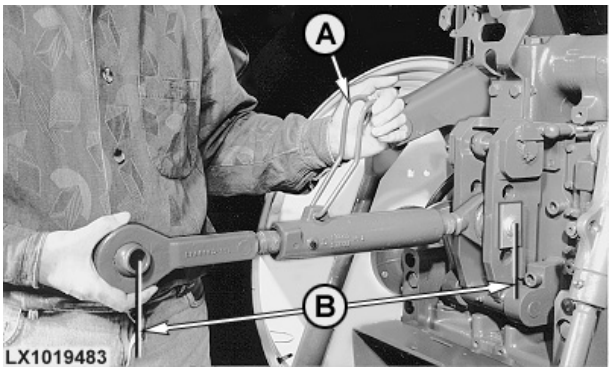
Adjustment of center link arm can be carried out by means of lever (A). Raise lever and turn it until required distance (B) is obtained.

Specification

Length (B) of center link arm—	
Maximum Distance	725 mm (28.5 in)
Minimum Distance	530 mm (20.9 in)

IMPORTANT: Do not adjust center link arm to lengths exceeding these limits.

Once adjusted, lie lever (A) down on the arm. Couple the implement to the center link arm, inserting the pin/bolt and ensuring it locks in place.



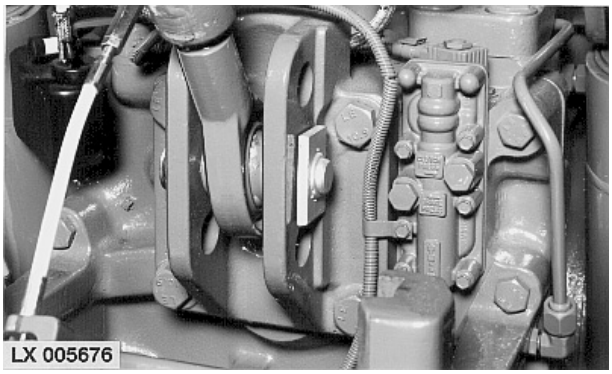
LT04177,0000147 –19–18JUN07–1/1

Positions of Center Link Arm

Center link arm can be installed in three different positions.

The lowest position provides the greatest lifting height. Use this position to couple plows.

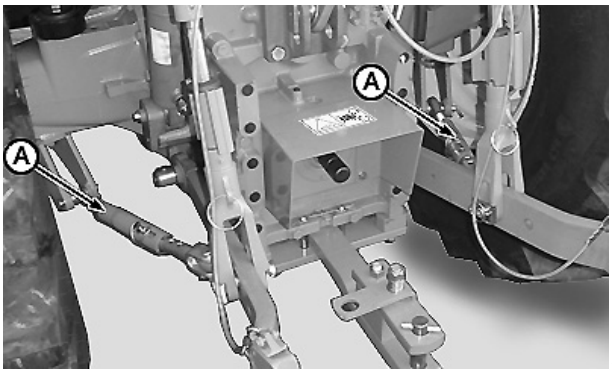
The highest position reduces lifting force and can be used with direct planting machines, for example.



ML70882,0000483 –19–05NOV04–1/1

Stabilizer Bar

The purpose of the side stabilizers (A) is to eliminate the lateral play of the lift arms without the need to use tools.



ML70882,0000484 –19–05NOV04–1/1

Leveling Arms

Increase the length of the leveling arms so that the implement achieves maximum working depth. With side-to-side leveling of the implement, only the right-hand leveling arm needs to be adjusted. Use handle (A) to adjust the lift arm. After adjustment is complete, lock handle (A) in place. Adjust the left-hand lift arm using the same procedure:

- If the leveling arm is equipped with an adjustment handle, proceed in the same way as for the right-hand lift arm.
- If the leveling arm is not equipped with an adjustment handle:

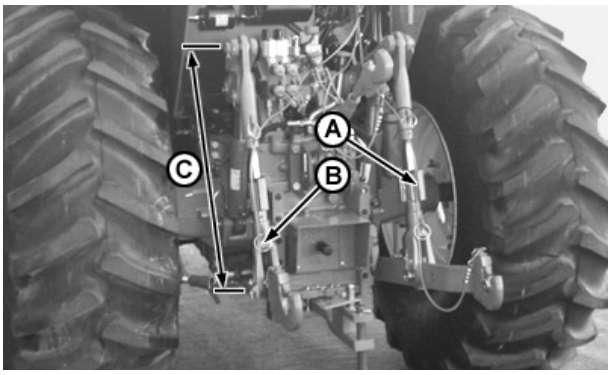
1. Separate the leveling arm from the lift arm.
2. Turn yoke (B) to reduce or increase distance (C).

IMPORTANT: The leveling arm length must be within the specified limits.

Specification

Length (C) of leveling arm—	
Maximum Distance	865 mm (34.1 in)
Minimum Distance	705 mm (27.8 in)

NOTE: The abovementioned measurements are quoted for lift arms coupled to leveling arms (locked in place) without any vertical play at all. See "Vertical Play Adjustment".



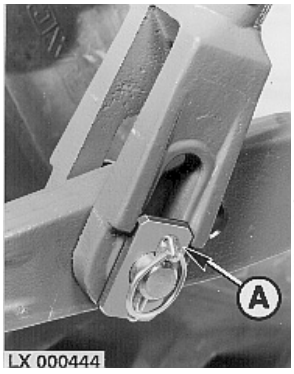
A—Handle
B—Yoke
C—Length of leveling arm

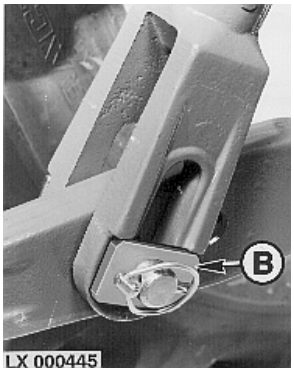
ML70882,0000485 –19–05NOV04–1/1

Vertical Play Adjustment

With steel locking tab in position (A) the lift arms are provided with vertical play.

With steel locking tab in position (B) the lift arms are locked in place.





ML70882,0000486 –19–06APR05–1/1

PTO Operation

CAUTION: ALWAYS disengage the PTO when not in use.

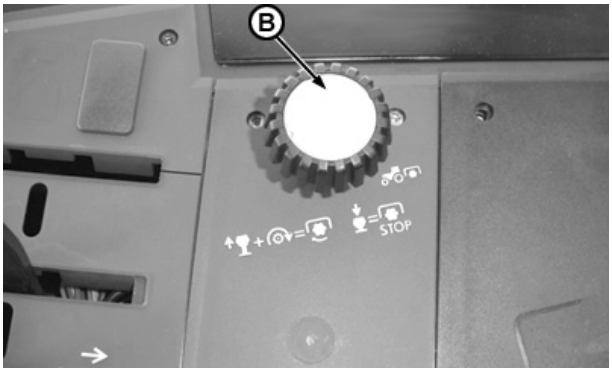
High-inertia implements do not come to a standstill the moment the PTO control lever is shifted to the "STOP" position (disengaged). DO NOT approach the equipment until all moving parts have completely stopped.

The PTO can be turned on and off with the engine in gear without depressing the clutch pedal, even when under load. When the PTO is engaged, warning light (A) comes on.

To engage the PTO, raise knob (B) and rotate it to the right. To disengage the PTO, depress the knob.

NOTE: If engine is stopped and then restarted while the PTO is running, the PTO will not operate. In such a case warning light (A) will remain on and it will flash. If the PTO is further required, disengage it and then turn it on again.

CQ224157 –UN–03NOV04



CQ224158 –UN–09JUN04

ML70882,0000487 –19–05NOV04–1/1

Operating Instructions

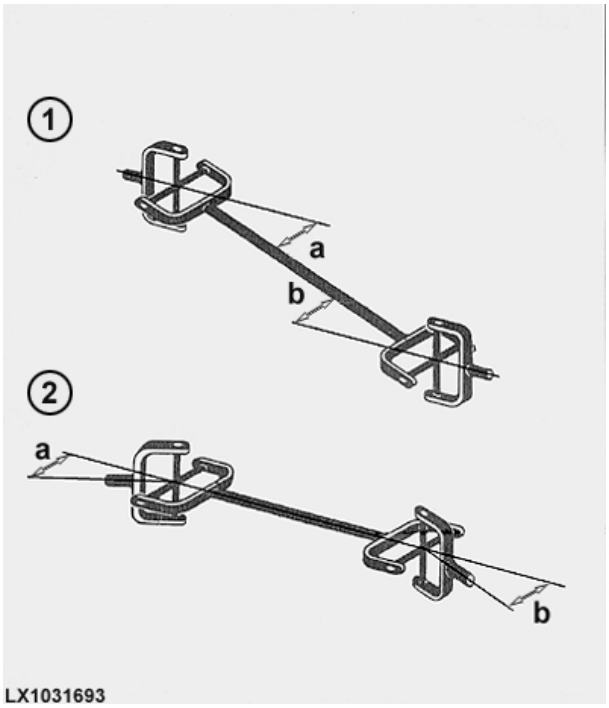
As far as possible, angles (a) and (b) at the universal joints should be the same at both ends of the (Cardan) driveshaft.

Where this is frequently not possible (e.g.: lots of sharp turns), it is recommended to use a continuous-velocity (Cardan) driveshaft.

NOTE: The two schematic drawings do not show any guards on the (Cardan) driveshaft. The use of guards when the PTO is engaged is compulsory.

IMPORTANT: When using (Cardan) drive shafts of the "plug-in" type, the forks on either end of the intermediate shaft must be aligned in the same plane.

1—Z-shaped layout
2—W-shaped layout



OU83340,00005A7 –19–17JUL04–1/1

Power Take-Off Speed — PTO

IMPORTANT: The 540 rpm engine operating speed is used only for implements requiring power lower than 56 kW (76 cv).

The tractor may be fitted with one of the following types of PTO:

Tractor model	PTO speed (rpm)	Engine speed (rpm)
6415 / 6615	540	2124
6415 / 6615	540 and 1000	2143 / 2208

LT04177,00002DA –19–14DEC07–1/1

Reversible PTO Shaft

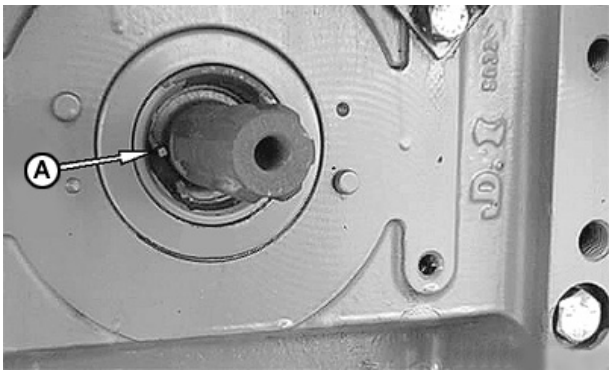
PTO shaft has two types of splines. When the side with 6 splines faces out, the PTO will run at 540 rpm. When the side with 21 splines faces out, the PTO will run at 1000 rpm.

NOTE: Some models do not possess the 1000 rpm option.

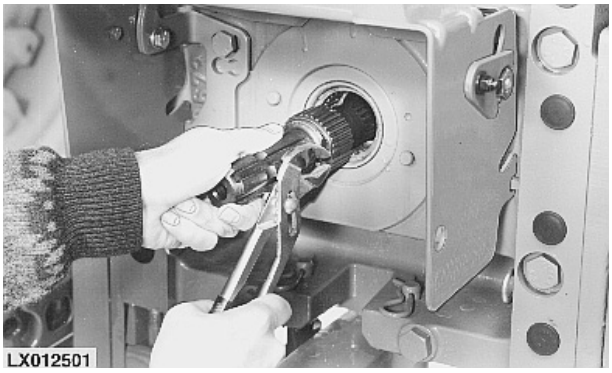
Thoroughly clean PTO output shaft before installation.

Remove snap ring (A) and remove shaft. Invert it and apply a layer of grease. Install and mount snap ring.

NOTE: The flat part of the PTO output shaft facilitates mounting the snap ring.



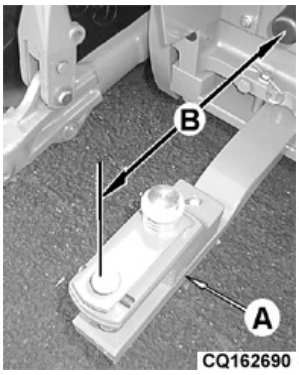
CQ162680 –UN–13JUL07



LX012501 –UN–29JAN96

ML70882,0000488 –19–19JUN07–1/1

Coupling Implements Driven by PTO



CAUTION: Stop engine and disconnect PTO before coupling implements driven by PTO.

CAUTION: High-inertia implements do not come to a standstill the moment the PTO control lever is shifted to the "STOP" position (disengaged). DO NOT approach the equipment until all moving parts have completely stopped.

CAUTION: Before cleaning, adjusting or servicing implements, hitches or drive shafts powered by the PTO, ensure that the PTO is disengaged, stop the engine and remove the key.

1. Align swinging drawbar (A) parallel to PTO shaft and lock it in position.
2. Check distance (B) from end of PTO shaft to the bolt hole at the end of the drawbar.

Specification	
540 rpm PTO—Distance (B)	350 mm (13.8 in)
1,000 rpm PTO—Distance (B)	400 mm (15.7 in)

ML70882,0000489 –19–05NOV04–1/1

Ballasting

Selecting Counterweights

CAUTION: When determining front and rear axle ballast, ensure that permissible axle loads and maximum permissible machine weight are not exceeded (see Specifications).

Safety and performance of your tractor depend on correct ballasting of front axle (front weights) and rear axle (wheel weights, filling tires with liquid ballast).

IMPORTANT: Do not work with too much ballast. This leads to high fuel consumption, overloading of tires, soil compaction and other inconveniences.

AG,LT04177,105 –19–14SEP98–1/1

Transporting with Ballast

CAUTION: Avoid injuries when transporting heavy, rear mounted implements. Drive slowly and cautiously on uneven ground.

Add weight to the front end if more stability is necessary. Heavy rear mounted implements and heavy traction tend to raise the front wheels. Add sufficient weight to maintain steering control and avoid rolling the tractor.

NOTE: Do not operate the tractor with implements attached that are not needed, for example a loader.

AG,GG05155,495 –19–03AUG99–1/1

Guidelines for Tractor Ballasting

Ballast Limitations

IMPORTANT: Do not install counterweights above specified limits. Exceeding permitted weight may damage tractor components and void warranty due to overloading.

Ballast is limited by either tire capacity or tractor capacity. Do not exceed the load capacity for each tire. If more weight is required for traction, use a larger single tire or double tires.

Correct Ballasting

Only use the ballasting necessary. Remove ballast when no longer required. For correct ballasting, measure slip rate of the drive wheels. Under normal conditions, slip rate should be from 10 to 15% for 4x2 tractors and from 8 to 12% for 4x4 tractors.

Place more weight if drive wheels continue slipping. Remove excess weight if the slip is below the minimum percentage.

NOTE: Ideal weight split for tractors can be consulted in “Determining Ballast” section.

ML70882,000048A –19–06JUN06–1/1

Determining Ballast

Factors determining amount of ballast

- Soil surface (soft or firm)
- Type of implement:
  - – Integral (on three points of hitch)
  - – Semi-Integral (on lift arms and selective control)
  - – Drag (on drawbar)
- Ground speed (partial or full load)
- Tires (single or double)

Weight split factors (%)			
	Drawbar	Semi-mounted or integral	3-point mounted or integral
4x2	25 / 75	30 / 70	35 / 65
4x4	35 / 65	35 / 65	40 / 60

NOTE: Pulling a lighter load at a higher speed is more economical and more efficient than pulling heavier loads at a lower speed.

Before adding ballast to your tractor, consider these important factors to attain optimum performance:

- Total tractor weight and static weight split (between front and rear axles)
- Type of ballast (cast iron or liquid)
- Tire inflation pressures

NOTE: See "Wheels, Tires and Treads" section for inflation pressure charts.

IMPORTANT: The weight should be split according to the implements mounted on the tractor and working conditions.

Start with the minimum requirement for the job. Then add ballast to obtain required performance.

NOTE: Correct weight split must be maintained when adding or removing weight.

Ballast levels are based on the following ground speeds.

	Ground speed			
	Light	**Medium**	**Heavy**	
Tractor	8.7 km/h (5.4 mph)	7.7 km/h (4.8 mph)	7.2 km/h (4.5 mph)	
	Manufacturer's recommended weights, in kg (lb)			Maximum weight, in kg (lb)
6415	4850 (10692)	5250 (11574)	5860 (12919)	6000 (13228)
6615	5495 (12114)	5950 (13117)	6700 (14771)	7000 (15432)

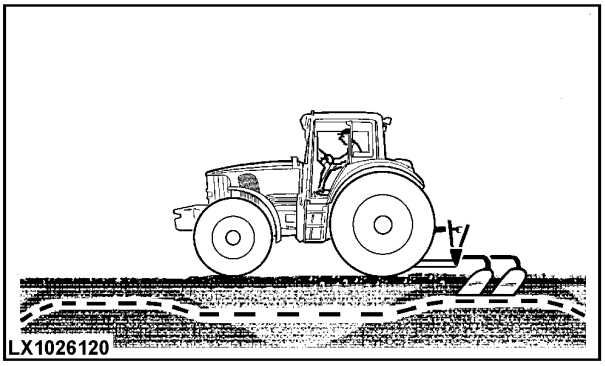
IMPORTANT: Excessive ballasting signifies inappropriate use of the product, which implies a loss of warranty cover for the product.

If the drive force at full load results in a ground speed of 8.7 km/h (5.4 mph) or more, the tractor may operate unballasted. Medium ballast is recommended for operating at full load with a ground speed of between 7.7 km/h (4.8 mph) and 8.7 km/h (5.4 mph).

Heavy ballast should only be used for those few implements (such as deep rippers) that oblige a ground speed at full load below 7.2 km/h (4.5 mph).

IMPORTANT: Avoid working for long periods of time at ground speeds lower than 6 km/h (3.7 mph) when the tractor possesses maximum ballast and the engine is operating at maximum power.

Ballast Calculation for Optimum Performance



LX1026120 –UN–10MAY01

Ballasting example:

We will use a 6415 Tractor with the following features as an example:
Four front weights
23.1-30 rear tires
1,828 kg front weight
2,496 kg rear weight
Implement mounted to three-point hitch: 40x60 distribution (previous table).

Ballast necessary for **medium load: 5,250** kg (11,574 lb) (previous table).

Calculated front weight: 5,250 x 0.40 = 2,100 kg (4,630 lb)
Calculated rear weight: 5,250 x 0.60 = 3,150 kg (6,945 lb)

Necessary front weight: 2,100 - 1,828 = 272 kg (600 lb)
Necessary rear weight: 3,150 - 2,496 = 654 kg (1,442 lb)

Each 50kg weight represents a weight increase of 65 kg on the front axle.

Front: 272 ÷ 65 = 4,1 — Add four weights of 50 kg to the front or ballast front tires with water.

For each solid front weight, subtract 15 kg from rear axle, by transfer.
Transfer: 4 x 15 = 60 kg (132 lb)
Necessary rear weight: 654 + 60 = 714 kg (1,574 lb)

Weight for rear tires: 714 ÷ 2 = 357 kg (787 lb)

23.1-30 tires with 40% of water weigh 288 kg according to tire weights table in this section.

Missing rear weight: 357 - 288 = 69 kg (152 lb)

Add 55 kg to each wheel and weigh tractor again to check distribution of weights.

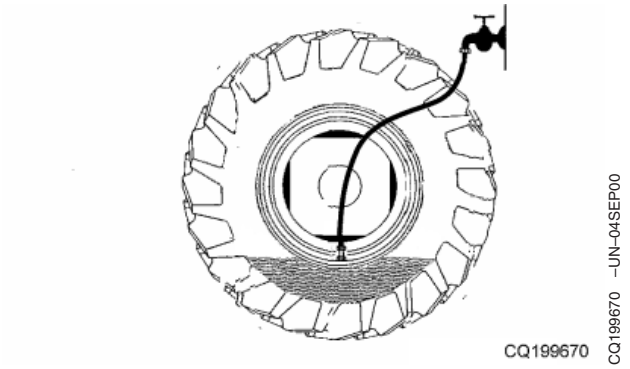
Add more counterweights to drive wheels if slip is excessive. If slip is less than minimum, the weight should be removed.

Continued on next page

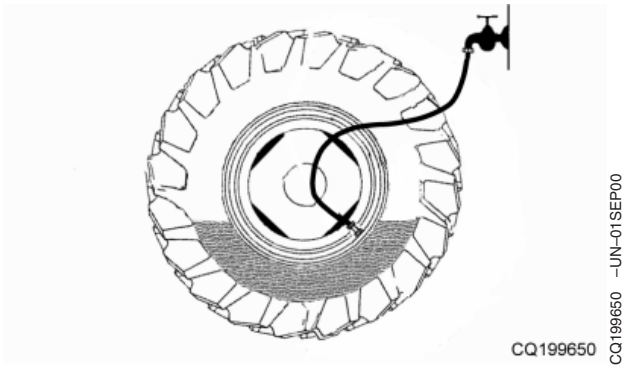
IMPORTANT: Always obey to permissible maximum weight of tractor according to manufacturer's specification.

LT04177,0000154 –19–24AUG07–2/2

Using Liquid Ballast in Tires



25% water, valve at 6 o'clock position

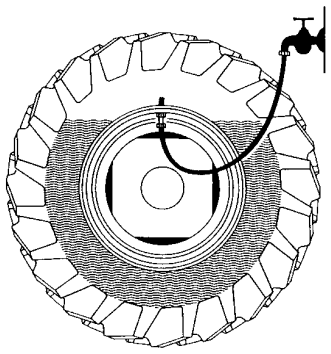


40% water, valve at 4 o'clock position

Up to 75% of tire capacity may be used for liquid ballast.

- Never use more than 75% of tire capacity for liquid ballast in front tires, otherwise the available space for tire deformation will be excessively reduced, causing hardening and subsequent damage to tire.
- To ballast front and rear tires at 75%, position tire valve in upper position (12 o'clock).

IMPORTANT: The weights shown in chart 4 refer to the ballast weight of each tire.



75% water, valve at 12 o'clock position

Chart no.4 — Liquid ballasting of tires

Tire size	25% water (kg/lb)	40% water (kg/lb)	75% water (kg/lb)	Tire size	25% water (kg/lb)	40% water (kg/lb)	75% water (kg/lb)
10.00-16	21 (46)	34 (75)	64 (142)	18.4-26 R1	100 (221)	159 (351)	299 (659)
11.2-28	34 (75)	54 (120)	102 (225)	18.4-34 R1	100 (221)	159 (351)	299(659)
12.4-36 R1	55 (122)	89 (196)	166 (366)	18.4-34 R4	126 (278)	202 (446)	378 (834)
14.9-24 R1	55 (122)	89 (196)	166 (366)	18.4-38 R1	139 (307)	222 (499)	416 (917)
14.9-24 R2	55 (122)	89 (196)	166 (366)	18.4R-26 R1	100 (221)	159 (351)	—
14.9-26 R1	55 (122)	89 (196)	166 (366)	18.4R-38 R1	139 (307)	202 (446)	—
14.9R-26 R1	67 (148)	107 (236)	201 (443)	20.8-38 R1	177 (390)	283 (624)	530 (1168)
14.9-28 R2	67 (148)	107 (236)	201 (443)	23.1-30 R1	177 (390)	283 (624)	530 (1168)
15.5-38 R1	67 (148)	107 (236)	201 (443)	23.1-30 R2	180 (397)	289 (637)	541 (1193)
16.9-24 R1	67 (148)	107 (236)	201 (443)	24.5-32 R1	214 (472)	343 (756)	643 (1418)
16.9-24 R4	77 (180)	123 (271)	231 (510)	320/90R50 R1	70 (155)	112 (247)	—
16.9-26 R1	82 (181)	131 (289)	246 (543)	620/75R30 R1	70 (155)	112 (247)	—
16.9R26 R1	82 (181)	131 (289)	246 (543)	650/75R32R1	204 (450)	327 (721)	—

AG,LT04177,207 –19–19JUN07–1/1

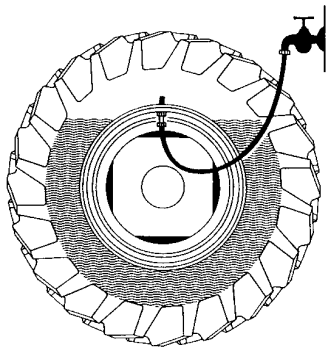
Ballasting Tires with Water

Lift wheel with a jack and rotate wheel until valve is at upper part of tire. Replace air valve for one that permits water entry. As the tire is filled with water the air is expelled through the bleed tube. The water filling process will take from 15 to 30 minutes, depending on tire size.

Then, replace valve with an air valve and pump up tire to normal inflation pressure. Capacities vary according to wheel size and brand.

If necessary, see your John Deere dealer or tire distributor.

In cold climate an antifreeze product, such as calcium chloride, may be added to the water at 0.4 kg (0.88 lb) per liter of water.



LX009450

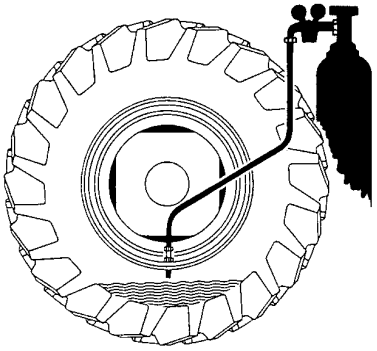
LX009450 –UN–03JAN95

AG,LT04177,215 –19–06APR05–1/1

Emptying Tires With Liquid Ballast

Lift the wheel with a jack, rotate the wheel until the valve is pointing down. Remove the valve and let the water flow out.

If it is necessary to completely empty the water from the tire, put a purge tube into the base of the tire and to force the remaining water out of the tire, pressurizing it with air.



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AG,LT04177,216 –19–27MAY03–1/1

Tire Inflation Pressure

Front tires **Tire inflation pressure (PSI) x weight (kg) per tire**											
Tire	44	56									
10.00-16	1195	1420									

Front tires **Tire inflation pressure (PSI) x weight (kg) per tire**											
Tire	12	14	16	18	20	22	24	26	28	30	32
11.2-28	630	690	750	800(4)	—	—	—	—	—	—	—
14.9-24	1000	1090(4)	1180	1285	1360(6)	1450	1500	1600(8)	—	—	—
14.9-26	1030	1150	1215	1320	1400(6)	1500	1550	1650	1700	1800	1850(10)

Front tires **Tire inflation pressure (PSI) x weight (kg) per tire**													
Tire	6	8	10	12	14	16	18	20	22	24	26	28	30
14.9R24	750	875	1000	1120	1215	1320	1400 (120A8)	1500	1600	1700 (126A8)	—	—	—
14.9R26	775	925	975	1150	1250	1360	1450 (121A8)	1550	1650	1750 (127A8)	1800	1900	2000 (132A8)
16.9R24	—	—	—	1360	1500	1600	1700 (126A8)	1850	1950	2120 (134A8)	2140	2240	2300 (137A8)

Rear tires **Tire inflation pressure (PSI) x weight (kg) per tire**											
Tire	12	14	16	18	20	22	24	26	28	30	32
12.4-36	875	950	1030(4)	1090	1150	1215	1285(6)	1360	1400	1450	1550(8)
13.6-38	1060	1150(4)	1250	1320	1400	1500(6)	—	—	—	—	—
13.6-46	1150	1285(4)	1360	1450	1550	1650(6)	1750	1800	1900(8)	—	—
15.5-38	1180	1285	1400	1500	1600(6)	1700	1750	1850(8)	—	—	—
16.9-24	1215	1320	1450	1550(6)	1650	1750	1850(8)	1950	2000(10)	—	—
18.4-34	1700	1900	2200(6)	2180	2300(8)	2430	2575	2725	2800	2900	3300(12)
18.4-38	1800	2000	2120(6)	2300	2430(8)	2575	2725	2900(10)	3000	3075	3250(12)
23.1-30	2300	2500	2725(8)	2900	3075(10)	—	—	—	—	—	—

Rear tires **Tire inflation pressure (PSI) x weight (kg) per tire**													
Tire	6	8	10	12	14	16	18	20	22	24	26	28	30
18.4R34	1285	1500	1700	1900	2060	2240	2430 (139A8)	2575	2725	2800 (144A8)	3000	3150	3250 (149A8)
18.4R38	1360	1600	1800	2000	2180	2360	2575 (141A8)	2725	2900	3000 (146A8)	3150	3350	3450 (151A8)

Continued on next page

Rear tires **Tire inflation pressure (PSI) x weight (kg) per tire**									
Tire	32	35	38	17	41	44	46	49	52
320/90R50	2575	2650 (142A8)	2800	2900 (145A8)	3000	3150 (148A8)	—	—	—

Rear tires **Tire inflation pressure (PSI) x weight (kg) per tire**								
Tire	9	12	15	17	20	23	26	29
620/75R30	2675	2995	3290	3585	3800	4125	4415	4680

LT04177,0001BB2 –19–19JUN07–2/2

Tires & Loads


CQ273132 –UN–21DEC06

The tires are the principal item that affects ballasting. Better traction is achieved with bigger or double tires. When a tire is run at its maximum capacity good performance or durability cannot be expected.

Heavy ballasting means the tire will have a greater contact with the ground and consequently there will more compaction.

Double tires can be used to reduce ground pressure and prevent excessive compaction. They are also used when single tire transport capacity is exceeded. However, doubling does not mean an increase in ballast is necessary.

Advantages of double tires

- Double tires, with ballasting provide greater contact with the ground. This results in less slippage, increased speed and improved work capacity, allowing for a reduction in fuel costs.
- Improves tractor stability.
- Double tires lessen operator fatigue by providing a smoother motion.
- Double tires provide greater tractor float.
- Tractors can be converted to doubles and have their use potential increased at any stage of the year. Doubles perform better in soil preparation work where greater tractor power is needed.
- Doubles allow tractor to be used under adverse soil and weather conditions, where single wheels cannot be used.
- Doubles allow tractor to be moved for servicing with one tire only, reducing stoppage time.

Disadvantages of double tires

- Some axles, bearings and drive train can be overloaded when using double tires. Always contact your dealer to advise you when installing double wheels.
- Reducing double tire air pressure to improve comfort while in motion may affect service life of tire. Consult tractor operation manual or your dealer for inflation pressures.

Continued on next page

- If the drawbar load is light, there are no advantages in using doubles.
- Double tires make tight maneuvers difficult and produce significant wear on tire grips and talons.
- Replacing a double tire can be difficult, unless you have the appropriate equipment.

LT04177,0000095 –19–22DEC06–2/2

Slip Rate

To obtain optimum tractor performance, inflation pressures must be correctly adjusted to gain maximum traction and minimum soil compaction.

Ground pressure (soil compaction) must be between 20.7 kPa (3 PSI) to 27.6 kPa (4 PSI) higher than tire inflation pressure (for tires on a diagonal plane).

IMPORTANT: To determine correct inflation pressure, see Tire Inflation Pressure chart.

NOTE: Check that tire load capacity is not exceeded when ballast is added. Check also liquid ballast weight charts.

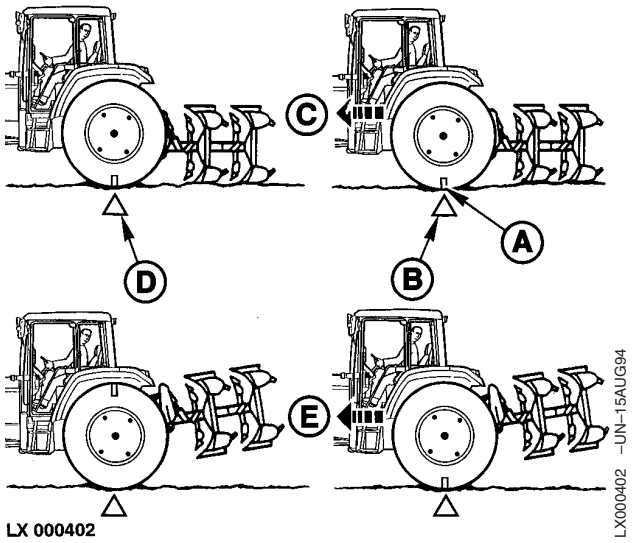
Checking Ballast

The principal factor for calculating correct ballast is the slip rate measured in the field. Under normal conditions, the slip rate must be:

Tractor	Slip rate (%) =
Two-Wheel Drive	10—15
Four-Wheel Drive	8—12

OU83340,00005AA –19–08DEC05–1/1

Rear Wheel Slip Measuring Methods



LX 000402

1. **Step 1**: Mark rear tire (A).
2. **Step 2**: Mark ground next to rear tire (using a stake) to indicate starting point (B).
3. **Step 3**: Drive tractor in straight line with implement in field position until rear wheel has completed 10 full rotations (C).
4. **Step 4**: Mark ground (with a stake) at point where rear wheel completed 10 full rotations (D).
5. **Step 5**: Return tractor to starting point and cover same route marked out on ground with the implement raised (in transport position). Count the number of rotations completed by rear wheel between the two markers (E). The ratio of the number of rotations of the rear wheel with load and without load is the slip rate.
   The formula below is used to draw up the following chart:

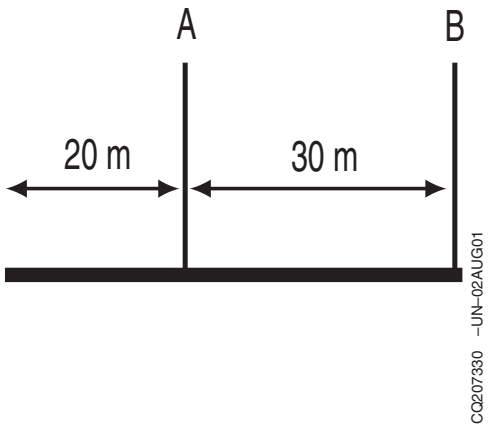
$$\text{Slip rate (\%)} = \frac{(\text{step 3 rotations} - \text{step 5 rotations}) \times 100}{\text{Time for step 3}}$$

Step 3 rotations	Step 5 rotations	Slip rate (%)
10	10.0	0
10	9.5	5
10	**9.2**	**8**
10	9.0	10
10	**8.8**	**12**
10	8.5	15
10	8.0	20
10	7.5	25
10	7.0	30

Step 6: Add more weight when slip is excessive. For rates below minimum, weight must be removed.

OU83340,000056F –19–09FEB06–1/1

Method of Measuring Slip Rate Using a Stopwatch



1. Mark out two points **A** and **B** approximately 30 m apart.
2. Start 20 m (65 ft 7 in.) before starting mark **A** . Start stopwatch when marker **A** is reached and stop stopwatch when marker **B** is reached. Record time.
3. Cover the same distance with the implement raised (in transport position) and record time between **A** and **B** , using the same gear and engine operating speed.

$$\text{Slip (\%)} = \frac{\text{(time for step 2 - time for step 3) X 100}}{\text{Time for step 2}}$$

Example
In field position, time = 15 s
Implement without load = 13 s.

$$\text{Slip} = \frac{\text{(15 - 13) x 100}}{15} = 13.3\ \%$$

NOTE: Add more weight when slip is excessive, always respecting recommended maximum values. For rates below minimum, weight must be removed.

LT04177,0000085 –19–18JAN06–1/1

Jolting Effect

Jolting effect during operation

The jolting effect occurs when the ballast installed on the tractor and the operating speed feed energy in the form of vibration.

To remove this annoying condition, the front or rear weight of the tractor must be changed. For this, follow the procedure below, testing every change.

- Calibrate the tires to the minimum pressures indicated by the load.
- Increase the pressure of the front wheels in 2 lb/in^2 intervals up to a maximum of 8.
- Remove any liquid ballast from the rear tires.
- Add solid ballast to the rear tires.
- Add liquid ballast to the front tires.

NOTE: After each change of ballast, test the tractor again. Repeat the steps above until the problem is solved.

AG,LT04177,211 –19–29OCT98–1/1

Mounting Rear Wheel Counterweights

CAUTION: Whenever mounting or removing counterweights, orient wheels so that the counterweight inserts are pointing upwards. This prevents counterweights from falling off.

1. Mount the first counterweight over the wheel disk and insert and tighten three bolts (A).

Specification

First rear wheel counterweight—Weight..... 38,5 kg (84.9 lb)

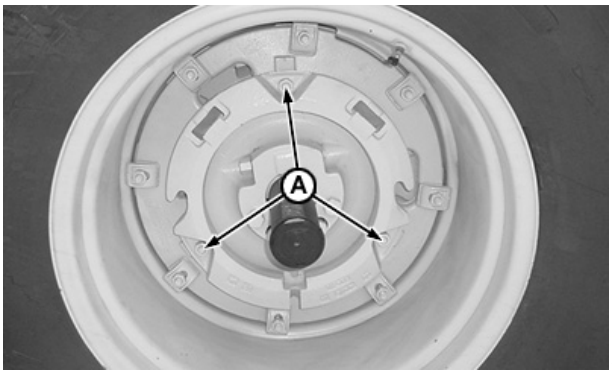
2. Mount additional counterweights:

   a. Snap additional counterweights to inserts (B).

Specification

Additional rear wheel counterweights—Weight..... 55 kg (110 lb)

   b. Insert and tighten bolt (C).



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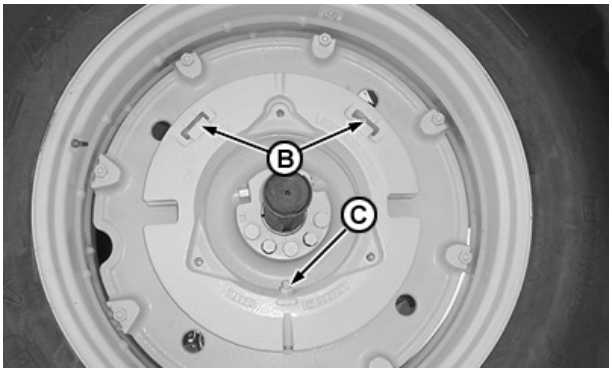

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ML70882,000048B –19–20MAY05–1/1

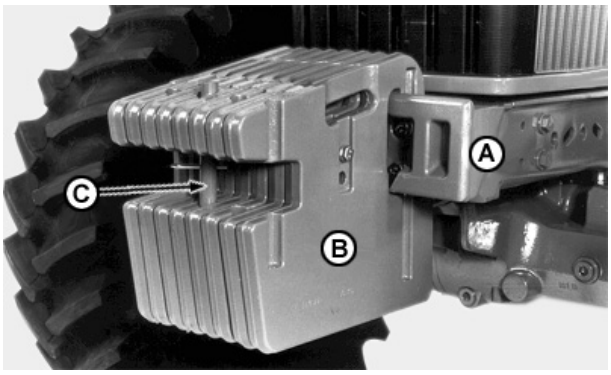
Mounting Front Counterweights

CAUTION: If it is necessary to tow a tractor uphill or to free a mired machine under application of great traction force, remove front counterweights (if equipped) and install pin (D) in towing position. See "Towing Tractor".

IMPORTANT: Front Hitch position (C) should be used only for maneuvering and towing on roads.

Tractor allows one counterweight base (A) with at max 16 front counterweights.

Each additional counterweight weighs 50 kg (110 lbs).



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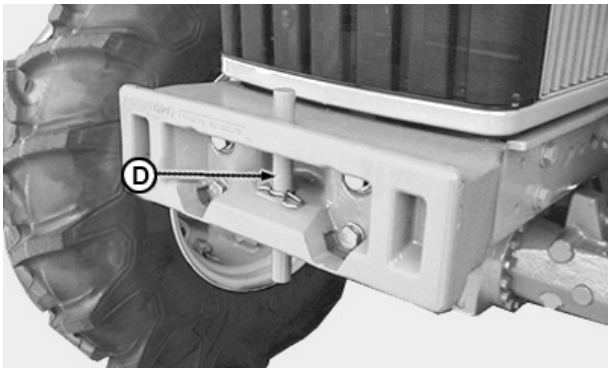

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ML70882,0000776 –19–07JUL05–1/1

Four Wheel Drive Front Axle Maximum Load with Front-Mounted Implements

The operation of four wheel drive tractors with front-mounted blades and loaders must comply with the following requirements:

1. Front-wheel drive must compulsorily be disengaged when operating front-mounted implements.
2. Static front load must not exceed specified value.

Specification

Static front load[1]—Maximum Weight..... 6,000 kg (13,228 lb)

IMPORTANT: Incorrect use may shorten working life of drive train system parts and may result in loss of warranty.

CQ213630 –UN–15APR02

[1] For loading operation at speed of up to 10 km/h (6.2 mph).

ML70882,000048D –19–27MAY05–1/1

Checking Toe-In—4x4 Axle

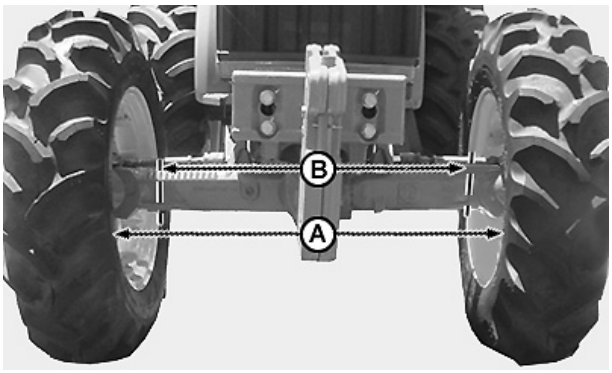
Measure width of front part of front axle and behind the wheel between rim edges.

1. Mark wheel and measure distance (A).
2. Rotate front wheels 1/2 turn.

NOTE: The mark must be on the opposite side to its original position.

3. Measure distance (B) at the same point at which distance (A) was measured.

IMPORTANT: The value of measurement (A), taken at the front, should be between 0.5—3.5 mm greater than the value of measurement (B), taken at the rear.



ML70882,000048E –19–19OCT06–1/1

Adjusting Toe-In—4x4 Axle

1. Loosen nuts (A) on both sides of coupling bar.
2. Adjust both sides equally by turning internal bar (B) to increase or decrease length of coupling bar as necessary, until specified toe-in is obtained.

Specification

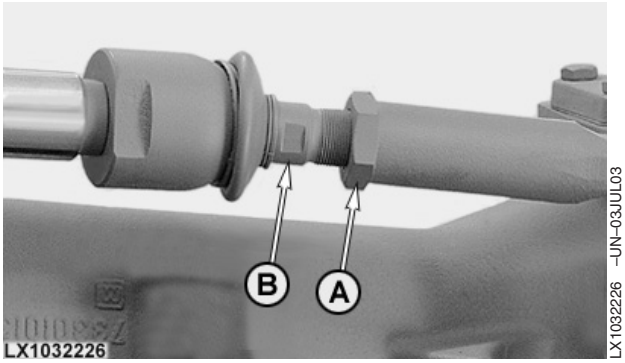
Front axle toe-in (4x4)—Distance ..... 0.5—3.5mm (0.019—0.14 in.)

IMPORTANT: Each complete turn of coupling bar will alter toe-in by approx. 1.5 mm.

3. Tighten nuts to specification once adjustment is completed:

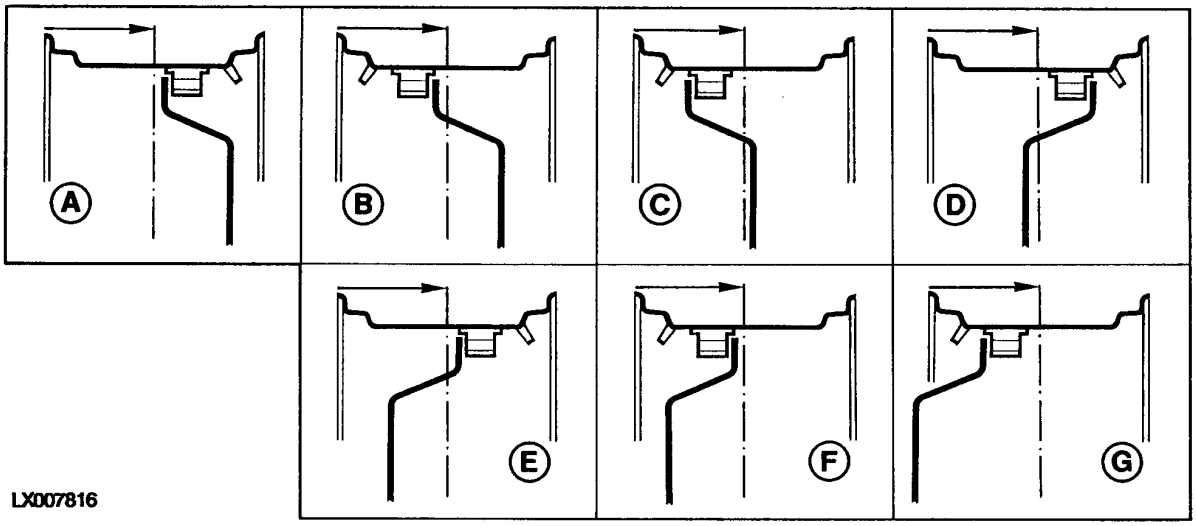
Specification

Tightening nut—Torque..... 328—363 N.m
242—267 Lb-ft



ML70882,000048F –19–19OCT06–1/1

Adjusting Tread of Front Wheels with Reversible Rims



Front wheel tread can be adjusted as required by replacing or reversing wheel rims.

IMPORTANT: Bolts must be mounted on outside face of wheel.

The entire wheel can be reversed and mounted on opposite side of tractor. The arrow on side of tire indicates forward direction.

NOTE: Wheel tread on tractors equipped with a front loader must not exceed 1.80 m (71 in.).

Wheel Tread	
A	1541 mm (5.1 ft)
B	1616 mm (5.3 ft)
C	1734 mm (5.7 ft)
D	1843 mm (6.1 ft)
E	1961 mm (6.4 ft)
F	2036 mm (6.7 ft)
G	2154 mm (7.1 ft)

NOTE: For 14.9x24, 14.9x26 and 16.9x24 tires, the use of tread A IS NOT RECOMMENDED.

ML70882,0000490 –19–08NOV04–1/1

Limiting Steering Angle

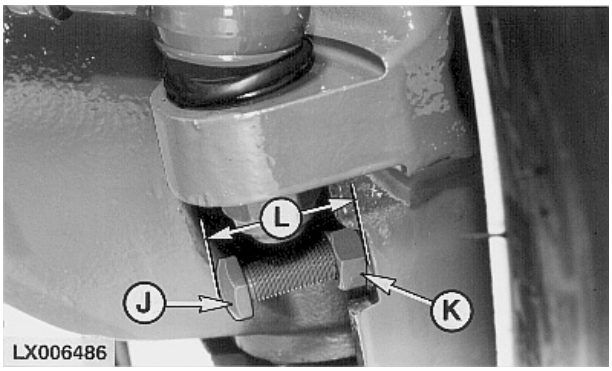
Ask your dealer to carry out the steering angle adjustment according to the tread used and the tire set of your tractor.

This adjustment should be carried out to prevent interference between the front tires and the tractor shields.

Carry out this adjustment each time the tire set is changed.

Specification

Locknut (K)—Torque ..... 20—30 N.m
14—21 Lb-ft



Limiting steering angle

J—Stop screw
K—Locknut
L—Stop screw length

ML70882,0000491 –19–31OCT06–1/1

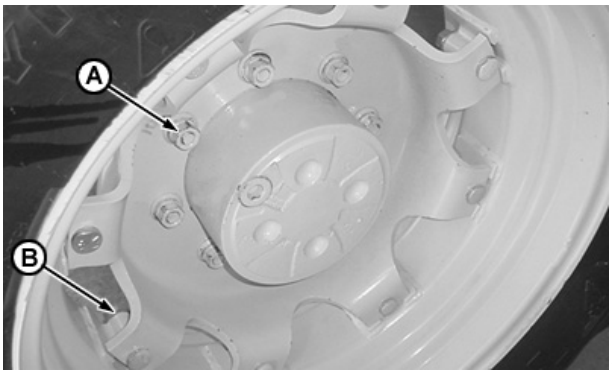
Tightening Front Wheel Attaching Nuts

Whenever any service of front wheels is carried out, retighten attaching nuts as specified.

Specification

Attaching nuts (A)—Torque ..... 300 N.m (220 lb-ft)
Attaching nuts (B)—Torque ..... 250 N.m (185 lb-ft)

IMPORTANT: After the first 8 to 10 hours of operation, retighten all wheel attaching nuts to specified torque. Check tightness of these nuts frequently during the first 100 hours of operation.



ML70882,0000492 –19–26JUL05–1/1

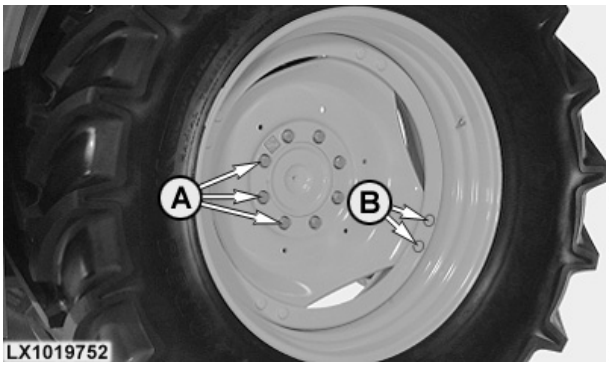
Tightening Rear Wheel Attaching Nuts—Reversible Rims

Whenever any service of front wheels is carried out, retighten attaching nuts as specified.

Specification

Attaching nuts (A)—Torque ..... 400 N•m(290 lb-ft)
Attaching nuts (B)—Torque ..... 200 N•m (145 lb-ft)

IMPORTANT: After the first 8 to 10 hours of operation, retighten all wheel attaching nuts to specified torque. Check tightness of these nuts frequently during the first 100 hours of operation.



ML70882,00004CA –19–26JUL05–1/1

Adjusting Tread of Rear Wheels with Reversible Rims

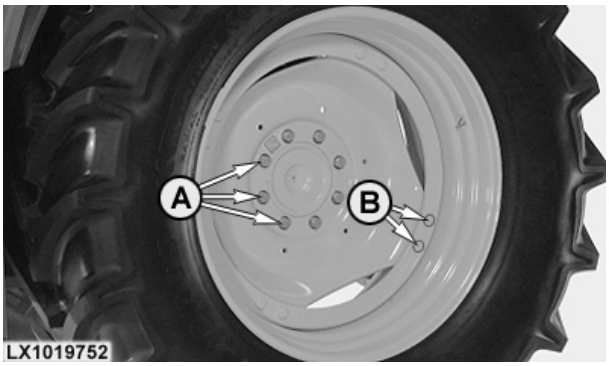
Rear tread is adjusted by changing position of disks and rims.

Tread can also be adjusted by changing wheel to opposite side of tractor. When changing rear wheels from one side to other, the arrow on side of tire must be pointing in direction of forward travel.

After adjusting tread, tighten attaching nuts (A) and (B).

See “Tightening Rear Wheel Attaching Nuts—Reversible Rims”.

The following diagram indicates disk and rim positions, according to required tread. Carefully study diagrams before changing tread as this will reduce effort when performing this task.



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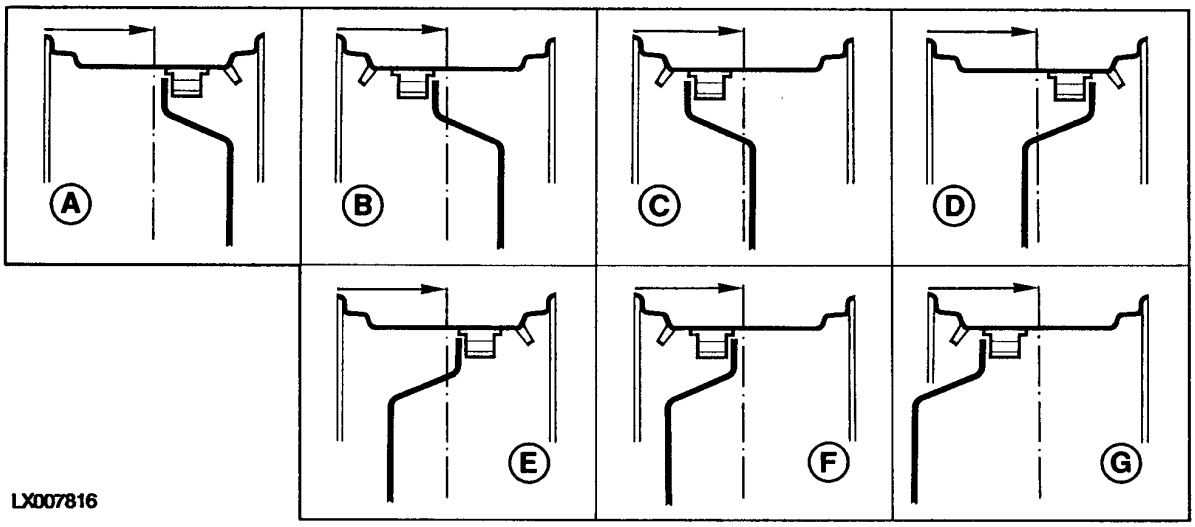
Positions of Tread of Rear Wheels with Reversible Rims



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See the following treads:

NOTE: For 18.4x38 and 18.4x34 tires, the use of treads A, B and C IS NOT RECOMMENDED.

Position of Tires and Wheel Flanges

Wheel Tread	
A	1320 mm (4.3 ft)
B	1413 mm (4.6 ft)
C	1524 mm (5.0 ft)
D	1609 mm (5.3 ft)
E	1720 mm (5.6 ft)
F	1813 mm (6.0 ft)
G	1924 mm (6.3 ft)

ML70882,00004CB –19–10NOV04–1/1

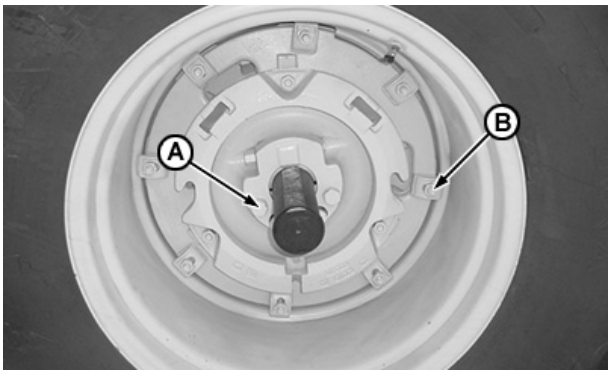
Tightening Rear Wheel Attaching Nuts—Rack and Pinion

Whenever any service of front wheels is carried out, retighten attaching nuts as specified.

Specification

Nuts (A)—Torque ..... 400 N.m (290 lb-ft)
Attaching nuts (B)—Torque..... 240 N.m (177 lb-ft)

IMPORTANT: After the first 8 to 10 hours of operation, retighten all wheel attaching nuts to specified torque. Check tightness of these nuts frequently during the first 100 hours of operation.



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ML70882,0000493 –19–26JUN06–1/1

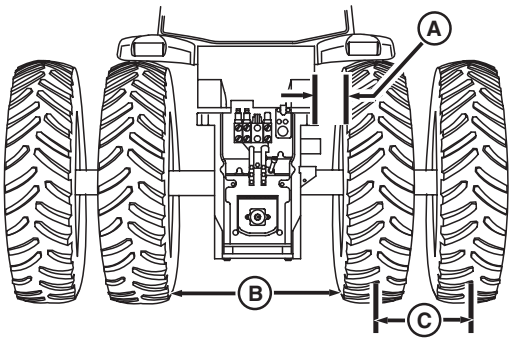
Instructions For Double Tires

IMPORTANT: Tires should have a clearance of at least 25 mm (1 in.) from fenders (A). Distance between tires must be at least 1,015 mm (40 in.) with tires at equal distance from tractor centerline (B).

Check for adequate clearance between implement and rear tires.

DO NOT mix radial and bias-ply tires on same axle.

Minimum Spacing for Dual Tires (C)	
Tread setting is measured between centers of tires.	
Tire Section	**Minimum Spacing**
16.9	563 mm (21.1 in.)
420	526 mm (20.7 in.)
20.8	645 mm (25.4 in.)
520	636 mm (25 in.)
600	746 mm (29.4 in.)
710	845 mm (33.2 in.)



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ML70882,0000777 –19–28JUN07–1/1

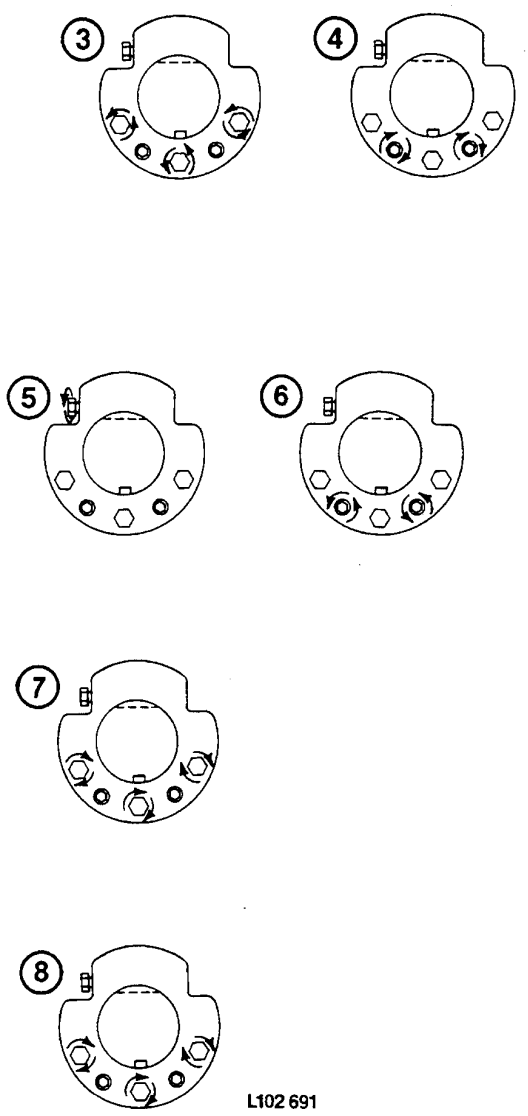
Adjusting Wheel Tread With Rack-and-Pinion Axle

NOTE: Adjustment of wheels is only possible when not more than two weights are attached to each wheel.

1. Clean the axle with a wire brush.
2. Jack up tractor and turn rear wheel so that rack on axle faces upward.
3. Loosen the attaching bolts completely.
4. Tighten the jack screws until the screw heads are flush against the face of the wheel hub.

NOTE: If the sleeve does not break loose at once, also loosen the three special screws on inboard side of wheel. If sleeve still does not break loose, strike end of axle several times with a heavy hammer. Evenly retighten jack screws. It helps to soak the sleeves in penetrating oil.

5. Turn adjusting screw in or out until desired position is reached.
6. Back jack screws all the way out against stop, but do not use force.
7. Lubricate threads and retighten attaching bolts alternately to 400 N•m (300 lb-ft). Retighten bolts several times until all three stay tightened to specified torque. When the attaching bolts are tightened to specified torque, the jack screws should be free to turn. If this is not the case, loosen jack screws and retighten attaching bolts to specified torque.
8. After completing wheel tread adjustment, make sure that tires and wheel ballast weights do not rub against the tractor. Then drive tractor approx. 50 m (160 ft.), stop the tractor and retighten attaching bolts to 400 N•m (300 lb-ft). The bolts must be retightened to torque after 4 hours, after 8 hours and several times within the next 100 hours. See “Break-In Period”.



L102 691

L102691 –UN–13APR00

Continued on next page

AG,OU12401,10030 –19–18FEB00–1/3

IMPORTANT: The distance between the side wall of the tire and the fender must not be less than 50 mm (1.97 in.).

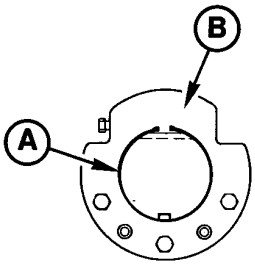
The distance between the running surface (edge) of the tire and the fender must not be less than 60 mm (2.36 in.).

AG,OU12401,10030 –19–18FEB00–2/3

Turn wheel hub (pinion inside)

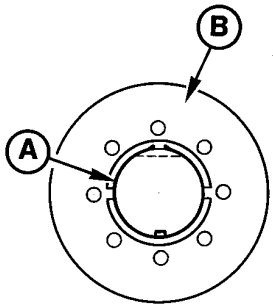
For loosening, adjusting and tightening wheel hub, see previous page.

1. To facilitate assembly, remove rear wheel.
2. Remove snap ring (A). Turn adjusting screw so that wheel hub (B) is at maximum width. Remove wheel hub (B).
3. Put wheel as desired on axle. Turn wheel hub (B) around and install it.
4. Install wheel and snap ring (A). For further assembly, see previous page.



LX008633 –UN–16AUG94

LX008633



LX008634 –UN–16AUG94

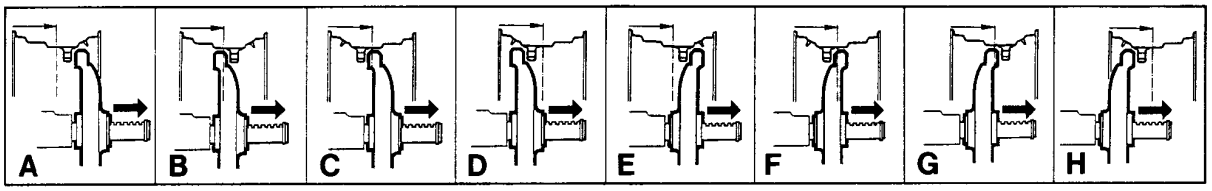
LX008634

IMPORTANT: The distance between the side wall of the tire and the fender must not be less than 50 mm (1.97 in.).

The distance between the running surface (edge) of the tire and the fender must not be less than 60 mm (2.36 in.).

AG,OU12401,10030 –19–18FEB00–3/3

Positions of Rear Tread with Rack and Pinion



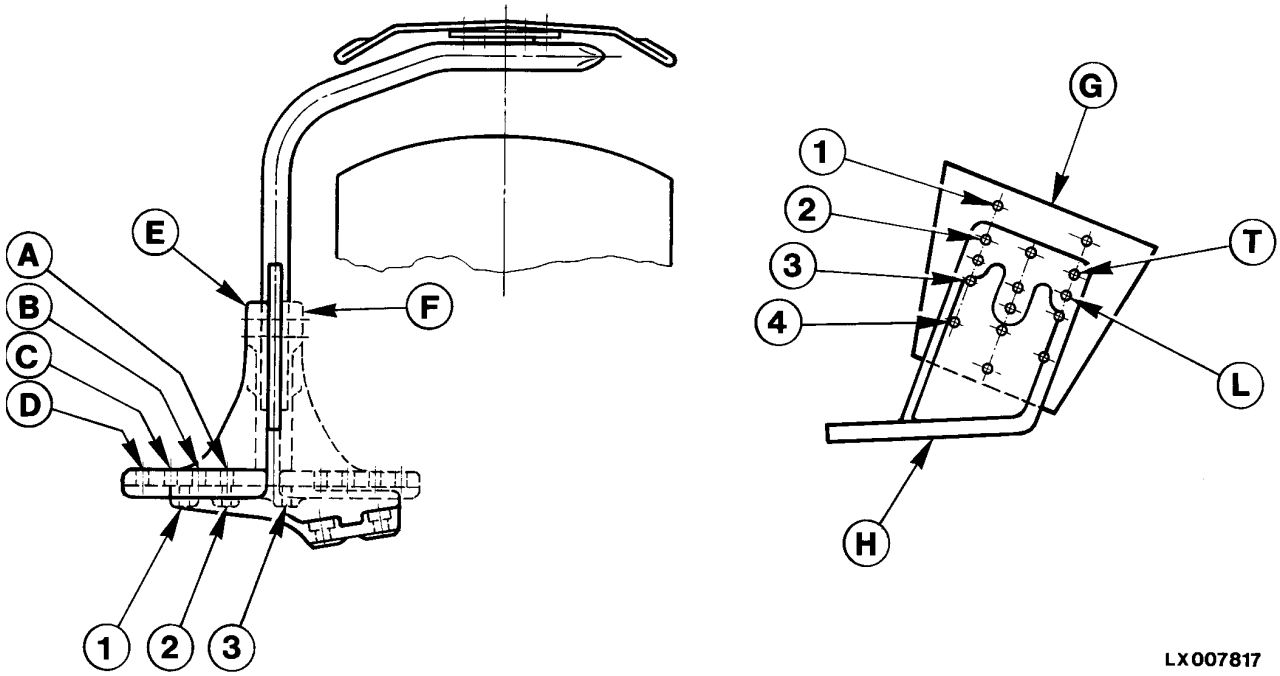
LX007827

Type	Minimum tread (mm)	Maximum tread (mm)
Rack and pinion axle	1658	2409

18.4-34R1 or 23.1-30R1 wheeled

LT04177,0000174 –19–20JUL07–1/1

Adjusting Fenders



LX007817 –UN–16AUG94

Front wheels shown

The fenders must be installed according to tire dimensions and tread. Select suitable tires and tread and determine correct fender position from the chart, see “Fender Positions” chart in this section).

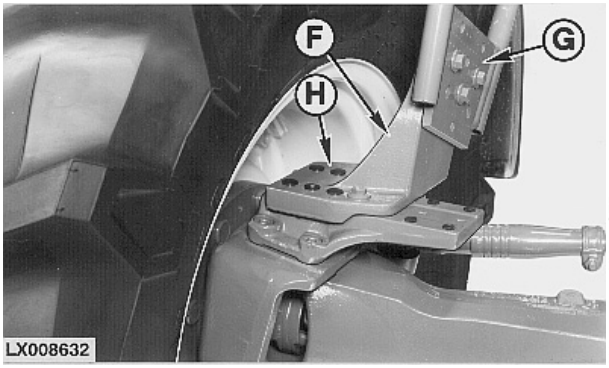
Explanation of Positions

D-3-Indicates which holes (1,2 or 3 and A, B, C or D) are bolted together.

INSIDE- indicates if bracket is mounted on the INSIDE or the OUTSIDE. When reversing bracket position, it is necessary to install the bracket from the left-hand side of the tractor on the right-hand side and vice versa.

L/3-Indicates whether the upper (T) or lower (L) holes in the bracket are used, and which corresponding holes (1, 2, 3 or 4) are used in the fender.

Fender position-This line indicates the position of the fender on the front-wheel drive axle, e.g. D-3 INSIDE.



LX008632 –UN–01SEP94

E—Outside bracket
F—Inside bracket
G—Fender
H—Support

Continued on next page

Fender height-This line indicates the height of the fender, e.g. L/3.

Fender width- Approximately indicates fender clearance, e.g. 400 mm (15.7 in.) for used tires.

See fender position chart below.

For treads chart (position of rims and wheel disks), see corresponding pages.

ML70882,00007A1 –19–16FEB06–2/2

Fender Positions

Position of adjustable wheels and disks with reversible rims.

Tires Fender width	Standard tread	**A** 1320	**B** 1430	**C** 1524	**D** 1609	**E** 1720	**F** 1830	**G** 1924
14.9-24 400 mm (15.7 in)	Fender position	—	A-2E	B-3E	A-2F	D-1F	B-3F	C-3F
	Fender height	—	L/3	L/3	L/3	L/3	L/3	L/3
16.9-26 440 mm (17.3 in)	Fender position	—	—	A-3E	A-3E	C-1F	A-3F	B-3F
	Fender height	—	—	T/2	T/2	T/2	T/2	T/2

To adjust fender see “Adjusting Fenders”.

AG,LT04177,128 –19–16FEB06–1/1

Inflation Pressure

Long life and satisfactory performance of tires depends on proper tire inflation. Under inflation of tires leads to increased wear. Over inflation reduces traction and increases wheel slip.

Since correct tire pressures depend not only on working conditions and load but also on tractor model, tire size and manufacturer, we recommend that you consult your John Deere dealer or tire distributor for advice. The inflation pressures specified in the chart in section 60 must be solely considered as a guide.

The specified inflation pressures refer to specific working conditions. If around 20% of tractor use is reserved solely for transport, then increase the inflation pressures as recommended by the tire manufacturer.

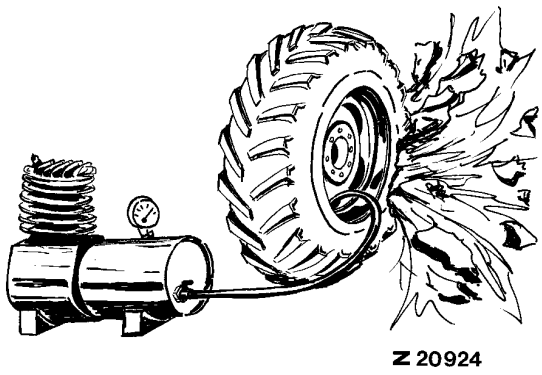
AG,LT04177,133 –19–06APR05–1/1

Safely Mounting Tires

Failure to follow appropriate procedure when mounting a tire on a wheel or rim can cause an explosion, which may result in serious injury or death. DO NOT attempt to mount a tire unless you possess the equipment and experience to safely carry out the task. It is safer to leave this task to your John Deere dealer or a professional tire shop.

When mounting the bead of the tire in the rim never exceed the maximum adjustment pressure as specified by the tire manufacturer. Inflating a tire to a pressure above the maximum level may cause the bead to tear or even the rim, with dangerous explosive force. If, at the recommended pressure, there is leakage of air from the bead of the tire set on the rim deflate tire, lubricate the bead and reinflate it.

Detailed agricultural tire mounting instructions, including necessary safety precautions, are available from the local office of your tire manufacturer. This information is also available in the manuals of tire manufacturers.



Z 20924

Z20924 –UN–15AUG94

LX,OSPU 000242 –19–06APR05–1/1

Tire Combinations

The size ratio of the front wheels to the rear ones is precisely determined in order to produce a positive front wheel lead of between 1.5 and 4%, otherwise the tires will become deformed or suffer undue wear. To ascertain the correct ratio when changing tires, proceed as follows:

Ascertain tractor data:

1. Transmission ratio of the differential gear pair. This information is displayed on the transmission type plate. The following pairs are possible:

Gear pair	Transmission ratio
53/10	5,300
51/9	5,667

2. Transmission ratio of front axle. This figure is displayed on the front axle type plate. The following ratio is possible:

   - 15,692

3. Transmission ratio of gear pair for front-wheel drive axle (output). This value can be found on the transmission serial number plate. The following ratios are possible:

   - 1,446
   - 1,465
   - 1,497
   - 1,532
   - 1,564
   - 1,597
   - 1,625
   - 1,658
   - 1,692
   - 1,725
   - 1,760
   - 1,795
   - 1,833
   - 1,870
   - 1,907
   - 1,943
   - 1,990
   - 2,028

Ascertain tire data:

This information must be ascertained from the tire manufacturer's manual.

1. Select tires with suitable load-bearing capability.
2. Select tires appropriate to the tractor's top speed.
3. From the manual, ascertain the rolling circumference of the tire desired for the rear wheel.
4. From the manual, ascertain the rolling circumference of the tire desired for the front wheel.

Ascertain the following data:

1. Calculate the difference between the rolling circumferences of the tires on the front and rear wheels.

IMPORTANT: The largest front tires on SE tractors 6020, 6120 and 6220 must not exceed an index radius of 610 mm (24.0 in.). The largest front tires on SE tractors 6320 and 6420 must not exceed an index radius of 620 mm (24.4 in.).

   The difference in rolling circumferences between the front and rear tires must be between 945 mm (37.2 in.) and 1618 mm (63.7 in.).

2. Calculate the overall transmission ratio using the following formula:

$$I = \frac{A1 * I1 * I3 * 100}{A2 * I2 * 102{,}75}$$

A1 = Rolling circumference of front tires
A2 = Rolling circumference of rear tires
I1 = Rear axle ratio (7.0714)
I2 = Transmission ratio of front axle
I3 = Transmission ratio of the differential gear pair

Continued on next page

Ascertain the gear pair that is appropriate for the overall transmission ratio.

Calculated transmission ratio (corresponds to a pos. front wheel lead of 1.5 - 4.0%)	**Transmission ratio of the required gear pair** (corresponds to desired average value of pos. front wheel lead)
1,428 — 1,446	1,446
1,447 — 1,478	1,465
1,479 — 1,512	1,497
1,513 — 1,544	1,532
1,545 — 1,576	1,564
1,577 — 1,617	1,597
1,618 — 1,637	1,625
1,638 — 1,669	1,658
1,670 — 1,703	1,692
1,704 — 1,737	1,725
1,738 — 1,772	1,760
1,773 — 1,810	1,795
1,811 — 1,846	1,833
1,847 — 1,882	1,870
1,883 — 1,918	1,907
1,919 — 1,964	1,943
1,965 — 2,002	1,990
2,003 — 2,062	2,028

Sample calculation

The intention is to fit a 6420 SE tractor with 540/65R38 and 480/65R24 tires, made by a certain manufacturer.

1. The transmission ratio of the differential gear pair is 5.667.
2. The transmission ratio of the front axle is 15.692.
3. The transmission ratio of the gear pair for the front-wheel drive axle is 1.833.
4. The rolling circumference of the tire on the rear wheel is 4995mm (196.7 in.).
5. The rolling circumference of the tire on the front wheel is 3707 mm (145.9 in.).
6. The difference between the rolling circumferences of the tires on the rear/front wheels is 1288 mm (50.7 in.), i.e. within the acceptable range.
7. Calculate the overall transmission ratio.

$$\frac{3707 * 7{,}0714 * 5{,}667 * 100}{4995 * 15{,}692 * 102{,}75} = 1{,}845$$

The gear pair that is required must have a ratio of 1.833.

OULXE59,001066F –19–06AUG04–2/2

Selective Control Valves

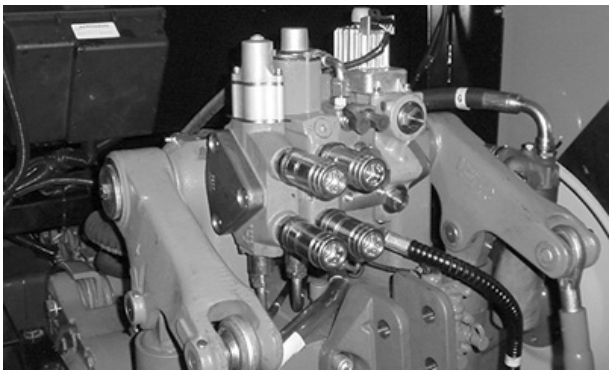
The tractor may be equipped with two different types of selective control valve: 101 series and 301 series.

The 101 series selective control valve has the following positions “raise”, “lower”, plus one more, “float”.

The 301 series selective control valve has a constant flow function (A) that maintains the engaged control lever in the “Raise” or “Lower” position until it is manually moved from that position. It also includes a retain function (B) that maintains the control lever in the “Raise” or “Lower” until the hydraulic system pressure reaches a predetermined value (e.g. when the selective hydraulic cylinder reaches the limit of its travel and the lever automatically returns to the neutral position).

In position (C) no lock is engaged. The control lever returns to the “ Neutral” position when it is released.

For the 101 series, when coupling an implement with a hydraulic cylinder system to the pressure connection (e.g. the extendible cylinder), it must be connected to the lower quick couple assembly. With the 301 series, the pressure connection hitch (e.g. the extendible cylinder) can be connected to the lower or upper quick couple assembly. The selective control valve prevents loss of pressure through leaks when the engine is stopped. This feature is not present on 101 series selective control valves.



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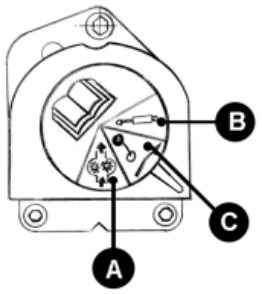

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OU83340,00005AD –19–19JUL04–1/1

Selective Control Levers

The control lever has four positions.

The remote hydraulic cylinder extends when the lever is moved to "Raise" position (B). The lever locks in this position. The remote cylinder is held in place when the lever is in "Neutral" (C). The remote cylinder retracts when the lever is moved to the "Lower" position (A). The lever locks in this position. When the lever is in the "Float" position (D) (that is, piston moves freely inside remote cylinder), the mounted implement follows the ground contours.

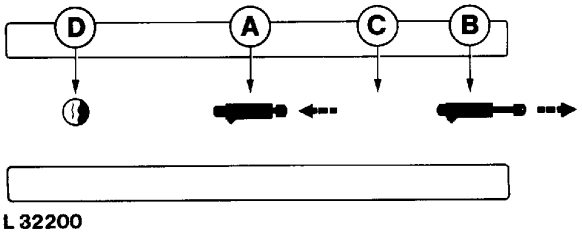
NOTE: If additional external valves are used, move control lever to neutral when shutting off each hydraulic function.

If tractor is equipped with a third or fourth selective control valve, these must not be used to continuously withdraw large quantities of oil.

Locks (E) allow control levers to be secured in neutral.

NOTE: Engage locks (E) when driving on roads and whenever control levers are in "neutral" position.

LX1015612 –UN–08JAN97



L32200 –UN–13APR00

A—Lower
B—Raise
C—Neutral position
D—Float position
E—Lock

OU83340,0000572 –19–05JUL06–1/1

Adjusting Pressure of 301 Series Selective Control Valves

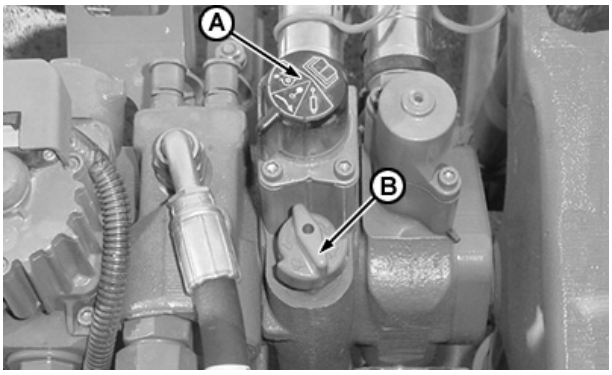
NOTE: All selective control valves are factory adjusted to 18,000 kPa (180 bar; 2,610 PSI).

If a selective control valve shifts early or late, carry out its adjustment as follows:

1. Disconnect hydraulic hoses and electrical connections.
2. Engage the locking function (A) and move flow rate control valve (B) to the mid-position.
3. Remove cap and insert a screwdriver.
4. Start up engine and turn screwdriver clockwise as much as possible.
5. Move control lever to "raise" or "lower" position (control lever remains in selected position).
6. Turn screw counterclockwise until lever shifts back to neutral position.
7. Turn screw counterclockwise one more half-turn.

NOTE: One full turn changes the pressure by approx. 4,600 kPa (46 bar; 670 PSI).

8. Remove screwdriver and replace protective cap.



CQ170561 –UN–03NOV04


CQ170580 –UN–09NOV07

ML70882,0000494 –19–08NOV04–1/1

Quick Couplers

CAUTION: The hydraulic system operates with a maximum pressure of 20,000 kPa (200 bar, 2,900 PSI). For your own protection and to assure proper functioning of the system, use only John Deere original parts.

To connect or disconnect the implement hydraulic line, place the lever in the float position and firmly push or pull the hose.

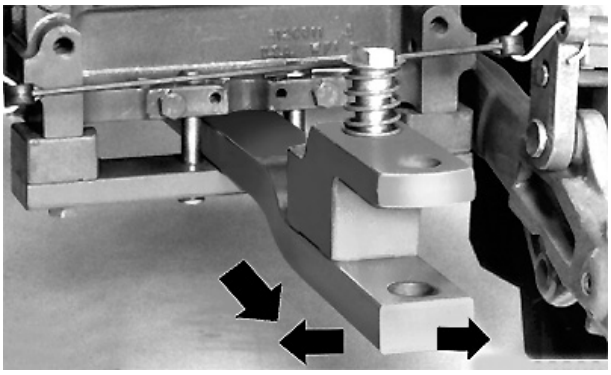
Quick couplers permit the disconnection of lines without oil loss.

NOTE: This operation may be performed with engine running.

NOTE: Pushing the control level forwards causes pressure to be applied to the upper connection.

OU83340,00005B9 –19–06APR05–1/1

Swinging Drawbar



The swinging drawbar is used to drag all classes of implements and loads, in particular implements coupled to the PTO.

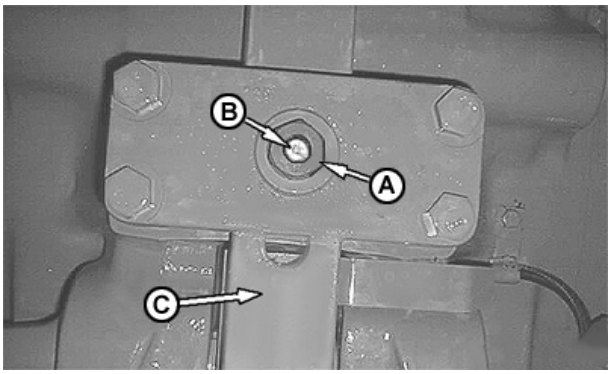
Thanks to the position of the bar's hitch point, the load rests on the rear axle in such a way that the loss of traction at the front wheels is reduced to a minimum.

The swinging drawbar is forward, rearward and laterally adjustable.

NOTE: The maximum permissible weights for loads dragged by swinging drawbar are specified in "Specifications" section.

AG,LT04177,139 –19–15SEP98–1/1

Drawbar Length Adjustment



The swinging drawbar can be adjusted to specification:

Specification	
Length of drawbar—Clearance	250 mm (9.8 in)
	350 mm (13.8 in)
	400 mm (15.7 in)
	550 mm (21.7 in)

1. Remove nut (A).
2. Remove pin (B).
3. Shift drawbar (C) to desired position and reinsert pin.
4. Tighten nut (A) to specification.

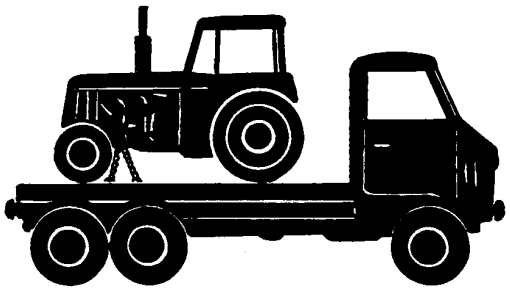
Specification	
Drawbar pin retaining nut—Torque	250 N.m (185 lb-ft)

ML70882,0000495 –19–06APR05–1/1

Transport

Transporting Tractor

A broken down tractor should be transported on a flatbed carrier.



RW13090 –UN–07DEC88

OU83340,00005BA –19–20JUL04–1/1

Towing Tractor

CAUTION: Never tow a tractor at a speed greater than 16 km/h (10 mph).

Put range shift lever and gearshift lever in neutral.

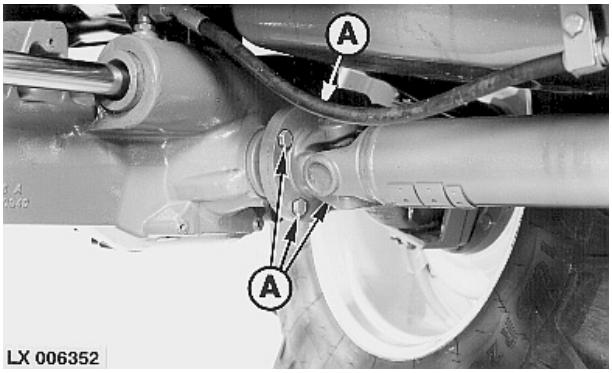
Make sure that the oil level in the transmission is between the visible marks on the dipstick. If the tractor is towed with the front wheels raised off the ground, ensure the following is complied with:

Do not raise the wheels more than 30 cm (12 in.).

IMPORTANT: If the engine is functioning, disengage the front wheel drive. If the engine is not functioning, disconnect the universal-jointed driveshaft by taking out screws (A). This prevents excessive wear on the tires.

IMPORTANT: If it is necessary to tow a tractor uphill or to free a mired machine under application of great traction force, remove front counterweights and install pin (D) in tow position. See "Installing Front Counterweights".

IMPORTANT: For every 15 cm (6 in.) that the front wheels are raised, add 4 liters (1 U.S. gal.) of transmission/hydraulic oil to the transmission. When towing is completed, remove excess oil.



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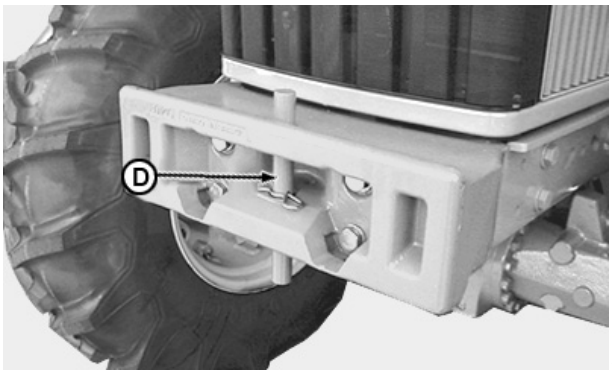


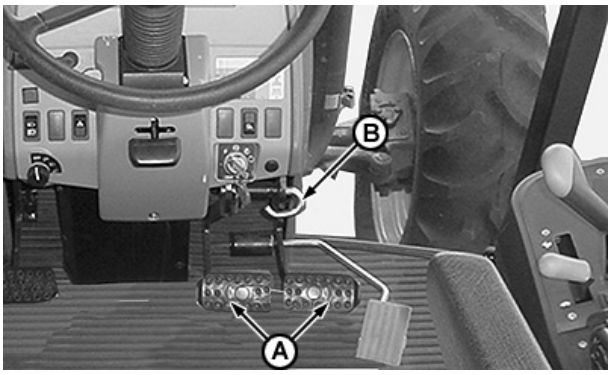
CQ228940 –UN–08FEB07

AG,LT04177,142 –19–06DEC04–1/1

Driving On Public Roads

Before driving the tractor on public roads, check that all lights are functioning correctly. Couple brake pedals (A) with locking pin (B).

NOTE: On public roads, drive tractor with hazard warning lights engaged.



OU83340,0000524 –19–04JUN04–1/1

Fuel, Lubricants, Coolant

Handling and Storing Diesel Fuel

CAUTION: Handle fuel carefully. Do not fill the fuel tank when engine is running.

DO NOT smoke while you fill the fuel tank or service the fuel system.

Fill the fuel tank at the end of each day's operation to prevent water condensation and freezing during cold weather.

Keep all storage tanks as full as practicable to minimize condensation.

Ensure that all fuel tank caps and covers are installed properly to prevent moisture from entering.

Monitor water content of the fuel regularly.

When using bio-diesel fuel, the fuel filter may require more frequent replacement due to premature plugging.

Check engine oil level daily prior to starting engine. A rising oil level may indicate fuel dilution of the engine oil.

IMPORTANT: The fuel tank is vented through the filler cap. If a new filler cap is required, always replace it with an original vented cap.

When fuel is stored for an extended period or if there is a slow turnover of fuel, add a fuel conditioner to stabilize the fuel and prevent water condensation. Contact your fuel supplier for recommendations.

DX,FUEL4 –19–19DEC03–1/1

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.

TS202 –UN–23AUG88

DX,FIRE1 –19–03MAR93–1/1

Diesel Fuel

Consult your local fuel distributor for properties of the diesel fuel available in your area.

In general, diesel fuels are blended to satisfy the low temperature requirements of the geographical area in which they are marketed.

Diesel fuels specified to EN 590 or ASTM D975 are recommended. Renewable diesel is basically identical to petroleum diesel fuel that is created by Hydrotreating fats and oils. Renewable diesel that meets EN 590 or ASTM D975 is acceptable for use at all percentage mixture levels.

Required fuel properties

In all cases, the fuel shall meet the following properties:

Cetane number of 45 minimum. Cetane number greater than 50 is preferred, especially for temperatures below –20°C (–4°F) or elevations above 1500 m (5000 ft).

Cold Filter Plugging Point (CFPP) should be at least 5°C (9°F) below the expected lowest temperature or **Cloud Point** below the expected lowest ambient temperature.

Fuel lubricity should pass a maximum scar diameter of 0.45 mm as measured by ASTM D6079 or ISO 12156-1.

Sulfur content:

- Diesel fuel quality and fuel sulfur content must comply with all existing emissions regulations for the area in which the engine operates.
- Use of diesel fuel with sulfur content less than 0.10% (1000 ppm) is STRONGLY recommended.
- Use of diesel fuel with sulfur content 0.10% (1000 ppm) to 0.50% (5000 ppm) may result in REDUCED oil and filter change intervals as shown in the table.
- BEFORE using diesel fuel with sulfur content greater than 0.50% (5000 ppm), contact your John Deere dealer.

IMPORTANT: Do not mix used diesel engine oil or any other type of lubricating oil with diesel fuel.

IMPORTANT: Improper fuel additive usage may cause damage on fuel injection equipment of diesel engines.

DX,FUEL1 –19–05OCT07–1/1

Sulfur

IMPORTANT: If fuel sulfur content exceeds 0.5 %, the engine oil change interval must be reduced by 50%, more or less 125 hours.

LT04177,0000051 –19–21JUN06–1/1

Filling Up Fuel Tank

TS202 –UN–23AUG88

CAUTION: Handle fuel with extreme care, since it is inflammable. DO NOT refill machine close to people smoking, nor close to any naked flame or any place releasing sparks or cinders etc. Always shut off engine before refilling tank. Whenever possible, fill fuel tank in the open air. Avoid fires by maintaining the machine free of accumulated dirt. Always clean up fuel spilt on machine.

Fill the fuel tank at the end of each day's operation to prevent condensation of water in the tank.

Fuel tank:

See fuel tank capacity in the "Specifications"section.

IMPORTANT: The fuel tank has a sealed cap. If a new cap is necessary, always replace it with a sealed cap. Always use genuine John Deere parts.

OU83340,00005BB –19–20JUL04–1/1

Lubricity of Diesel Fuel

Most diesel fuels manufactured in the United States, Canada, and the European Union have adequate lubricity to ensure proper operation and durability of fuel injection system components. However, diesel fuels manufactured in some areas of the world may lack the necessary lubricity.

IMPORTANT: Make sure the diesel fuel used in your machine demonstrates good lubricity characteristics.

Fuel lubricity should pass a maximum scar diameter of 0.45 mm as measured by ASTM D6079 or ISO 12156-1.

If fuel of low or unknown lubricity is used, add John Deere PREMIUM DIESEL FUEL CONDITIONER (or equivalent) at the specified concentration.

Lubricity of Biodiesel Fuel

Significant improvement in lubricity can occur with biodiesel blends up to B20. The gain in lubricity above a 20% blend is limited.

DX,FUEL5 –19–05OCT07–1/1

Testing Diesel Fuel

DIESELSCAN™ is a John Deere fuel analysis program that can be used to monitor the quality of your fuel. The DIESELSCAN analysis verifies fuel type, cleanliness, water content, suitability for cold weather operation, and whether the fuel meets specifications.

Check with your John Deere dealer for availability of DIESELSCAN kits.

DIESELSCAN is a trademark of Deere & Company

DX,FUEL6 –19–14NOV05–1/1

Bio-Diesel Fuel

Biodiesel is a fuel comprised of mono-alkyl esters of long chain fatty acids derived from vegetable oils or animal fats. Biodiesel blends are biodiesel mixed with petroleum diesel fuel on a volume basis.

Biodiesel users in the U.S. are strongly encouraged to purchase biodiesel blends from a BQ-9000 Certified Marketer and sourced from a BQ-9000 Accredited Producer (as certified by the National Biodiesel Board). Certified Marketers and Accredited Producers can be found at the following website: http://www.bq-9000.org.

While 5% blends are preferred (B5), biodiesel concentrations up to a 20% blend (B20) in petroleum diesel fuel can be used in all John Deere engines. Biodiesel blends up to B20 can be used ONLY if the biodiesel (100% biodiesel or B100) meets ASTM D6751 (US), EN 14214 (EU), or equivalent specification. Expect a 2% reduction in power and a 3% reduction in fuel economy when using B20.

John Deere approved fuel conditioners containing detergent/dispersant additives are recommended when using lower biodiesel blends, but are required when using blends of B20 or greater.

John Deere engines can also operate on biodiesel blends above B20 (up to 100% biodiesel) ONLY if the biodiesel meets the EN 14214 specification (primarily available in Europe). Engines operating on biodiesel blends above B20 may not fully comply with all applicable emissions regulations. Expect up to a 12% reduction in power and an 18% reduction in fuel economy when using 100% biodiesel. John Deere approved fuel conditioners containing detergent/dispersant additives are required.

The petroleum diesel portion of biodiesel blends must meet the requirements of ASTM D975 (US) or EN 590 (EU) commercial standards.

Biodiesel blends up to B20 must be used within 90 days of the date of biodiesel manufacture. Biodiesel blends from B21 to B100 must be used within 45 days of the date of biodiesel manufacture.

Request a certificate of analysis from your fuel distributor to ensure that the fuel is compliant with the above specifications.

Consult your John Deere dealer for approved biodiesel fuel conditioners to improve storage and performance with biodiesel fuels.

When using biodiesel fuel, the engine oil level must be checked daily. If oil becomes diluted with fuel, shorten oil change intervals. Refer to Diesel Engine Oil and Filter Service Intervals for more details regarding biodiesel and engine oil change intervals.

The following must be considered when using biodiesel blends up to B20:

- Cold weather flow degradation
- Stability and storage issues (moisture absorption, oxidation, microbial growth)
- Possible filter restriction and plugging (usually a problem when first switching to biodiesel on used engines.)
- Possible fuel leakage through seals and hoses
- Possible reduction of service life of engine components

The following must also be considered when using biodiesel blends above B20.

- Possible coking and/or blocked injector nozzles, resulting in power loss and engine misfire if John Deere approved fuel conditioners containing detergent/dispersant additives are not used
- Possible crankcase oil dilution, requiring more frequent oil changes
- Possible corrosion of fuel injection equipment
- Possible lacquering and/or seizure of internal components
- Possible formation of sludge and sediments
- Possible thermal oxidation of fuel at elevated temperatures
- Possible elastomer seal and gasket material degradation (primarily an issue with older engines)

Continued on next page

- Possible compatibility issues with other materials (including copper, lead, zinc, tin, brass, and bronze) used in fuel systems and fuel handling equipment
- Possible reduction in water separator efficiency
- Potential high acid levels within fuel system
- Possible damage to paint if exposed to biodiesel

IMPORTANT: Raw pressed vegetable oils are NOT acceptable for use as fuel in any concentration in John Deere engines. Their use could cause engine failure.

DX,FUEL7 –19–04OCT07–2/2

Diesel Engine Oil

Use oil viscosity based on the expected air temperature range during the period between oil changes.

John Deere PLUS-50™ oil is preferred.

Oils meeting one of the following specifications are also recommended:

- ACEA Oil Sequence E7
- ACEA Oil Sequence E6
- ACEA Oil Sequence E5
- ACEA Oil Sequence E4

Extended service intervals may apply when John Deere PLUS-50, ACEA E7, ACEA E6, ACEA E5, or ACEA E4 engine oils are used. Consult your John Deere dealer for more information.

Other oils may be used if they meet one or more of the following:

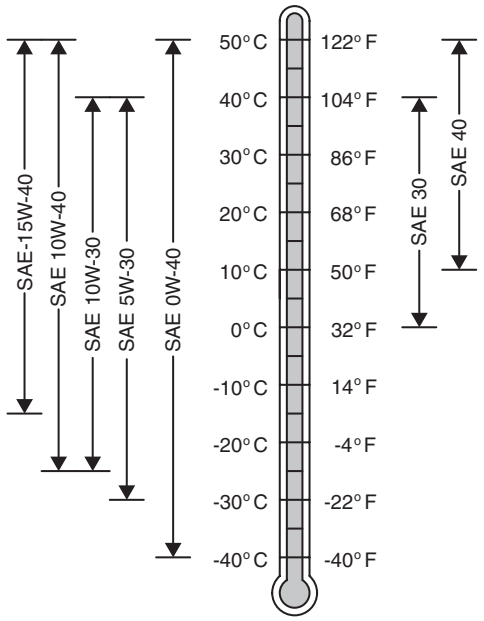
- John Deere TORQ-GARD SUPREME™
- API Service Category CJ-4
- API Service Category CI-4 PLUS
- API Service Category CI-4
- API Service Category CH-4
- API Service Category CG-4
- API Service Category CF-4
- ACEA Oil Sequence E3
- ACEA Oil Sequence E2

If oils meeting API CG-4, API CF-4, or ACEA E2 are used, reduce the service interval by 50%.

Multi-viscosity diesel engine oils are preferred.

Diesel fuel quality and fuel sulfur content must comply with all existing emissions regulations for the area in which the engine operates.

If diesel fuel with sulfur content greater than 0.50% (5000 ppm) is used, reduce the service interval by 50%.



Oil Viscosities for Air Temperature Ranges

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TORQ-GARD SUPREME is a trademark of Deere & Company

Continued on next page

DX,ENOIL –19–06APR07–1/2

DO NOT use diesel fuel with sulfur content greater than 1.00% (10 000 ppm).

DX,ENOIL –19–06APR07–2/2

Grease

Use grease based on NLGI consistency numbers and the expected air temperature range during the service interval.

John Deere SD POLYUREA GREASE is preferred.

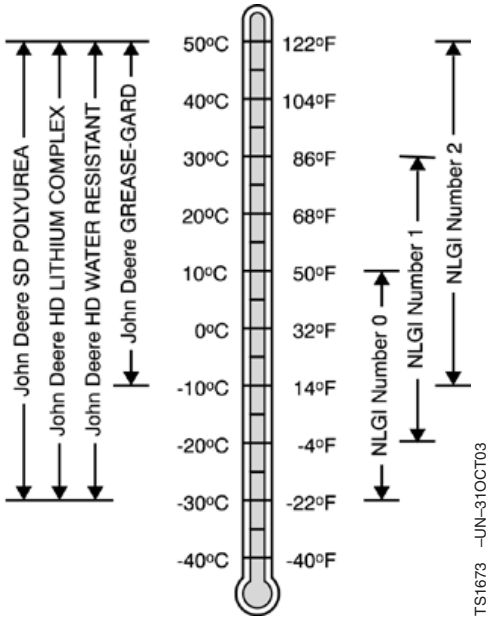
The following greases are also recommended

- John Deere HD LITHIUM COMPLEX GREASE
- John Deere HD WATER RESISTANT GREASE
- John Deere GREASE-GARD™

Other greases may be used if they meet the following:

NLGI Performance Classification GC-LB

IMPORTANT: Some types of grease thickeners are not compatible with others. Consult your grease supplier before mixing different types of grease.



GREASE-GARD is a trademark of Deere & Company

DX,GREA1 –19–07NOV03–1/1

Diesel Engine Coolant

The engine cooling system is filled to provide year-round protection against corrosion and cylinder liner pitting, and winter freeze protection to -37°C (-34°F). If protection at lower temperatures is required, consult your John Deere dealer for recommendations.

John Deere COOL-GARD™ Prediluted Coolant is preferred for service.

John Deere COOL-GARD Prediluted Coolant is available in a concentration of either 50% ethylene glycol or 55% propylene glycol.

Additional recommended coolants

The following engine coolant is also recommended:

- John Deere COOL-GARD Coolant Concentrate in a 40% to 60% mixture of concentrate with quality water.

John Deere COOL-GARD coolants do not require use of supplemental coolant additives, except for periodic replenishment of additives during the drain interval.

Other fully formulated coolants

Other fully formulated low silicate ethylene or propylene glycol base coolants for heavy-duty engines may be used if they meet one of the following specifications:

- ASTM D6210 prediluted (50%) coolant
- ASTM D6210 coolant concentrate in a 40% to 60% mixture of concentrate with quality water

Coolants meeting ASTM D6210 do not require use of supplemental coolant additives, except for periodic replenishment of additives during the drain interval.

Coolants requiring supplemental coolant additives

Other low silicate ethylene glycol base coolants for heavy-duty engines may also be used if they meet one of the following specifications:

- ASTM D4985 ethylene glycol base prediluted (50%) coolant
- ASTM D4985 ethylene glycol base coolant concentrate in a 40% to 60% mixture of concentrate with quality water

Coolants meeting ASTM D4985 require an initial charge of supplemental coolant additives, formulated for protection of heavy duty diesel engines against corrosion and cylinder liner erosion and pitting. They also require periodic replenishment of additives during the drain interval.

Other coolants

It is possible that neither John Deere COOL-GARD nor coolants meeting one of the coolant standards listed above is available in the geographical area where service is performed. If these coolants are unavailable, use a coolant concentrate or prediluted coolant with a quality additive package that provides cylinder liner cavitation protection and protects the cooling system metals (cast iron, aluminum alloys, and copper alloys such as brass) from corrosion.

The additive package must be part of one of the following coolant mixtures:

- ethylene glycol or propylene glycol base prediluted (40% to 60%) coolant
- ethylene glycol or propylene glycol base coolant concentrate in a 40% to 60% mixture of concentrate with quality water

Water quality

Continued on next page

Water quality is important to the performance of the cooling system. Distilled, deionized, or demineralized water is recommended for mixing with ethylene glycol and propylene glycol base engine coolant concentrate.

IMPORTANT: Do not use cooling system sealing additives or antifreeze that contains sealing additives.

IMPORTANT: Do not mix ethylene glycol and propylene glycol base coolants.

DX,COOL3 –19–27OCT05–2/2

Mixing of Lubricants

In general, avoid mixing different brands or types of oil. Oil manufacturers blend additives in their oils to meet certain specifications and performance requirements.

Mixing different oils can interfere with the proper functioning of these additives and degrade lubricant performance.

Consult your John Deere dealer to obtain specific information and recommendations.

DX,LUBMIX –19–18MAR96–1/1

Diesel Engine Oil and Filter Service Intervals

The oil and filter service intervals in the table below should be used as guidelines. Actual service intervals also depend on operation and maintenance practices. It is suggested to use oil analysis to determine the actual useful life of the oil and to aid in selection of the proper oil and filter service interval.

Oil and filter service intervals are based on a combination of oil pan capacity, type of engine oil and filter used, and sulfur content of the diesel fuel.

Engine Oil and Filter Service Intervals		
	Standard Drain Oil Pan	**Extended Drain Oil Pan**
Fuel Sulfur	Less than 0.05% (500 ppm)	
Standard Oil	250 hours	250 hours
Premium Oil	375 hours	500 hours
Fuel Sulfur	0.05 to 0.50% (500 to 5000 ppm)	
Standard Oil	150 hours	150 hours
Premium Oil	275 hours	400 hours
Fuel Sulfur	0.50% to 1.00% (5000 ppm to 10 000 ppm)	
Standard Oil	125 hours	125 hours
Premium Oil	187 hours	250 hours
Engine oil analysis is required to determine the actual extended service life of premium oils ACEA E7, ACEA E6, ACEA E5, and ACEA E4.		

Diesel fuel sulfur level will affect engine oil and filter service intervals. Higher fuel sulfur levels reduce oil and filter service intervals as shown in the table.

- Use of diesel fuel with sulfur content less than 0.05% (500 ppm) is strongly recommended.
- Use of diesel fuel with sulfur content 0.05% (500 ppm) to 0.50% (5000 ppm) may result in REDUCED oil and filter change intervals as shown in the table.
- BEFORE using diesel fuel with sulfur content greater than 0.50% (5000 ppm), contact your John Deere dealer.

IMPORTANT: If using BIODIESEL blends greater than B20, shorten oil change interval to half the recommended service interval or monitor engine oil using OILSCAN to ensure that fuel dilution does not exceed 5%.

Oil types (premium or standard) in the table include:

- “Premium Oils” include John Deere PLUS-50™, ACEA E7, ACEA E6, ACEA E5, or ACEA E4 oils.
- “Standard Oils” include John DeereTORQ-GARD SUPREME™, API CJ-4, API CI-4 PLUS, API CI-4, API CH-4, or ACEA E3 oils.

NOTE: The 500 hour extended oil and filter change interval is only allowed if all of the following conditions are met:

- *Engine equipped with an extended drain interval oil pan*
- *Use of diesel fuel with sulfur content less than 0.05% (500 ppm)*
- *Use of premium oil: John Deere PLUS-50, ACEA E7, ACEA E6, ACEA E5, or ACEA E4*
- *Perform engine oil analysis to determine the actual extended service life of ACEA E7, ACEA E6, ACEA E5, and ACEA E4 oils*
- *Use of an approved John Deere oil filter*

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TORQ-GARD SUPREME is a trademark of Deere & Company

DX,ENOIL12 –19–04OCT07–1/1

Note: Extended Service

Due to high sulfur content of diesel fuel produced in Brazil, 500 hours extended service is explicitly prohibited.

If using Plus-50 or ACEA classification E4, E5, E6 and E7 oil, use standard 250 hours or 375 hours service as a guiding option, always respecting engine filter replacement intervals.

LT04177,00002DD –19–19DEC07–1/1

Diesel Engine Break-In Oil

New engines are filled at the factory with John Deere ENGINE BREAK-IN OIL. During the break-in period, add John Deere ENGINE BREAK-IN OIL as needed to maintain the specified oil level.

Change the oil and filter after the first 100 hours of operation of a new or rebuilt engine.

After engine overhaul, fill the engine with John Deere ENGINE BREAK-IN OIL.

If John Deere ENGINE BREAK-IN OIL is not available, use a diesel engine oil meeting one of the following during the first 100 hours of operation:

- API Service Classification CE
- API Service Classification CD
- API Service Classification CC
- ACEA Oil Sequence E2
- ACEA Oil Sequence E1

After the break-in period, use John Deere PLUS-50™ or other diesel engine oil as recommended in this manual.

IMPORTANT: Do not use PLUS-50 oil or engine oils meeting any of the following during the first 100 hours of operation of a new or rebuilt engine:

API CJ-4	**ACEA E7**
API CI-4 PLUS	**ACEA E6**
API CI-4	**ACEA E5**
API CH-4	**ACEA E4**
API CG-4	**ACEA E3**
API CF-4	
API CF-2	
API CF	

These oils will not allow the engine to break-in properly.

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DX,ENOIL4 –19–13SEP06–1/1

Transmission and Hydraulic Oil

Use oil viscosity based on the expected air temperature range during the period between oil changes.

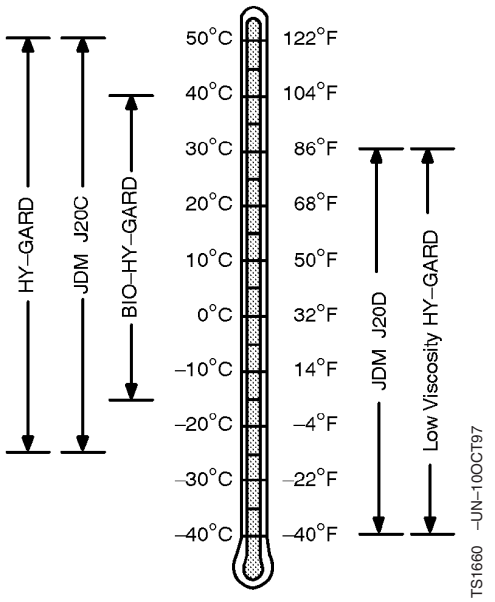
The following oils are preferred:

- John Deere HY-GARD™
- John Deere Low Viscosity HY-GARD™

Other oils may be used if they meet one of the following:

- John Deere Standard JDM J20C
- John Deere Standard JDM J20D

Use John Deere BIO-HY-GARD™ oil when a biodegradable fluid is required.[1]



HY-GARD is a trademark of Deere & Company
BIO-HY-GARD is a trademark of Deere & Company

[1] BIO-HY-GARD meets or exceeds the minimum biodegradability of 80% within 21 days according to CEC-L-33-T-82 test method. BIO-HY-GARD should not be mixed with mineral oils, because this reduces the biodegradability and makes proper oil recycling impossible.

DX,ANTI –19–07NOV03–1/1

Front-Wheel Drive Axle Oil

Use John Deere transmission oil.

John Deere SAE 90 transmission oil is an oil for multiple transmission application in motor vehicles. It is recommended for API GL - 5 classification services and it meets the requirements of MIL-L-2105 D. This transmission oil also surpasses MB 235 requirements.

Capacities:

Final drive: 0.75 liters (0.20 U.S. gal.) each.

Front axle: 6.7 liters (1.8 U.S. gal.).

LT04177,0000134 –19–16MAY07–1/1

Operating in Warm Temperature Climates

John Deere engines are designed to operate using glycol base engine coolants.

Always use a recommended glycol base engine coolant, even when operating in geographical areas where freeze protection is not required.

IMPORTANT: Water may be used as coolant *in emergency situations only.*

Foaming, hot surface aluminum and iron corrosion, scaling, and cavitation will occur when water is used as the coolant, even when coolant conditioners are added.

Drain cooling system and refill with recommended glycol base engine coolant as soon as possible.

DX,COOL6 –19–18MAR96–1/1

Alternative and Synthetic Lubricants

Conditions in certain geographical areas may require lubricant recommendations different from those printed in this manual.

Some John Deere brand coolants and lubricants may not be available in your location.

Consult your John Deere dealer to obtain information and recommendations.

Synthetic lubricants may be used if they meet the performance requirements as shown in this manual.

The temperature limits and service intervals shown in this manual apply to both conventional and synthetic oils.

Re-refined base stock products may be used if the finished lubricant meets the performance requirements.

DX,ALTER –19–15JUN00–1/1

Lubricant Storage

Your equipment can operate at top efficiency only when clean lubricants are used.

Use clean containers to handle all lubricants.

Whenever possible, store lubricants and containers in an area protected from dust, moisture, and other contamination. Store containers on their side to avoid water and dirt accumulation.

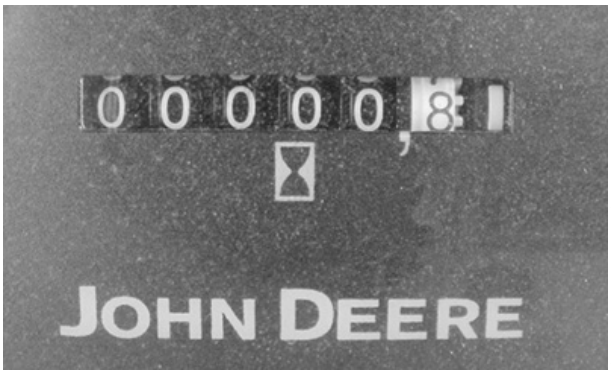
Make certain that all containers are properly marked to identify their contents.

Properly dispose of all old containers and any residual lubricant they may contain.

DX,LUBST –19–18MAR96–1/1

Lubrication, Periodic Services

Lubrication, Periodic Services



CQ162201 –UN–25OCT04

CAUTION: Do not carry out service, repair or lubrication of any kind with the engine running, unless specifically stated otherwise.

The intervals at which different components should be checked, lubricated, replaced or adjusted are based on the operating hours recorded in the hour meter. The hour meter functions when the engine is running and it indicates the accumulated number of working hours.

Frequently check that the hour meter is working correctly.

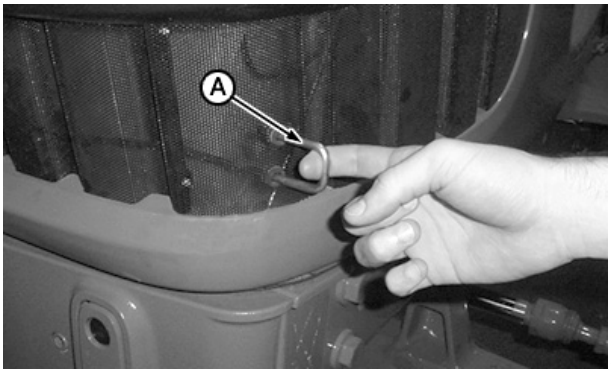
The specified lubrication and service intervals are for normal working conditions. These intervals should be shortened when operating under adverse conditions.

IMPORTANT: After servicing, cleaning or repairing the tractor, reinstall all guards and shields before operating the tractor.

ML70882,0000496 –19–08NOV04–1/1

Opening Hood

Pull catch (A) and lift hood.



CQ227580 –UN–03NOV04

ML70882,0000497 –19–06APR05–1/1

Access to Battery

Battery is located in front of the radiator. To access battery, raise hood.

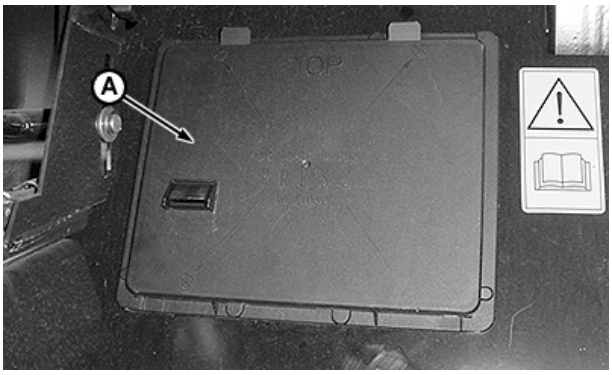
CQ194823 –UN–03NOV04

ML70882,000045C –19–03NOV04–1/1

Access to Fuses (Tractors without Cab)

The fuses are located on the operating platform, to the left-hand side of operator's seat.

Remove cover (A) to access the fuses.

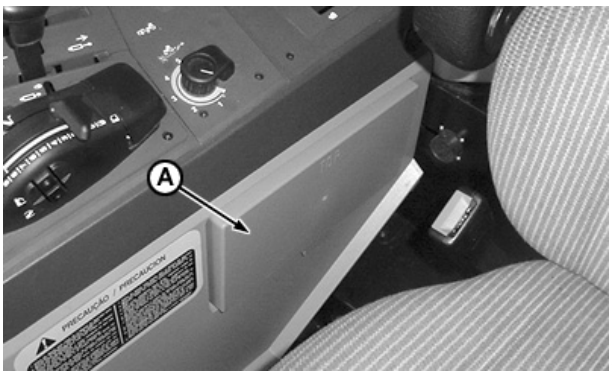


ML70882,0000498 –19–08NOV04–1/1

Access to Fuses (Tractors with Cab)

The fuses are located in the gearshift console.

Remove cover (A).



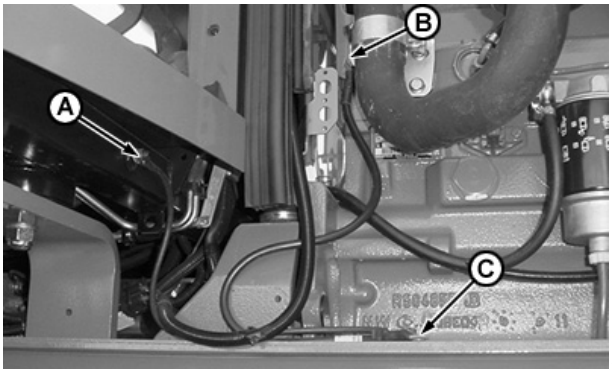
ML70882,0000499 –19–08NOV04–1/1

Engine Grounding

IMPORTANT: Periodically inspect the condition and tightness of the attaching nuts of the engine ground cable.

John Deere engines are seated on rubber dampers inside the machinery. These dampers, as well as reducing noise levels, also electrically insulate the engine. Nevertheless, it is necessary that the engine has a good ground connection, for which reason the ground cable exists.

If this cable is not in perfect working order then the flow of excess current produced by the alternator may be redirected to the engine bearings, causing severe damage to the engine.

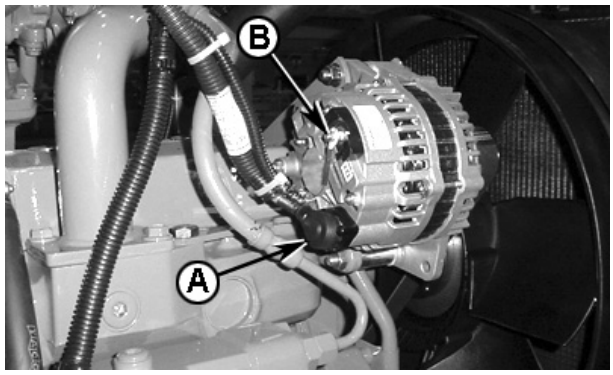


Engine Grounding

A—Operator's platform or cab
B—Engine
C—Chassis

ML70882,000045E –19–03NOV04–1/1

Important Instructions Regarding Alternator



NOTE: The alternator is equipped with a voltage regulator.

Connections

- Red cable (A) to battery.
- Black cable (B) to hour meter and battery charge warning light (instrument panel).

If it is necessary for the engine to operate without a battery (starting up the engine by means of an auxiliary battery), do not operate the engine above 1,000 rpm. Engage some electrical systems (lights) while the engine is running.

When the battery is removed the engine is started up by means of an auxiliary battery, in which case the loose current carrying cable must be insulated to prevent damage to the alternator and regulator.

CAUTION: NEVER short circuit or bypass the ground of the alternator or regulator with the engine running.

Connect battery charger with correct polarity. If connections are inverted (“+” and “-”), the rectifying diodes will be immediately destroyed.

IMPORTANT: Before carrying out any electrical welding jobs on the tractor, disconnect both alternator cables.

Connect ground terminal of welding apparatus directly to the part being welded.

Before carrying out repairs on electrical system, disconnect battery ground strap. This will prevent risk of a short circuit.

ML70882,000049A –19–08NOV04–1/1

Service—Daily or Every 10 Hours

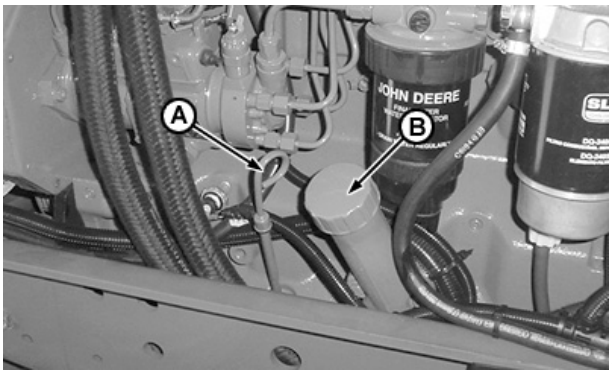
Check Engine Oil Level

Check engine oil level. Oil level should be between the marks on the dipstick.

Top up with oil if the oil level is below the minimum mark on the dipstick.

NOTE: Never operate engine if the oil level is below the minimum mark on the dipstick.

A—Dipstick
B—Oil filler plug



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ML70882,000049B –19–05JUL06–1/1

Lights Check

Before traveling on public roads, check that the lights and other electrical equipment is in good working order.

IMPORTANT: Consult local legislation.

ML70882,000049C –19–08NOV04–1/1

Special Lubrication Points

Check transmission/hydraulic system oil level if the tractor is operating external hydraulic equipment.

Lubricate the following points if operating the tractor in extremely wet or excessively muddy conditions:

NOTE: Use SD Polyurea Grease or similar to lubricate these points.

- Front axle.
- Rear axle.
- Three-point hitch.
- Pick-up hitch (the hitch needs frequent lubricating if it is extensively used).
- Lubricate PTO shaft (if tractor is equipped with reversible shaft).

These tasks are described in sections "Service — Every 50 hours" and "Service — Every 250 hours".

ML70882,000049D –19–14JUN07–1/1

Lubrication Points, Servicing and Inspecting

- Check alternator belt for wear.(If replacing is required consult your John Deere dealer).
- Check condition of tires.
- Check coolant levels.
- Check transmission/hydraulic system oil level.

OU92976,00000D7 –19–27JUN06–1/1

Lubricating Front Axle and U-Jointed Shaft

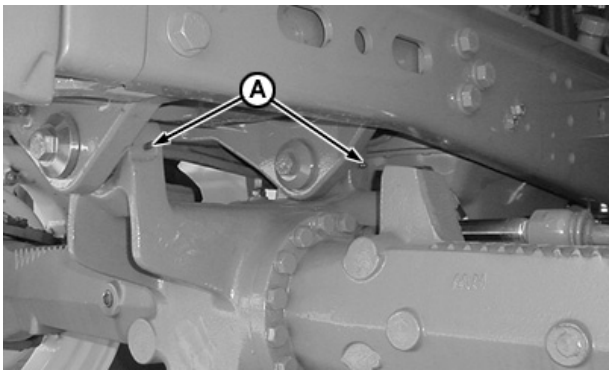
CAUTION: This operation should preferably be carried out by one person.

IMPORTANT: Perform this task every ten hours of operation when operating tractor in extremely wet or muddy conditions.

Grease lubrication points (A) on front axle and U-jointed shaft as specified.

Specification	
Lubricating front axle and U-jointed shaft—Lubricant	John Deere SD Polyurea Grease™ or universal grease

IMPORTANT: Carefully clean all lubrication points and replace damaged grease fittings.



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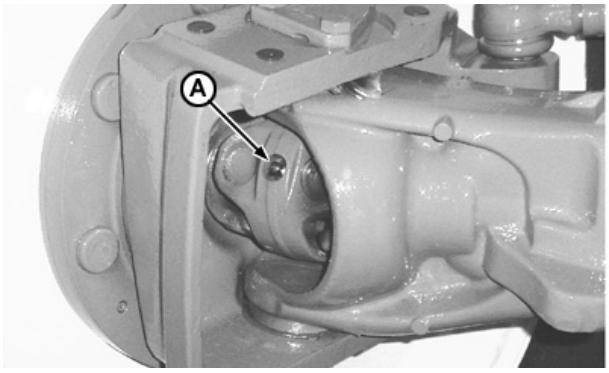

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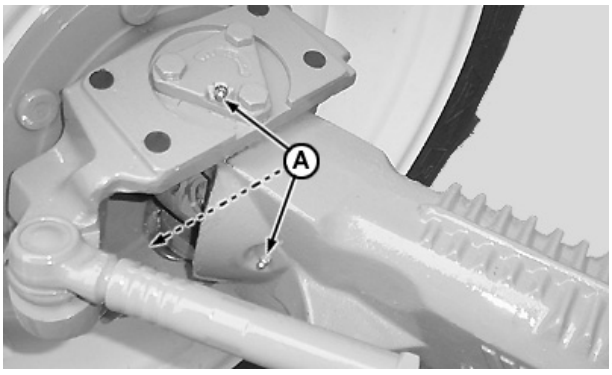

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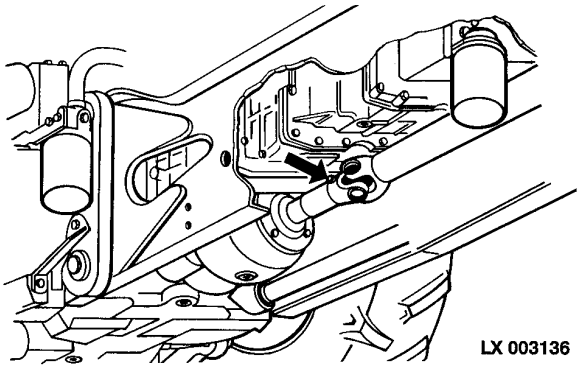

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LT04177,000013B –19–18MAY07–1/1

Lubrication Points, Servicing and Inspecting

- Check entire tractor for loose bolts.
- Check charge and clean battery terminals (see “Service—As Necessary” section and follow safety guidelines.

OU92976,00000E9 –19–27JUN06–1/1

Service—First 100 Hours

Within First 100 Hours of Operation

Periodically check and retighten air intake hose clamps as well as hydraulic hose clamps, if necessary.

AG,LT04177,163 –19–16JUN06–1/1

After 100 Hours

Lubricate the following points if operating the tractor in extremely wet or excessively muddy conditions:

- Drain off engine oil and refill (see "Fuel, Lubricants and Coolant - Diesel Engine Break-In Oil" and "Service Every 250 Hours" sections).
- Replace engine oil filters. Use John Deere filter inserts (see "Service Every 250 Hours" section).
- Check air intake hoses for leaks (see "Service Every 500 Hours" section).
- Replace transmission/hydraulic system filters (see "Service Every 750 Hours" section).
- Change front axle final drive and differential oil (see section "Service Every 1500 hours).

OU92976,00000DB –19–03APR08–1/1

Change Engine Oil

Drain engine oil while engine is still warm.

1. Remove drain plug (A).
2. While engine oil is drained, replace filter.
3. Replace drain plug (use a new seal) and tighten with recommended torque.

Specification

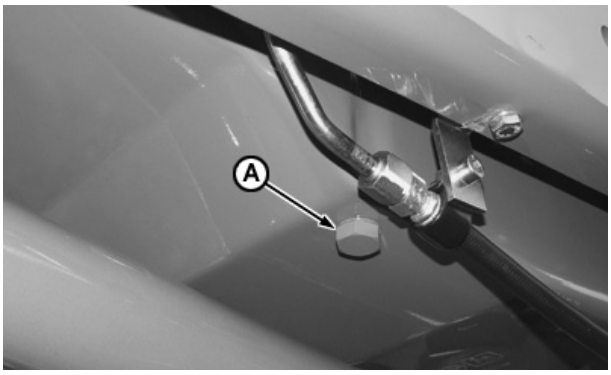
Drain plug—Torque ..... 70 N•m (52 lb-ft)

4. Add oil with a adequate viscosity (see "Fuel, Lubricants, Coolant" section) through filler neck (B). See approximate oil capacity of engine in "Specifications" section.
5. Run engine for a short time to check that there are no leaks from the base of the filter or from the drain plug.
6. Shut off engine.
7. Wait 5 minutes and check oil level. Oil level should be between the marks on the dip-stick (C). Add oil if required.

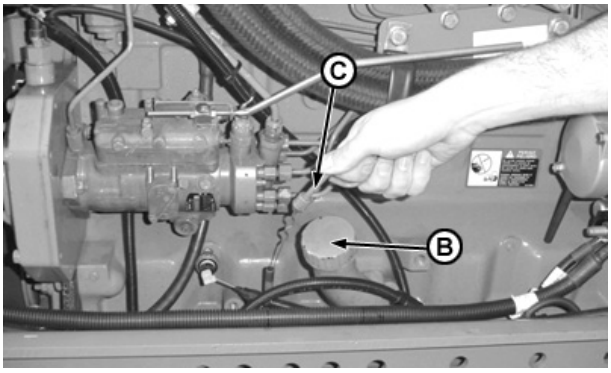
IMPORTANT: Carry out first engine oil and oil filter change after 100 working hours. Thereafter change every 250 hours or one year, whichever happens first.

NOTE: The interval can be extended from 250 to 375 hours if JD Plus-50 oil, or ACEA classification oil E4, E5, E6 and E7 is used.

NOTE: For further information on oils, see "Fuel, Lubricants, Oil and Coolant - Diesel Engine Oil" section.



CQ259210 –UN–09DEC05



CQ224159 –UN–09JUN04

ML70882,00004A0 –19–03APR08–1/1

Replace Engine Oil Filter

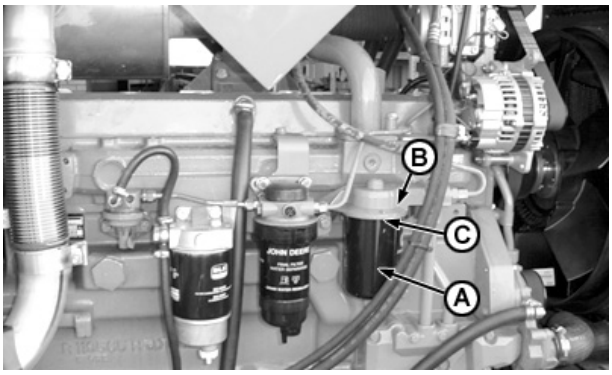
1. Remove filter (A) and clean housing surface (B).
2. Apply a little oil to retainer (C) of new filter.
3. Tighten new filter by hand until retainer touches housing surface, then tighten a further 3/4 to 1-1/4 turns.

IMPORTANT: Do not excessively overtighten filter.

4. Start engine and check for leaks.

IMPORTANT: Carry out first engine oil and oil filter change after 100 working hours. Thereafter change every 250 hours or one year, whichever happens first.

NOTE: The interval can be extended from 250 to 375 hours if JD Plus-50 oil, or ACEA classification oil E4, E5, E6 and E7 is used.

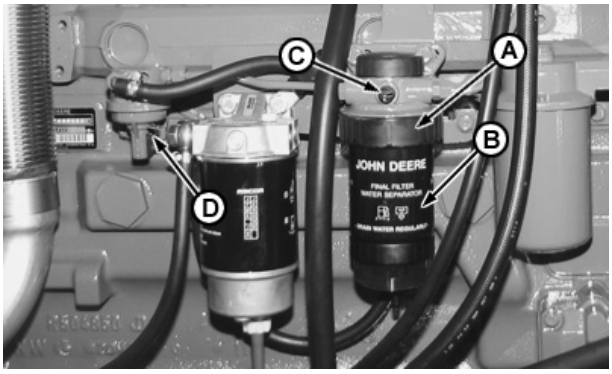


CQ209711 –UN–09JUN04

OU83340,0000528 –19–28JUN06–1/1

Replace Final Fuel Filter

1. Unfasten lock ring (A) and remove filter (B). Use new filter with the cap of the older one.
2. Remove water separator from filter and join it to new filter.
3. Install new filter (full of diesel). Correctly align marks on filter and filter base.
4. Tighten safety ring (A) until you hear that it has slotted home.
5. Loosen plug (C) of final filter.
6. Bleed the system through fuel pump (D) until fuels flows cleanly.
7. Close drain plug (C).
8. Start engine and check for leaks.



CQ241661 –UN–15JUN06

ML70882,00004A1 –19–05JUL06–1/1

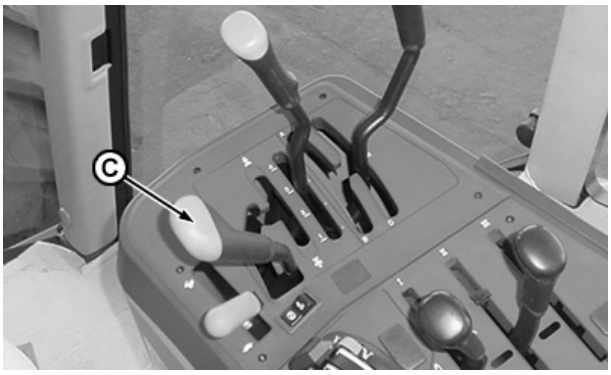
Check Hydraulic Oil Level of Transmission

IMPORTANT: Check oil level with cold engine, preferentially in the morning after the tractor has been parked for a full night.

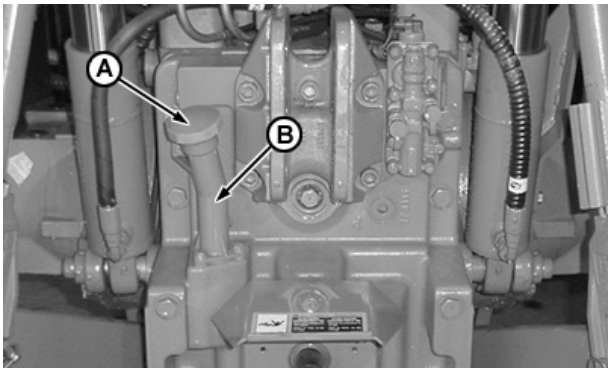
1. Park the tractor on level ground.
2. Place lever (C) in “P” position.
3. Lower lift arms.
4. Remove cover (A) with the dipstick and clean it.
5. Insert dipstick fully into its housing. Remove and check oil level.

Oil level should be between the marks on the dipstick. If it is below the lower mark, top up level by adding oil via filler neck (B).

IMPORTANT: Only use John Deere HY-GARD oil.



CQ227650 –UN–04NOV04



CQ162891 –UN–10NOV04

ML70882,00004A2 –19–08NOV04–1/1

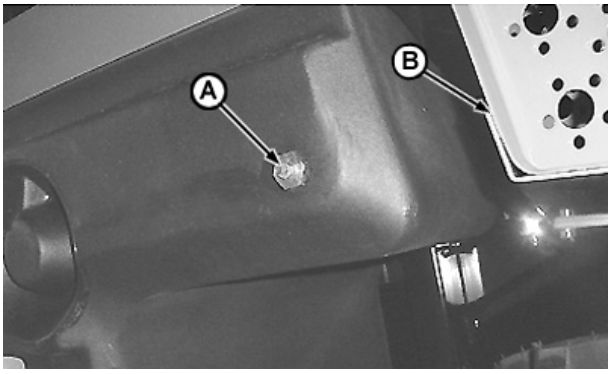
Draining Water from Fuel Tank

NOTE: Place a small container under the tap to collect spilt water and fuel.

Open drain screw (A) to collect the accumulated humidity and fuel tank residue.

Retighten drain screw as soon as clean fuel starts to come out.

A—Tank drain screw
B—Cab access ladder



CQ239231 –UN–23OCT06

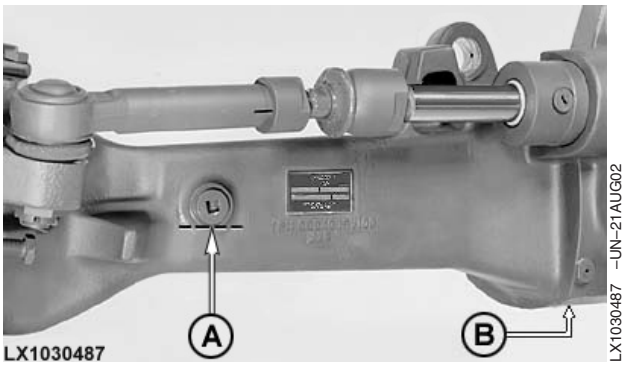
Lower view of fuel tank

LT04177,0000074 –19–24OCT06–1/1

Checking Oil Level of Front-Wheel Drive Axle

Remove oil level plug (A). The oil level should reach the threaded hole of the plug. Tighten oil level check plug to 90 N.m (66 Lb-ft).

A—Oil level check plug
B—Drain plug



ML70882,00004A4 –19–16JAN07–1/1

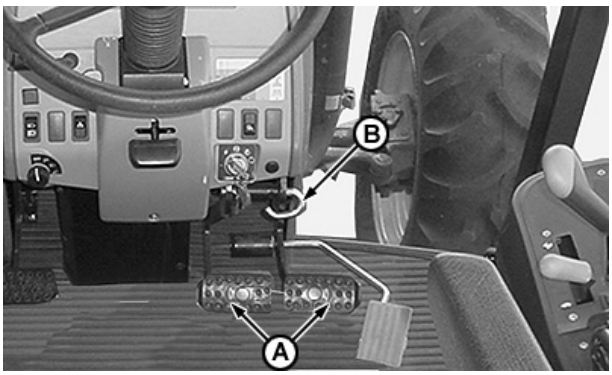
Check Hydraulic Brakes

With engine stopped, check hydraulic brakes for correct function:

1. Individually pump the left- and right-hand brakes (A), a number of times. Both pedals should be considerably solid when depressed. If not, contact your John Deere dealer.
2. Ensure that brake pedals do not descend to the limit of their travel in 10 seconds, after they have first been engaged. If they do, or if one of the pedals descends faster than the other, consult your John Deere dealer.
3. Lock brake pedals together with locking pin (B) and depress both pedals simultaneously. Both pedals should be considerably solid when depressed. If the difference in level between the pedals is greater than 51 mm, see your John Deere dealer.

IMPORTANT: When the pedals descend after reaching the point of resistance, this means that there is a leak somewhere in the brake system (see your John Deere dealer).

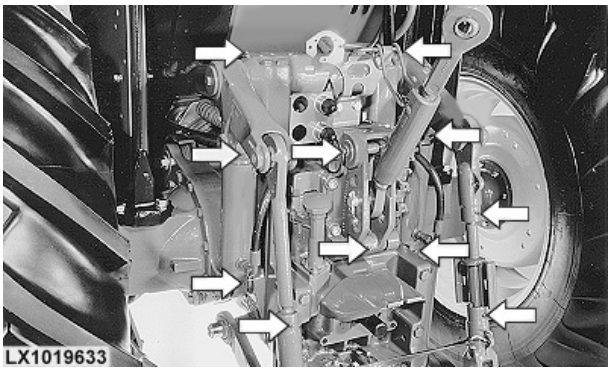
Solid resistance and symmetry between the left and right pedal are fundamental when applying emergency braking procedure, when the pedals are united by locking pin (B).



ML70882,00004A5 –19–08NOV04–1/1

Lubricate 3-Point Hitch

Lubricate all grease fittings of hydraulic hitch system with a number of applications of John Deere universal grease.



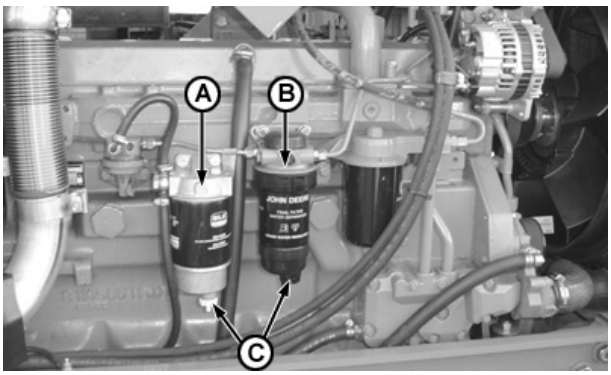
LT04177,0000157 –19–14JUN07–1/1

Check Final Fuel Filter and Prefiller

In the event that sediment and water is observed in the final fuel filter (A) and prefiller (B), perform the following:

1. Place lever in the “P” (Park) position.
2. Run engine at idle speed (low rpm).
3. Loosen plugs (C) and retighten them as soon as sediment and water has been bled off.

IMPORTANT: The water trap of the fuel filter and of the final fuel filter must be bled daily.



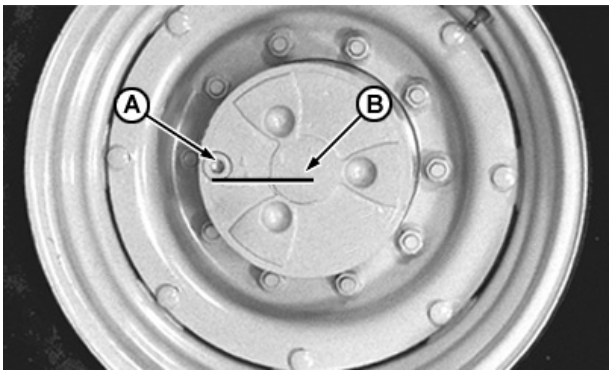
ML70882,00004B6 –19–08NOV04–1/1

Checking Oil Level of Final Drive of Front Wheel Drive

1. Rotate wheel so that drain plug (A) is in a horizontal line with center of wheel (B).
2. Remove drain plug. Oil level should reach threaded hole of drain plug.
3. Tighten drain plug to 90 N.m (66 Lb-ft).

IMPORTANT: If oil needs to be added due to a leakage, remove all the axle oil and add Hy-Gard oil (See "Fuel, Lubricants, Coolant" section).

NOTE: Carry out first change of axle and final drive oil at 100 hours of operation. Then change every 750 working hours.



ML70882,00004A3 –19–05JUL06–1/1

Lubrication Points, Servicing and Inspecting

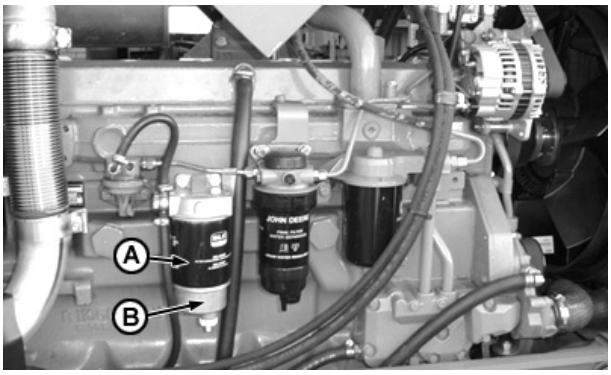
- Check correct functioning of neutral start circuit.
- Lubricate PTO shaft with John Deere universal grease.
- Check and adjust parking brake (consult your John Deere dealer).

ML70882,00009C0 –19–28JUN06–1/1

Service—Every 500 Hours

Replace Fuel Filter Water Trap

1. Remove filter insert (A) and water separator (B).
2. Mount new filter insert in water separator.
3. Install filter insert/ water separator assembly filled with diesel.
4. Bleed fuel system.



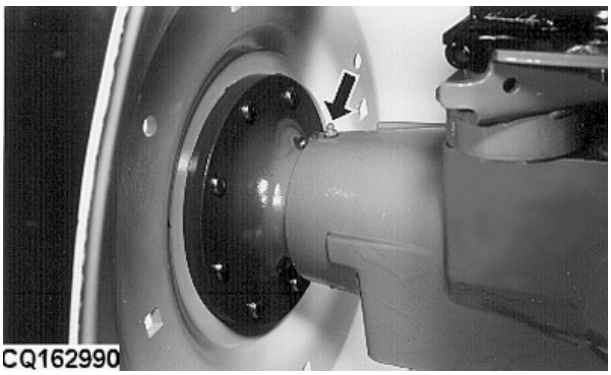
CQ209731 –UN–09JUN04

ML70882,00004A6 –19–08NOV04–1/1

Lubricate Rear Transmission Bearings

IMPORTANT: Perform this task every ten hours of operation when operating tractor in extremely wet or muddy conditions.

Lubricate both bearing sets of rear axle with 6 to 8 coats of John Deere universal grease. (See “Fuel, Lubricants, Oil and Coolant” section).



CQ162990 –UN–26OCT98

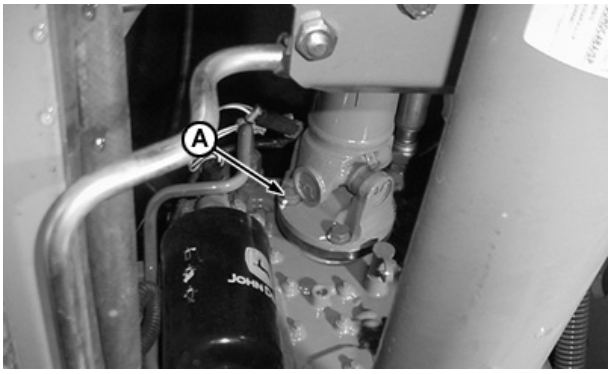
ML70882,00004A7 –19–27JUN06–1/1

Engine to Transmission U-Joint

Check condition of U-jointed shaft for play and loose bolts.

If there is play, contact your dealer.

A—Bolt



CQ239290 –UN–11APR05

LT04177,0000060 –19–07JUN06–1/1

Air Intake Hoses

Check hose connections for leaks and tighten hose clamps.

Leaks or faults in the hoses allow dirt to enter engine.

AG,LT04177,186 –19–16JUN06–1/1

Service—First 750 Hours

Lubrication Points, Maintenance and Inspection

- Adjust play of engine valves (see section “Service – Every 2000 Hours”).

OU92976,00000C1 –19–27JUN06–1/1

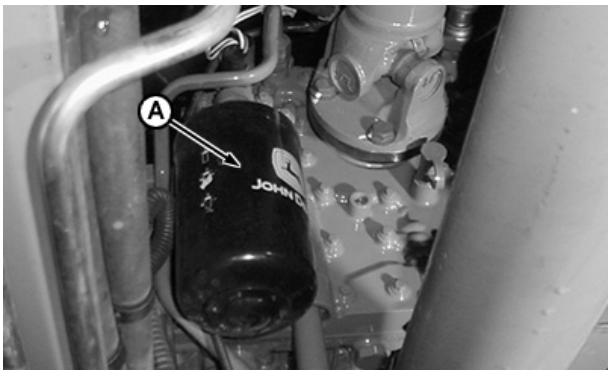
Replacing Transmission-Hydraulic Oil Filters

NOTE: Carry out first filter change of transmission/hydraulic system at 100 working hours. Then change every 750 working hours.

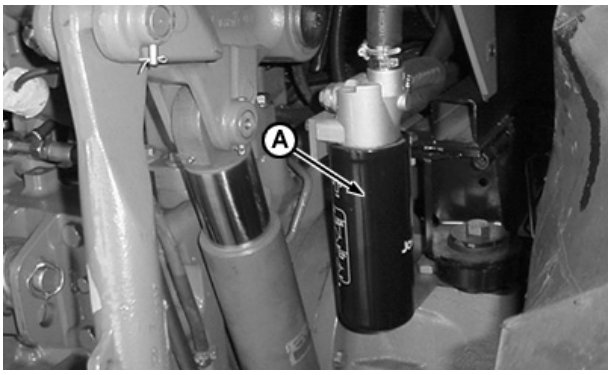
1. Remove filters.
2. Grease the sealing rings of new filters and mount them.

Use only genuine John Deere filters.

IMPORTANT: Always replace the two filters when servicing. Never replace just one.



Located at front of transmission



Located at rear of tractor

ML70882,00004A8 –19–19OCT06–1/1

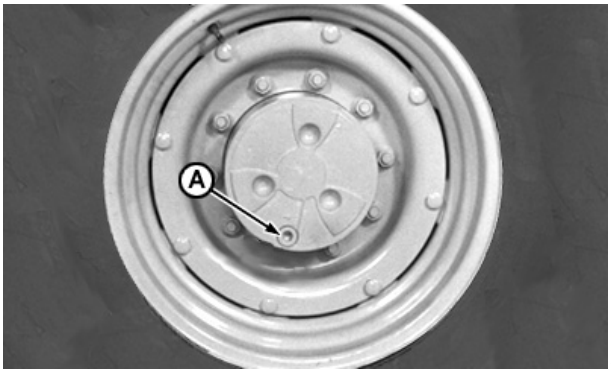
Changing Oil in Final Drives of Front Wheel Drive Axle

1. Turn wheel until drain plug (A) is in lower position. Remove drain plug (A) and drain the oil into an appropriate container.

Specification

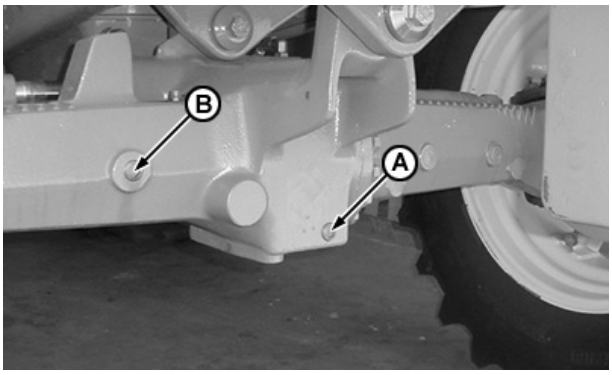
Front wheel final drive—
Approximate capacity ..... 1.7 liters (0.45 U.S. gal)

2. Turn wheel 180º. Fill up reservoir with specified quantity of fresh oil.
3. Check level, reinstall drain plug and tighten it to 90 N.m (66 lb-ft).



ML70882,00004AA –19–19JAN07–1/1

Changing 4x4 Front Axle Oil



NOTE: The oil in the axle housing and final drives should be changed after the first 100 hours of operation. Thereafter, it should be changed every 750 hours of operation.

ALWAYS use John Deere recommended oil for the transmission. See "Fuel, Lubricants, Oil and Coolant" Section.

Change oil while it is still hot, immediately after operating tractor.

1. Remove drain plug (A) and remove oil level check plug (B).
2. Drain oil into a suitable container.

Specification

Front axle—Approximate capacity ..... 6.7 liters (1.8 U.S. gal)

3. Reinstall drain plug and tighten to 150 N.m (110 lb-ft).
4. Fill up reservoir with specified quantity of fresh oil.
5. Oil level should reach filler neck recess(B); reinstall level plug. Reinstall oil level check plug and tighten to 150 N•m (110 lb-ft).

LT04177,0000135 –19–23AUG07–1/1

Lubrication Points, Servicing and Inspecting

- Carry out hydraulic system adjustments (consult your John Deere dealer).
- Check maximum and minimum engine speeds (consult your John Deere dealer).
- Clean vent filter of fuel tank (consult your John Deere dealer).
- Clean crankcase vent line (consult your John Deere dealer).
- Test coolant and add conditioner (consult your John Deere dealer).
- Check wheel bearings for play (consult your John Deere dealer).

ML70882,00009BF –19–22JUN06–1/1

Changing Transmission/Hydraulic System Oil

1. Run the engine and engage some hydraulic controls to heat up oil.
2. Park tractor on level ground. Shut off engine and remove starter key.
3. Engage parking brake (set gearshift lever to neutral).
4. Lower lift arms.
5. Remove drain plug (A).
6. Change the transmission oil filter and hydraulic filter (B).
7. Unscrew cap (C), remove suction mesh and wash with fuel.
8. Also remove transmission oil suction tube (1) to clean possible shavings that might have remained inside the tube. To do so, remove three bolts (6). Remove tube pulling it forward. Use fuel to wash inner part of tube and housing that holds tube with filter mesh.
9. Check condition of sealing rings, replace them if necessary.
10. After cleaning, lubricate end and install tube to rear housing using only manual pressure. At the opposite end, secure using the three bolts.
11. Before adding fresh oil, reinstall aspiration mesh and tighten drain caps to 50 N.m (35 lb-ft).
12. Add Hy-Gard oil through the filler neck on the gear box.
13. Run the engine for a few minutes and engage some hydraulic controls.
14. Shut off engine and wait 5 minutes.
15. Lower lift arms.
16. Oil level should be between the two marks on the dipstick. Insert dipstick, turn it in completely, remove it again and check oil level. If it is too low, top up level by adding oil through filling hole.

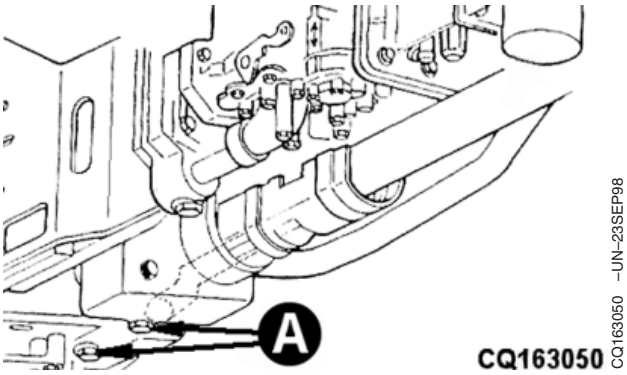
Capacities:

6415 PowrQuad Transmission = 57 liters (15.1 U.S. gal)

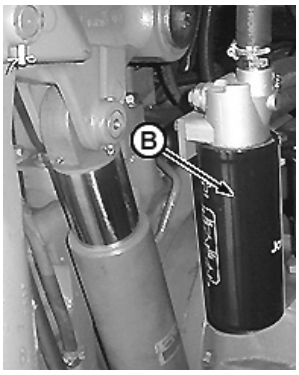
6415 SyncroPlus Transmission = 54 liters (14.3 U.S. gal)

6615 SyncroPlus Transmission = 57 liters (15.1 U.S. gal)

6615 PowrQuad Transmission = 57 liters (15.1 U.S. gal)

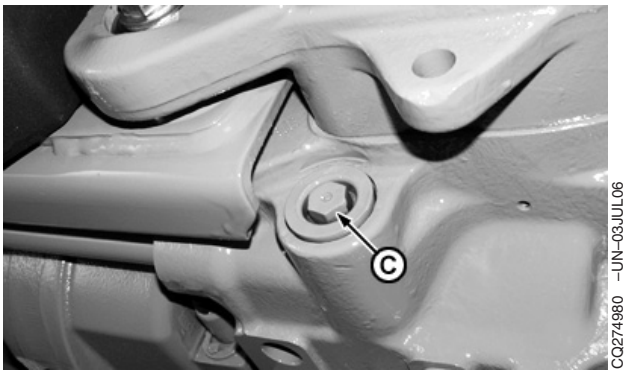


Transmission plug

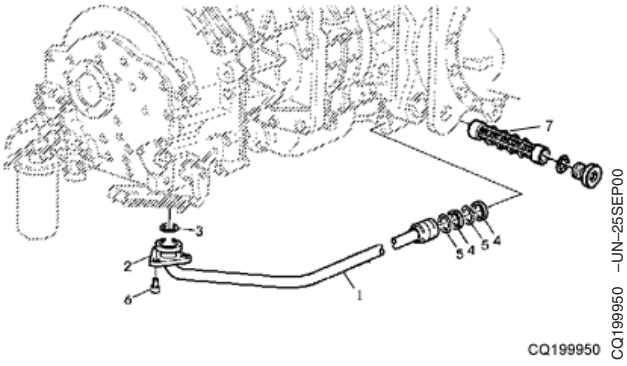


Hydraulic filters

Transmission oil filter



Left-hand side of SyncroPlus differential



Transmission oil suction tube

LT04177,0000061 –19–29JUN07–1/1

Lubrication Points, Maintenance and Inspection

- Check air conditioning operating system (consult your John Deere dealer).
- Replace thermostat valve (see section “Service – Every 2000 Hours”).

NOTE: Replace thermostat valve every two years or at 2000 hours, whichever happens first.

ML70882,00009C1 –19–05JUL06–1/1

Service—Every 1500 Hours

Injection nozzles

IMPORTANT: Tests and replacement of injection nozzles should be carried out by your John Deere dealer.

Test injection nozzles every 1500 hours.

If the nozzles are not working correctly consult your John Deere dealer to replace them.

If injection nozzles are working correctly it is not necessary to replace them at this point.

IMPORTANT: If there is no need to change the injection nozzles after 1500 hours of use, they should be replaced at 3750 hours even if still working correctly.

LT04177,000017A –19–07JUN06–1/1

Lubrication Points, Maintenance and Inspection

- Check engine fan belt automatic tensioner (consult your John Deere dealer).

ML70882,00009C5 –19–09JUN06–1/1

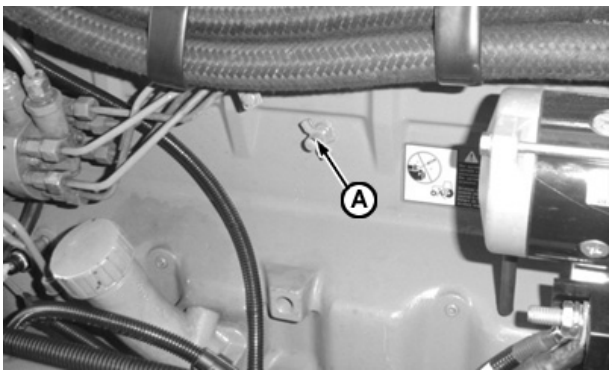
Changing Engine Coolant

CAUTION: The coolant may be hot. Wait until radiator and engine block cool down before touching them.

Do not remove cap (C) of expansion tank (D) until the water temperature has lowered to approx. ambient temperature. First loosen cap (C) to relieve pressure, then carefully remove it.


T6642EK –UN–01NOV88

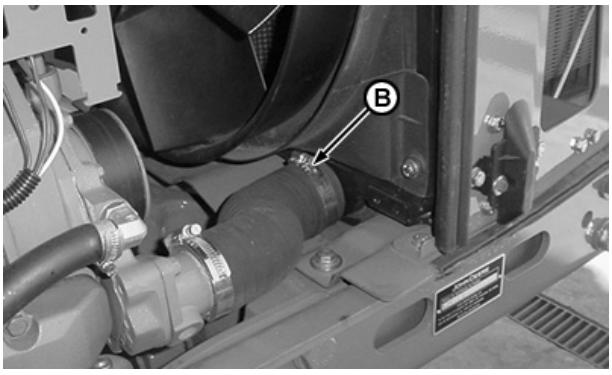
1. Position a container to collect the coolant.
2. Remove drain cap (A) on engine block.
3. To fully remove coolant, release clamp (B) of radiator hose.
4. When the cooling system is completely empty, close drain cap (A) on engine block and remount and tighten radiator hose clamp (B). Then refill system with a commercial solution to clean cooling circuits.
5. Operate engine until working temperature is reached. Stop engine and drain system.



CQ210021 –UN–04NOV04

IMPORTANT: Never refill system with coolant when engine is hot. Wait until engine cools down.

6. Empty system again and fill system with clean water.
7. Operate engine until working temperature is reached.
8. Stop engine and drain system.
9. Close radiator drain plug and drain cap (C) again. Connect drain hose (E).
10. Refill system this time with recommended coolant. (See “Fuel, Lubricants, Oil and Coolant” section).

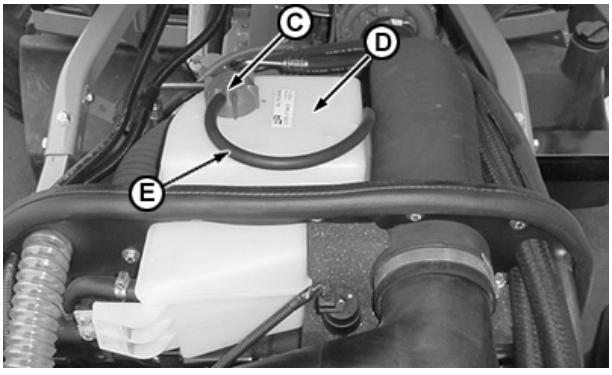


CQ224160 –UN–04NOV04

IMPORTANT: The percentage of water - coolant mixture must be abided by.

NOTE: See cooling system capacity in “Specifications” section.

11. After refilling system operate engine and let coolant circulate through the entire system.
12. Visually check coolant level at side of expansion tank (D). It should be between the “min” and “max” marks.



CQ241430 –UN–05MAY05

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13. Always keep radiator perfectly clean. Remove all sediment and dirt and carefully repair bent fins.

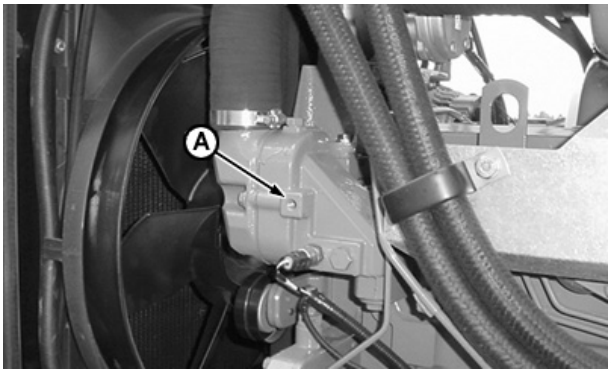
ML70882,00004AB –19–21JUN06–2/2

Replacing Thermostat

Replace thermostat (A) when cleaning radiator in accordance with the following recommendations:

NOTE: Replace thermostat valve every two years or at 2000 hours, whichever happens first.

1. Remove bolts.
2. Remove thermostat.
3. Remove used seal and sealing residue.
4. Install new thermostat.
5. Install new seal and cap.
6. Tighten bolts to 47 N.m (4.7 kg.m or 35 lb-ft).



ML70882,00004AC –19–28JUN06–1/1

Adjusting Valves

Checking valve play is recommended (adjusting) every 2000 hours to guarantee the performance of your John Deere tractor.

This service should be carried out by your John Deere dealer.

LT04177,000017B –19–21JUN06–1/1

Service—As required

Air Filter

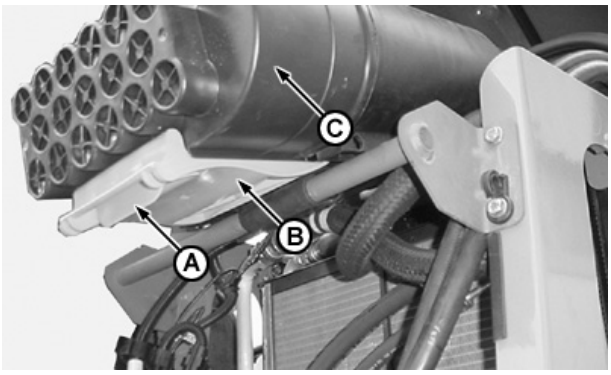
If air filter warning lamp comes on during operation, remove and clean the primary filter insert.

NOTE: Primary insert can be cleaned a total of **five times**.

Replace it after cleaning five times, or after 2 years of operation.

Raise the hood. Pull lock (A) and push lock (B) downwards. Push cover (C) upwards. Carefully pull primary filter insert out of filter housing.

IMPORTANT: Never run the engine without the primary filter insert.



CQ228000 –UN–04NOV04

CQ274950 –UN–03JUL06

MB03730,0000139 –19–03JUL06–1/1

Cleaning Primary Filter Insert

When the insert must be serviced in the field, tap it on the palm of your hand, as a temporary measure.

IMPORTANT: The guide ring must not be damaged or deformed.

When you return to your service area, clean the filter insert thoroughly, or replace it with a new one.

LX1026150 –UN–21MAY01

Continued on next page

ML70882,00004AF –19–06APR05–1/2

Service—As required

Primary Filter Insert Cleaning Procedure

If tapping insert does not remove dust, blow out the dust with compressed air by inserting nozzle inside the insert and blowing from the inside of the filter to the outside.

CAUTION: The compressed air pressure must NOT exceed 600 kPa (6 bar; 90 PSI)

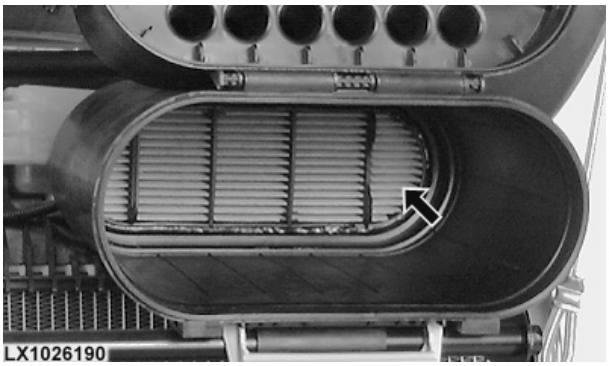
Replace insert if air filter warning light continues to come on after the insert has been cleaned.

ML70882,00004AF –19–06APR05–2/2

Secondary (Safety) Insert

If damaged, this filter must be replaced. Change it at every fifth change of the air filter primary insert, or at the latest after every 2 years of operation.

IMPORTANT: Always replace secondary (safety) filter insert, do not attempt to clean it.

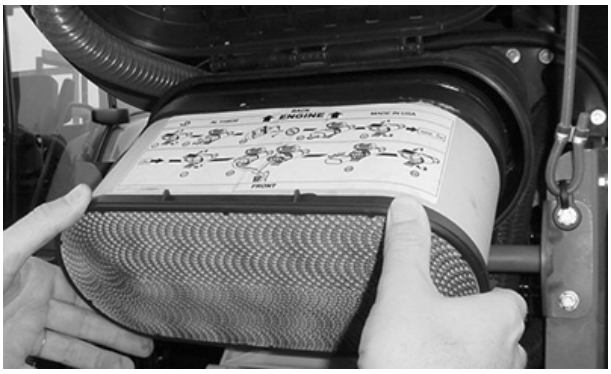


MB03730,000013A –19–20JAN05–1/1

Mounting

With the rubber seal first (arrows on decal pointing into the filter housing), slide a serviced or new primary filter insert as far as it will go into the filter housing. Lower cover and lock clamp in place.

IMPORTANT: Never close hood or start up engine if filter is not correctly mounted.

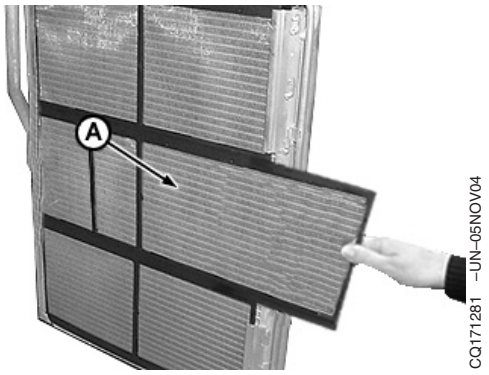


ML70882,00004B1 –19–08NOV04–1/1

Clean Radiator Grill Screen

Always maintain the radiator perfectly clean. Remove all sediment and dirt and carefully repair bent fins.

Remove screen (A) laterally.



ML70882,00004B2 –19–08NOV04–1/1

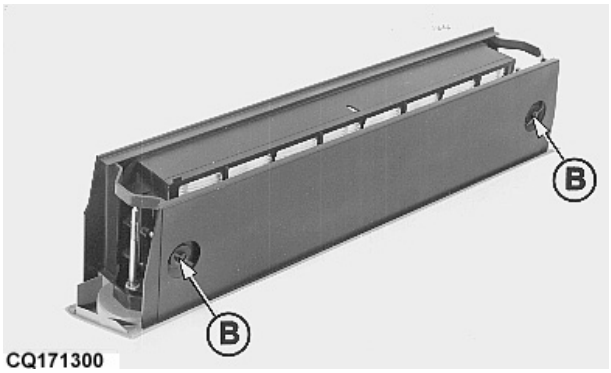
Clean Cab Air Filter

CAUTION: Air cabin filters do not protect against the inhalation of harmful pesticides. If pesticide use instructions require respiratory protection, wear an appropriate respirator inside the cab.

Every time the primary filter is serviced, also remove the cab air filter, and clean it with compressed air from clean side of filter.

Loosen cap screws (A) and remove filter housing downwards. Open latches (B) and remove filter insert.

Always replace cab filter when primary engine air filter is replaced.



ML70882,00004B3 –19–04DEC06–1/1

Bleeding Brakes

If the braking is ineffectual or irregular, bleed air from system. With tractor engine ON and position lever in “P” (Park), step down on pedal a few times until braking is adjusted. If problem still exists contact your John Deere dealer.

ML70882,00004B5 –19–21JUN06–1/1

Service—As required

Lubricate Greasing Points

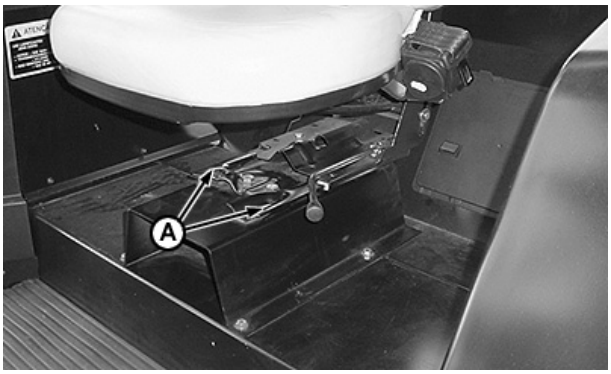
If the tractor has been washed with a high-pressure water jet, lubricate all greasing points.

NOTE: Directing pressurized water at electronic/electrical components or connectors, bearings and hydraulic seals, fuel injection pumps or other sensitive parts and components may cause product malfunctions. Reduce water pressure and pulverize at an angle of 45 to 90 degrees. Avoid the use of solvents.

ML70882,00004B7 –19–08NOV04–1/1

Operator's Seat

Grease seat guide rails (A) with John Deere universal grease.



CQ163131 –UN–05NOV04

ML70882,00004B8 –19–08NOV04–1/1

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

Starter Motor

If the starter motor does not function after engaging the starter switch, the entire starter system must be checked. Check if battery is charged and that no cable is damaged or worn and that the connections are not loose or corroded.

If the referred to checks do not solve the problem, consult your John Deere dealer.

AG,LT04177,206 –19–21JUN06–1/1

Battery

Cleaning the Battery

The battery is located at the front end of the machine, under the hood.

CAUTION: For safety reasons, before working on electrical system or engine, always disconnect battery negative cable.

CQ194823 –UN–03NOV04

Clean battery weekly.

- Remove any traces of terminal corrosion with a brush.
- Coat battery cable terminals and cables with petroleum jelly.
- Check lid vent plugs for obstructions. Clear any obstruction, if necessary.

OU92976,00000ED –19–29JUN06–1/3

Removing Battery

When removing battery, first disconnect negative (-) cable and then positive (+) cable.

CQ194822 –UN–08JUN04

Continued on next page

OU92976,00000ED –19–29JUN06–2/3

NOTE: When reconnecting the battery cables, first connect the positive (+) cable and then the negative (-) cable.

Storing and Handling Battery

- Handle battery with care. Do not knock on nor incline battery more than 45°.
- Always stack batteries in the correct manner to avoid tipping.
- Always perform battery recharging in a well ventilated space.

CQ194823 –UN–03NOV04

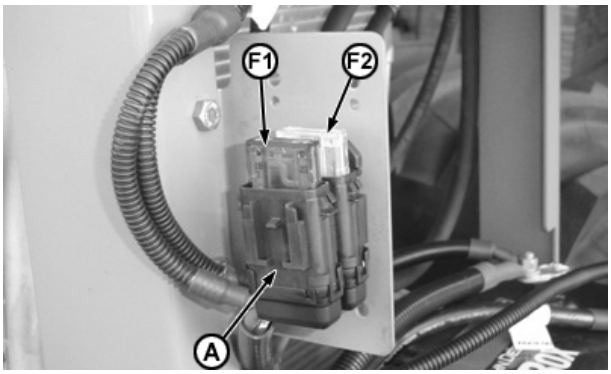
OU92976,00000ED –19–29JUN06–3/3

Fuses—Junction Box

	Tractors with cab	Open station tractors
A	Junction box	
F1	60-amp fuse	60-amp fuse
F2	80-amp fuse	60-amp fuse

Junction box (A) is located at the front of tractor. In it there are two fuses that protect the general electrical systems.

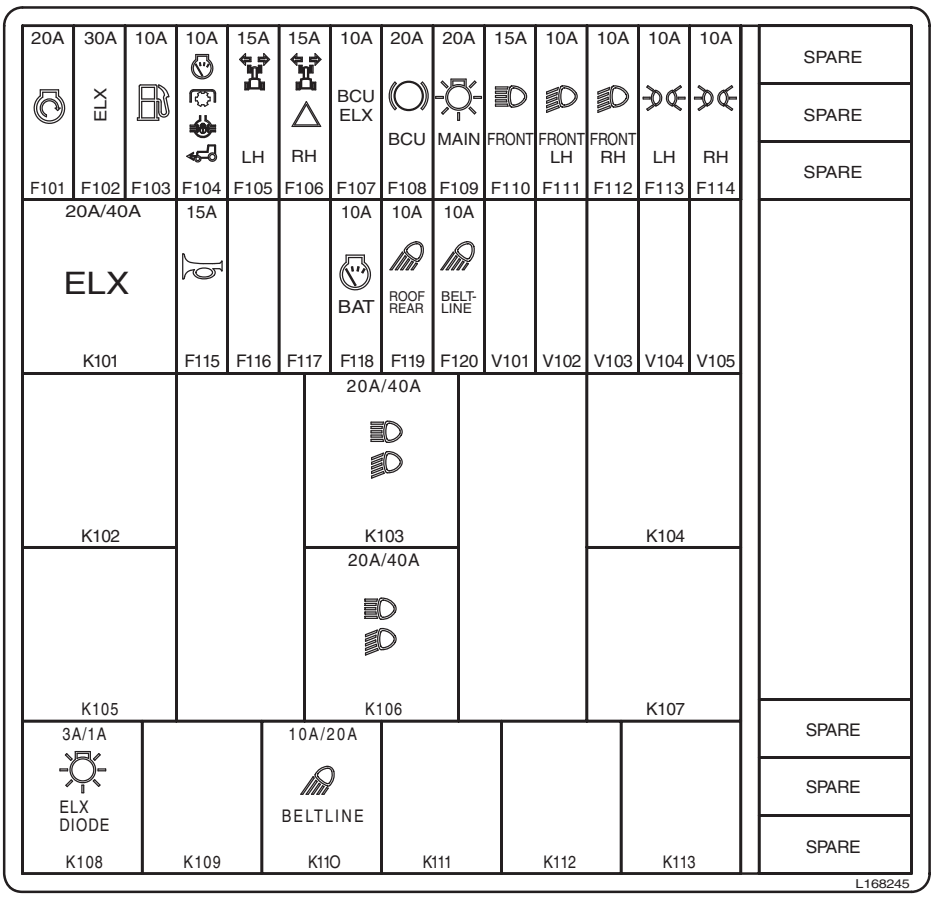
IMPORTANT: Whenever it is necessary to replace a fuse, always use one of the same amp (current).



CQ209981 –UN–09JUN04

OU83340,00005B0 –19–18OCT06–1/1

Fuse Box—Tractors with Open Operator's Station



CQ244670 –UN–08JUL05

—Fuses

F101—Battery main switch

F102—Power feed to electronics

F103—Injection pump shut-off valve

F104—Basic Control Unit - BCU - (PTO, front-wheel drive, differential lock, turn-signal switch)

F105—Left-hand turn signal, constant BCU power feed

F106—Right-hand turn signal, hazard lights

F107—BCU controller (power feed)

F108—Brake switch and brake light

F109—Lights switch (terminal B)

F110—Full-beam headlights

F111—Dipped-beam headlight, left

F112—Dipped-beam headlight, right

F113—Left-hand tail light

F114—Right-hand tail light

F115—Horn (option)

F116—Not used

F117—Work lights on platform roof (option)

F118—Constant CAN-bus power feed

F119—Work lights on cab roof, rear

F120—Work lights on cab roof, front

V101—Not used

V102—Not used

V103—Not used

V104—Not used

V105—Not used

—Relays

K101—Power feed to electronics

K102—Not used

K103—Dipped-beam headlights

K104—Not used

K105—Not used

K106—Full-beam headlights

K107—Not used

K108—Diode for power feed to electronics

K109—Work lights on roof (option)

K110—Work lights on roof, front (single in line)

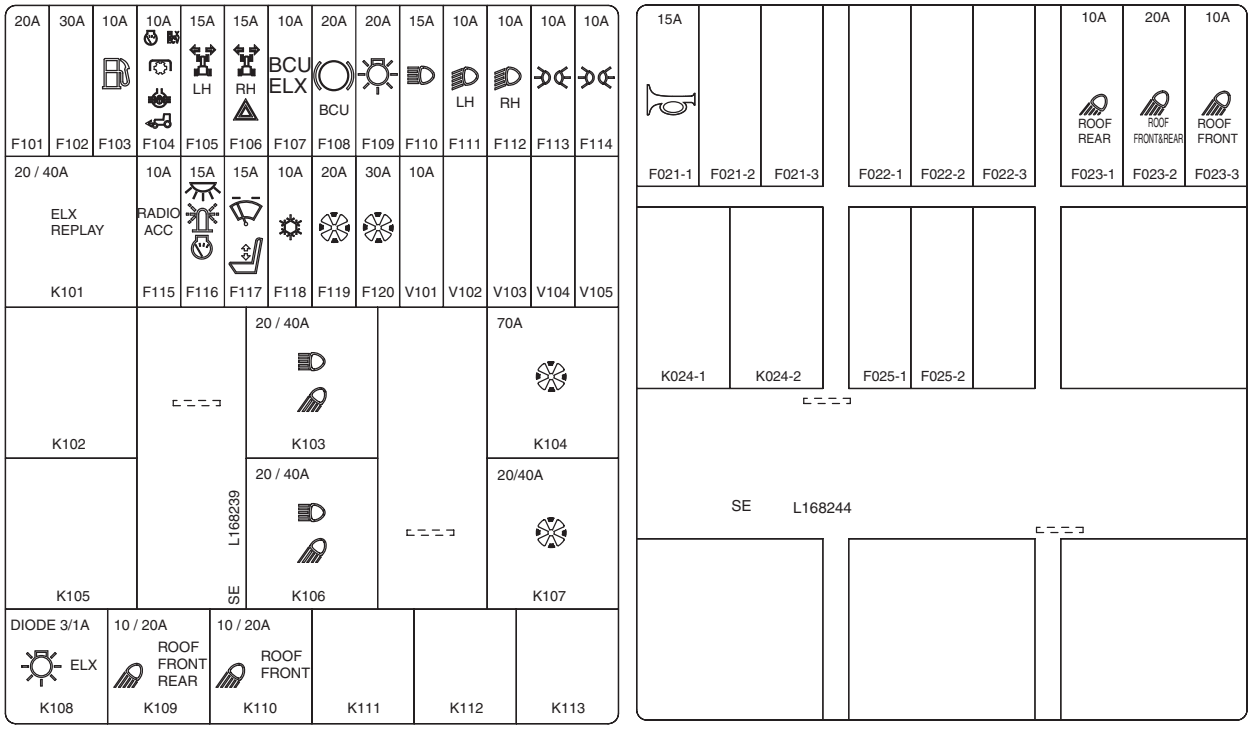
K111—Not used

K112—Not used

K113—Not used

ML70882,00004BA –19–31MAR05–1/1

Fuse Box—Tractor with Cab



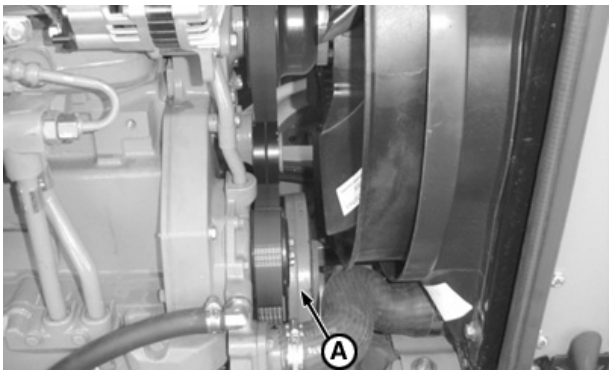
—Fuses
F101—Battery main switch
F102—Power feed to electronics
F103—Injection pump shut-off valve
F104—Basic Control Unit - BCU - (PTO, front-wheel drive, differential lock, turn-signal switch)
F105—Left-hand turn signal, constant BCU power feed
F106—Right-hand turn signal, hazard lights
F107—BCU controller (power feed)
F108—Brake switch and brake light
F109—Lights switch (terminal B)
F110—Full-beam headlights
F111—Dipped-beam headlight, left
F112—Dipped-beam headlight, right
F113—Left-hand tail light
F114—Right-hand tail light
F115—Radio / Cassette player (option)
F116—Dome light, radio (battery voltage)
F117—Work lights on cab roof (option)
F118—Constant CAN-bus power feed
F119—Work lights on cab roof, rear
F120—Work lights on cab roof, front
F021-1—Horn (option)
F023-1—Work lights on cab roof, rear
F023-2—Work lights on cab roof (option)
F023-3—Work lights on cab roof, front
V101—Not used
V102—Not used
V103—Not used
V104—Not used
V105—Not used
—Relays
K101—Power feed to electronics
K102—Not used
K103—Dipped-beam headlights
K104—Air conditioning system fan
K105—Not used
K106—Full-beam headlights
K107—Fan
K108—Diode for power feed to electronics
K109—Work lights on roof (option)
K110—Work lights on roof, front (single in line)
K111—Not used
K112—Not used
K113—Not used

ML70882,00004BB –19–31MAR05–1/1

Inspecting Crankshaft Damper—6615 Tractors

IMPORTANT: The crankshaft damper assembly (A) cannot be repaired. It must be replaced after 4500 hours of operation or every 5 years, whichever occurs first.

Have your John Deere dealer replace the engine crankshaft damper.



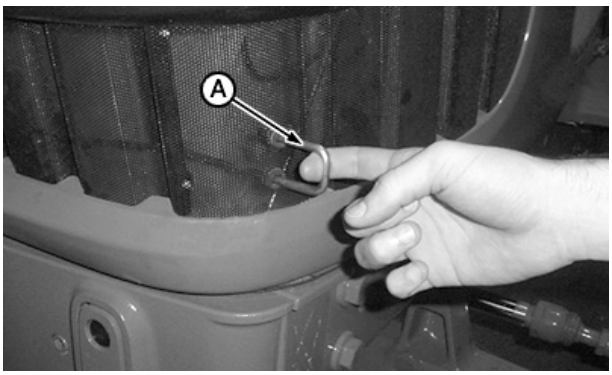
CQ1710211 –UN–09JUN04

OU83340,0000553 –19–26OCT06–1/1

Replacing Engine Fan Belt

CAUTION: Remove starter key from tractor before starting work on engine.

Pull catch (A) and lift hood.



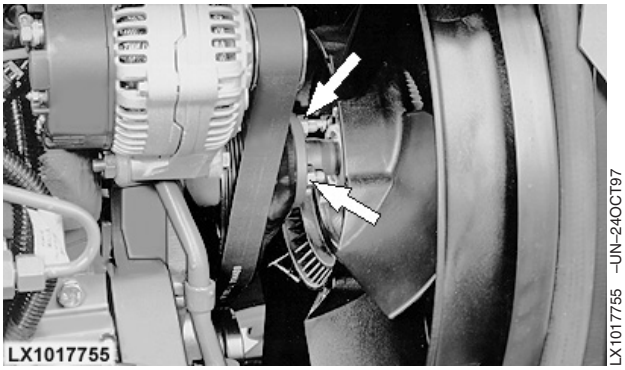
CQ227580 –UN–03NOV04

ML70882,00004BC –19–03JUL06–1/5

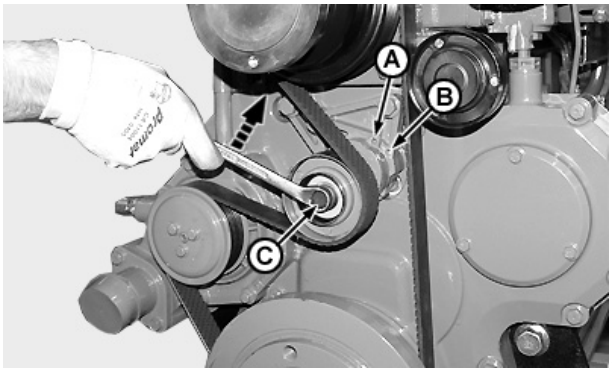
Procedure

CAUTION: Disconnect negative (-) battery cable.

1. Remove the four nuts of fan and push fan forward.
2. Use a 15 mm (19/32 in.) wrench to turn the cap screw (C) in the idler sprocket in the direction of arrow until the two holes (A and B) are aligned.
3. Insert a metal pin with a diameter of 5 mm (0.2 in.) into the two aligned holes.
4. Before tensioning the belt, rotate the idler sprocket a little to release the pressure on the metal pin, then remove the pin. The drive belt tensioner automatically returns to its tensioning position.



LX1017755 –UN–24OCT97



CQ274960 –UN–03JUL06

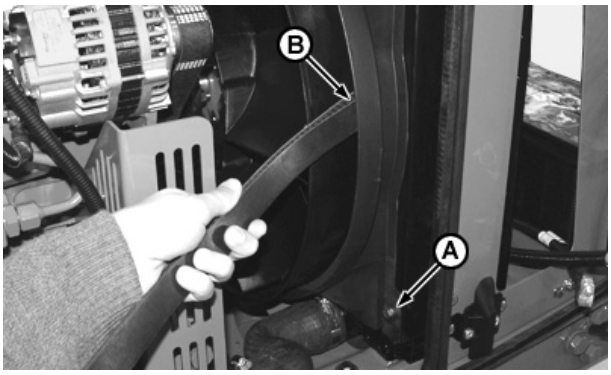
Continued on next page

ML70882,00004BC –19–03JUL06–2/5

Service—As required

5. Remove old belt from pulleys by cutting it free.

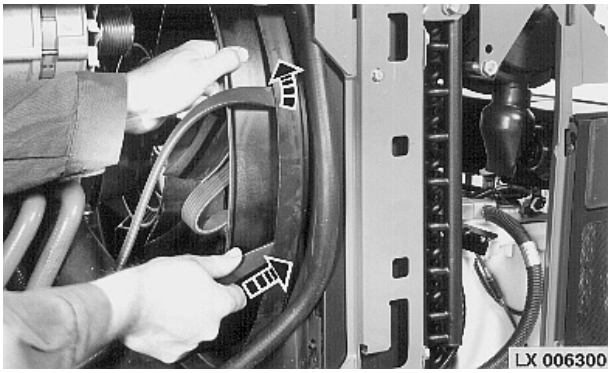
   Remove the three expanding plugs (A) of the protective shroud. Fold over the new belt (B) and slip it between the fan and protective shroud.



CQ274970 –UN–03JUL06

ML70882,00004BC –19–03JUL06–3/5

6. Turn fan as the belt is removed.



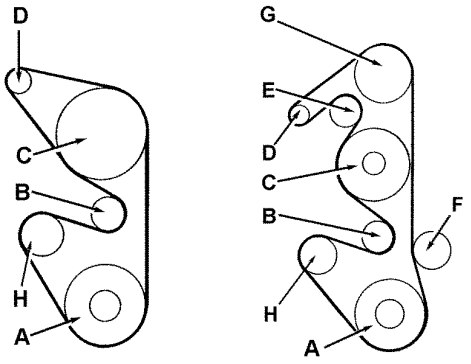
LX006300 –UN–13SEP94

ML70882,00004BC –19–03JUL06–4/5

Installing a New Drive Belt

1. Slacken belt tensioner and install new drive belt correctly.
2. For further assembly, follow the previous instructions in reverse order.

A—Crankshaft
B—Tensioner
C—Fan
D—Alternator
E—Positioning wheel
F—Tensioner
G—Compressor (air conditioning system)
H—Cooling system pump



CQ228070 –UN–05JUL05

ML70882,00004BC –19–03JUL06–5/5

Test Thermostat Opening Temperature

1. Remove thermostat.
2. Visually inspect thermostat for corrosion or damage.

CAUTION: DO NOT allow thermostat or thermometer to rest against the side or bottom of container when heating water. Either may rupture if overheated.

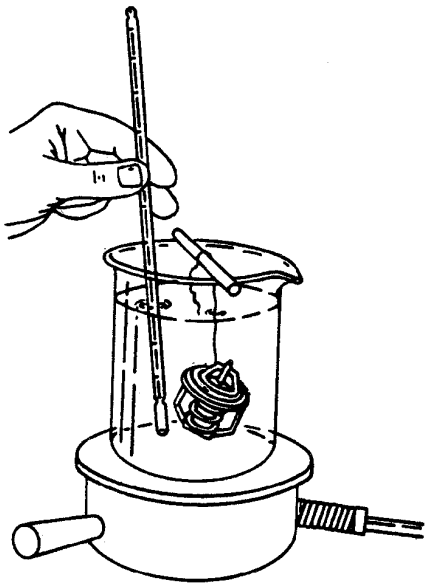
3. Suspend thermostat and thermometer in a container of water.
4. Stir the water as it heats. Observe opening action of thermostat and compare temperatures with specification given in chart below.

NOTE: Due to varying tolerances of different suppliers, initial opening and full open temperatures may vary slightly from specified temperatures.

THERMOSTAT TEST SPECIFICATION

Rating	Initial Opening (Range)	Full Open (Nominal)
82°C (180°F)	80-84°C (175-182°F)	94°C (202°F)

5. Remove thermostat from container and observe closing action as thermostat cools. Thermostat should close completely in ambient air. Closing action should be smooth and slow.
6. Replace thermostat if defective.



RG5971 –UN–23NOV97

OU12401,0000412 –19–29SEP00–1/1

Alternator Belt

Replace alternator belt as necessary.

ML70882,00009C2 –19–06JUN06–1/1

Service—As required

Lights

Check correct operation of working lights, headlights, turn-signal lights, panel lights, etc. Substitute burnt bulbs.

See your John Deere dealer if fault is not repaired.

ML70882,000079B –19–21JUN06–1/1

Lubrication Points, Servicing and Inspecting

- Check final filter and primary fuel filter (see "Service - Every 250 Hours" section).
- Check and adjust parking brake (consult your John Deere dealer).
- Check tire inflation pressure (see Section 60, "Ballasting").
- Check proper operation of injection nozzles (consult your John Deere dealer).

LT04177,000015E –19–21JUN07–1/1

Hydraulic System

Symptom	Problem	Solution
Hydraulic circuit fails to function	Low oil level	Refill.
	Plugged transmission/hydraulic system oil filter	Change filter.
	Dirty hydraulic pump	Check filter for plugging.
Hydraulic oil overheats	Oil cooler air passages clogged	Clean oil cooler.
Rockshaft does not rise	Excessive load on hitch	Adjust auxiliary springs on implement or reduce load.
Rockshaft lowers slowly	Lower regulator badly adjusted	Adjust rate-of-drop.
Insufficient or no hitch response to rockshaft load	The position selection knob is in the depth or mixed adjustment position	Turn selection knob to automatic load adjustment.
Rockshaft varies greatly	The position selection knob is in the automatic load adjustment position	Turn selection knob to mixed adjustment.
Direction of remote cylinder travel is reversed	Hoses inverted	Connect correctly.
Remote cylinder will not lift load	Excessive load	Adjust auxiliary springs on implement or reduce load.
	The quick couple hoses are not correctly coupled	Correctly connect quick couple hoses.
	Air in remote cylinder	Purge cylinder.
The remote cylinder elongates very quickly or too slowly	Badly adjusted operating speed	Adjust rate-of-drop.

ML70882,00004BD –19–08NOV04–1/1

Engine

Symptom	Problem	Solution
Engine hard to start or will not start	Out of fuel	Fill tank with fuel.
	Air in fuel system	Purge fuel feed system.
	Plugged fuel filter	Replace filters.
	Engine oil too thick	Use correct oil viscosity.
Engine knocks	Lack of engine oil	Top up engine oil.
	Injector pump out of synch	See your John Deere dealer.
Engine overheats	Low coolant level	Fill radiator to specified level. Check cooling system for leaks.
	Loose or defective fan belt	Adjust belt tension or change it. See your John Deere dealer if necessary.
	Cooling system needs flushing	Drain, flush, and refill cooling system
	Dirt in oil cooling system	Clean oil cooler and honeycombed grid.
	Faulty thermostat	Remove and test.
Oil pressure too low	Low oil level	Refill crankcase.
High oil consumption	Oil in crankcase too light	Drain and fill with oil of correct viscosity.
	Oil leaks	Check that seals and connections are well sealed.
High fuel consumption	Wrong type of fuel	Use correct fuel.
	Dirty or faulty injectors	See your John Deere dealer.
	Engine out of synch	See your John Deere dealer.
	Plugged or dirty air filter	Clean air filter.
	Plugged air filter exhaust system	Clean exhaust hose.

Continued on next page

Symptom	Problem	Solution
Engine emits black or gray exhaust smoke.	Wrong type of fuel	Use correct fuel.
	Plugged or dirty air filter	Clean air filter
	Plugged air filter exhaust system	Clean exhaust hose.
	Dirty or faulty injectors	See your John Deere dealer.
Engine emits white smoke	Wrong type of fuel	Use correct fuel.
	Cold engine	Start engine and run until normal temperature is reached.
	Faulty thermostat	Remove and check.
	Engine out of synch	See your John Deere dealer.

ML70882,00004BE –19–21JUN06–2/2

Electrical System

Symptom	Problem	Solution
Battery will not charge	Loose or corroded connections	Clean and tighten connections.
	Loose or faulty fan/alternator belt.	Adjust tension or replace belt.
Starter motor inoperative	Loose or corroded connections	Clean and tighten loose connections.
	Run down battery	Check and charge battery.
Starter motor cranks slowly	Engine oil too thick	Drain oil and fill with oil of correct viscosity.
	Loose or corroded connections	Clean and tighten loose connections.
	Run down battery	Check and charge battery.

ML70882,00004C3 –19–08NOV04–1/1

Storage

Long Storage Period

Drain, clean and refill cooling system with new coolant. For more information on mix, see “Fuel, Lubricants, Coolant” section.

Do not store tractor with dirty oil. Drain the oil, replace filter inserts and fill with new oil. Drain crankcase when the oil is still hot.

Operate engine for a few minutes before adding rust inhibitor.

To protect the engine, use the AR 41785 rust inhibitor supplied by your John Deere dealer. With this reference you will receive a flask of rust inhibitor, a strip of paper and protective hood to cover all engine orifices.

Proceed as follows:

1. Add 480 ml (1 pt) of rust inhibitor to the engine oil.
2. Refill fuel tank. Start up engine and engage hydraulic apparatus a number of times. Shut off engine.
3. Prepare 15 mL (0.0317 pt) of rust inhibitor for each cylinder. Remove cap of intake manifold or cold start connecting pipe, and inject rust inhibitor into the opening. Disconnect the power cable from the injection pump and insulate it well. Crank engine a few times to distribute the product.

Never put engine in gear after adding rust inhibitor.

IMPORTANT: The inhibitor is very volatile. This is why all openings must be sealed off after its addition to the engine. Also keep the rust inhibitor flask closed.

Remove and clean battery and add distilled water, if necessary. Charge battery and store in a cool and dry place where it will not freeze. Ensure battery is kept charged during storage period. Seal off all openings, such as the crankcase vent tube and exhaust pipe.

Wash the exterior and painted surfaces of the tractor using clear, cold water. Dry with a soft, dry cloth.

Replace worn or damaged parts. Touch up areas of damaged paintwork.

Store tractor in a dry and protected place. If the tractor is stored exposed to the elements, cover it up with a waterproof tarp.

Block up tractor on wooden blocks, so that the tires do not touch the soil. Protect tires from sunlight and heat.

AG,LT04177,217 –19–05JUL06–1/1

Removing Tractor from Storage

Remove all protective covers and tarpaulins. Check tire inflation pressures and remove propping blocks.

Install battery and first connect the positive (+) cable and then the negative (-) cable.

Check the following points:

— The hydraulic oil level of the transmission.

— Fuel level.

— Radiator coolant level.

— Engine oil level.

Perform all services at the hourly intervals indicated on the following pages.

CAUTION: Never operate the engine in a closed space. Danger of asphyxiation!

Disconnect the power cable from the injection pump then turn over engine for a few seconds until the engine oil has reached an appropriate pressure. Then reconnect the power cable to the injection pump and start up engine.

ML70882,00004C4 –19–08NOV04–1/1

Specifications

Engine

Tractor model	6415	6615
Engine / Manufacturer	John Deere	John Deere
Type	4045T	6068T
Power Feed	Turbocharged	Turbocharged
No. of Cylinders	4	6
Displacement (L)	4,5	6,8
Power at rated speed kW (cv)[a]	79,5 (108)	88,5 (120.3)
Engine rated speed	2300 rpm	2300 rpm
Maximum torque [a] N.m (lb-ft)	423 (290)	477 (334)
Speed at maximum torque	1500 rpm	1400 rpm
Torque bulge - %	32,7	43
Injection Pump Type	Rotary	Rotary
Mark	Delphi	Delphi
Starter motor / Brand	Prestolite	Prestolite

[a]In accordance with (SAE 1995)

AG,LT04177,220 –19–18JAN06–1/1

PTO

Tractor model	6415	6615
Type	Independent	Independent
Actuation	Electro-Hydraulic	Electro-Hydraulic
Power kW (cv)	66 (90)	76 (103)
PTO speed / Engine speed at PTO nominal speed (rpm) — SyncroPlus Transmission	540/2100	540/2150
PTO speed / Engine speed at PTO nominal speed (rpm) — PowerQuad Transmission	540 or 1000/2100	540 or 1000/2100

AG,LT04177,221 –19–18JAN06–1/1

SyncroPlus™ Transmission

Type	Synchronized helicoidal gears
Number of gears:	12 forward gears and 04 reverse gears.
Clutch	Mechanical/hydraulic

SYNCROPLUS is a registered trademark of the Deere & Company

AG,LT04177,222 –19–21AUG07–1/1

POWRQUAD™ Transmission

Type ..... Planetary gears, hydraulic shift
Number of gears: ..... 16 forward and 16 reverse gears.
Clutch ..... Mechanical/hydraulic

POWRQUAD is a registered trademark of the Deere & Company

AG,LT04177,223 –19–07FEB08–1/1

Clutch

SyncroPlus / PowrQuad Transmission

Type	Oil cooled
Actuation:	Auto-adjustable hydraulic
No. of disks	3 (SyncroPlus) and 4 (PowrQuad)
Diameter of disks	228 mm (9 in)

AG,LT04177,224 –19–21AUG07–1/1

Hydraulic System

Tractor model	**6415**	**6615**
Type	Closed center hybrid / option	Closed center hybrid / option
Pump / Pump flow rate	Gears / 66 L/min (17.4 gpm)	Gears / 66 L/min (17.4 gpm) or Pistons / 100 L/min (26.4 gpm)
Maximum pressure	190 kgf/cm^2 (200 bar; 2900 PSI)	190 kgf/cm^2 (200 bar; 2900 PSI)
Maximum lifting force on hitch	2470 kg (5445 lb)	2470 kg (5445 lb)
Lifting capacity 610 mm (2 ft) from hitch (NBR13145)	2160 kg (4762 lb)	2160 kg (4762 lb)
Command type	Electronic, with sensors in lift arms	Electronic, with sensors in lift arms
Selective control valves (standard)	2	2
Selective control valves (option)	3	3
Selective control valve flow rate	60 L/min (15.8 gpm)	60 L/min (15.8 gpm) or 96 L/min (25.4 gpm)
Steering system	Hydrostatic	Hydrostatic
Maximum pressure of steering system	18500 kPa (185 bar; 2683 PSI)	18500 kPa (185 bar; 2683 PSI)

AG,LT04177,225 –19–08DEC05–1/1

Brakes

Service brake ..... disk in oil bath
.....
Parking brake ..... auto-adjustable hydraulic engagement
Transmission lock ..... controlled by gearshift lever.

LT04177,000138B –19–07FEB08–1/1

Drawbar

Maximum vertical static load permissible
Extended to 250 mm (9.8 in.) ..... 2250 kg (4960 lb)
Extended to 350 mm (13.8 in.) ..... 1400 kg (3085 lb)
Extended to 400 mm (15.7 in.) ..... 1200 kg (2645 lb)
Extended to 550 mm (21.7 in.) ..... 800 kg (1765 lb)

LT04177,0000065 –19–10JUL06–1/1

Tractor Weight in Standard Configuration in kg (lb)

MODEL	TIRES	COUNTERWEIGHTS		WEIGHT PER AXLE		TOTAL WEIGHT
		FRONT WEIGHTS	REAR WEIGHTS	FRONT AXLE	REAR AXLE	
6415 CAB*	14.9 - 26 R1 12PR 23.1 - 30 R1 12PR	4 X 50 (110)	6 X 55 (121)	1890 (4167)	2860 (6305)	4750 (10472)
6415 EPCC**	14.9 - 26 R1 - 12PR 23.1 - 30 R1 - 12PR	4 X 50 (110)	—	1860 (4101)	2430 (5357)	4290 (9458)
6615 CAB*	14.9 - 26 R1 - 12PR 23.1 - 30 R1 - 12PR	8 X 50 (110)	2 X 38.5 (85) 2 X 55 (121)	2390 (5269)	2920 (6437)	5310 (11706)
6615 EPCC**	14.9 - 26 R1 - 12PR 23.1 - 30 R1 - 12PR	8 X 50 (110)	2 X 38.5 (85) 2 X 55 (121)	2340 (5159)	2860 (6305)	5200 (11464)

* Cab tractors.

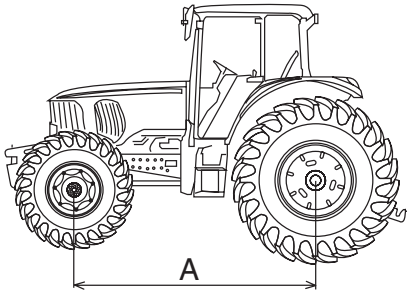
** Open Operator Station Tractors with Roll-Over Protective Structure (ROPS).

MB03730,000013D –19–02JUL07–1/1

Dimensions

NOTE: Dimensions refer to models equipped with option 1 wheels.

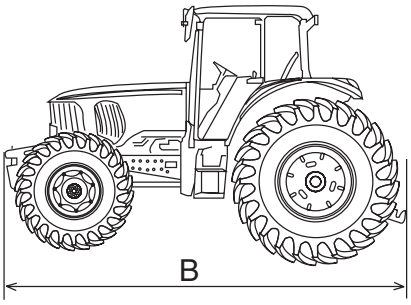
Dimensions	6415	6615
Distance from front to rear axle (A)	2400 mm (94.5 in)	2650 mm (104.3 in)



CQ276580 –UN–14JUL06

AG,LT04177,97 –19–14JUL06–1/5

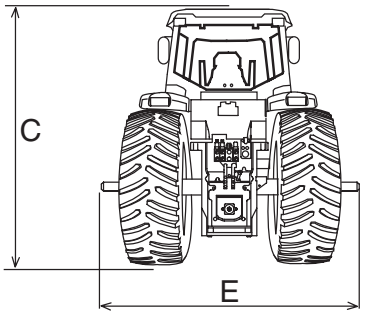
Dimensions	6415	6615
Total length with front end weights (B)	4564 mm (180 in)	4921 mm (193.7 in)



CQ276590 –UN–14JUL06

AG,LT04177,97 –19–14JUL06–2/5

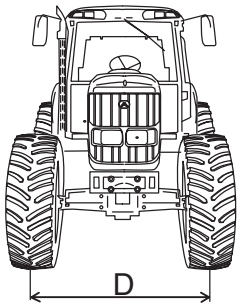
Dimensions	6415	6615
Maximum Height (C)	2715 mm (106.9 in)	2738 mm (107.8 in)
Rear tread with rack and pinion rear axle (E)	1564 – 2317 mm (61.6 – 91.2 in) without cab 1637 – 1924 mm (64.4 – 75.7 in) with cab	



CQ276600 –UN–14JUL06

AG,LT04177,97 –19–14JUL06–3/5

Dimensions	6415	6615
Front tread (D)	1616 – 2154 mm (63.6 – 84.8 in)	

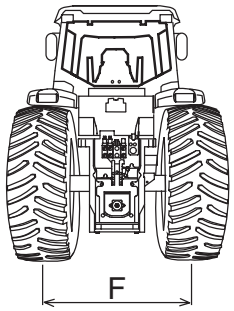


CQ276610 –UN–14JUL06

Continued on next page

AG,LT04177,97 –19–14JUL06–4/5

Dimensions	**6415**	**6615**
Rear tread with flanged rear axle (F)	1810 mm (71.3 in), fixed	



CQ276611 –UN–14JUL06

AG,LT04177,97 –19–14JUL06–5/5

Electrical System

Voltage	12 V
Alternator capacity	90 A
Battery / type	Sealed (unserviceable)
Battery / capacity:	
6415	100 Ah (cca min. 640 A)
6615	150 Ah (min. CCA - 800 A)

AG,LT04177,227 –19–06APR05–1/1

Capacities

Tractor	6415	6615
Fuel tank**	154 L (40.7 U.S. gal)	172 L (45.4 U.S. gal)
Auxiliary tank (optional)**	—	307 liters (81 U.S. gal)
Auxiliary tank with r.h. ladder (if equipped)**	—	267 L (70.5 U.S. gal)
Cooling system	20 L (5.28 U.S. gal)	25 liters (6.6 U.S. gal)
Engine oil (with filter)	12 liters (3.2 U.S. gal)	19 liters (5 U.S. gal)
Transmission*	62 liters (16.38 U.S. gal)	62 liters (16.38 U.S. gal)
Front-wheel drive (differential housing and hubs)	8.2 liters (2.17 U.S. gal)	8.2 liters (2.17 U.S. gal)
Front axle final drives (each)	0.75 liters (0.2 U.S. gal)	0.75 liters (0.2 U.S. gal)

* There is a difference of approximately two liters between the versions with and without rockshaft.
** Approximate capacity values.

NOTE: The oil capacities specified in this manual are approximate and may vary according to versions, examples of which are: models with or without rockshaft, and models specifically designed for rice growing regions. When checking the oil level ensure that the gearshift is in the “Park” position and that the tractor is parked on flat, level ground. See “Fuel, Lubricants, Coolant”, “Service - Every 250 Hours” and “Service - Every 750 Hours” sections about procedures.

AG,LT04177,228 –19–21JUN06–1/1

Serial Numbers

Serial Number Plates

The following figures illustrate some of the serial number plates used for the tractor. The letters and numbers printed on the plate are necessary for warranty claims and also for the purchase of replacement parts.

NOTE: Copy the serial numbers to the designated place in the manual.

AG,LT04177,229 –19–07FEB08–1/1

Product Identification Number

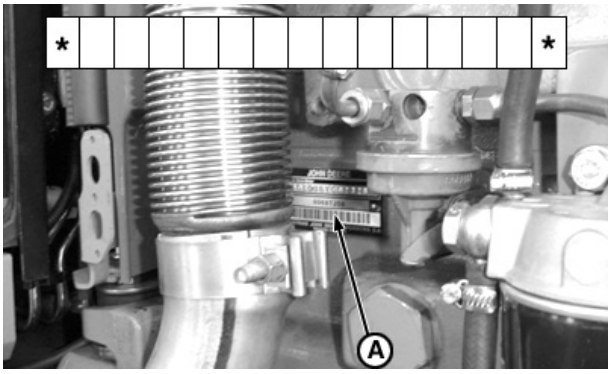
The product identification number is located on the right-hand side of the tractor chassis.

CQ281071 –UN–14DEC07

LT04177,00002DB –19–07FEB08–1/1

Engine Serial Number

The engine serial number is located on the right-hand side of the engine block.

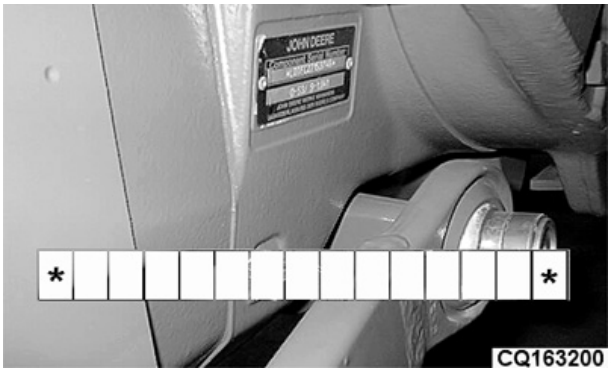


CQ209531 –UN–09JUN04

OU83340,0000533 –19–07FEB08–1/1

Transmission Serial Number SYNCROPLUS™

The plate with the transmission serial number is located on the rear right side of the transmission.



CQ163200 –UN–23SEP98

SYNCROPLUS is a trademark of Deere & Company

AG,LT04177,232 –19–16SEP98–1/1

POWRQUAD™Transmission Serial Number

The transmission serial number plate is located on the front left-hand side of the transmission.

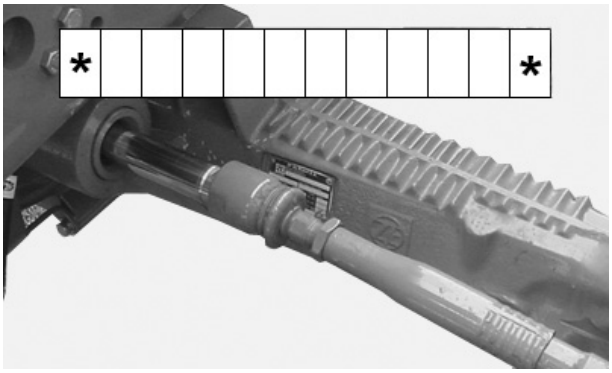
CQ163190 –UN–09NOV07

POWRQUAD is a registered trademark of the Deere & Company

AG,LT04177,233 –19–07FEB08–1/1

Front Wheel Drive Serial Number

This serial number plate is located on the rear right-hand side of the front axle.

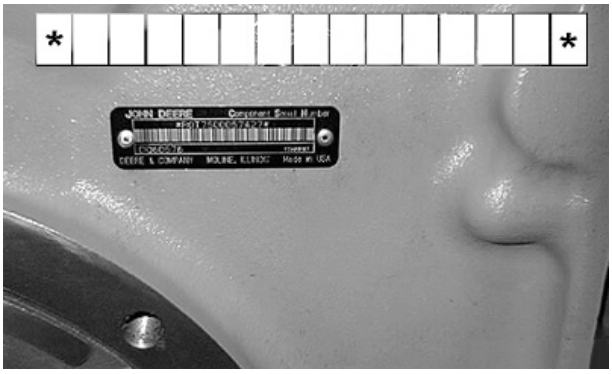


CQ163212 –UN–11NOV04

ML70882,00004CF –19–11NOV04–1/1

POWRQUAD™ Differential Serial Number

This serial number plate is located on the rear left-hand side of the differential case above the rear final drive.



CQ163220 –UN–09NOV07

POWRQUAD is a registered trademark of the Deere & Company

AG,LT04177,235 –19–07FEB08–1/1

Serial Number of Rear Final Drives (SYNCROPLUS™)

The plate with the serial number of the rear final drives is located on the rear left side of the final drive.

CQ163230 –UN–09NOV07

SYNCROPLUS is a trademark of Deere & Company

AG,LT04177,236 –19–16SEP98–1/1

Cab Serial Number

The serial number plate is located on the left-hand side of operator's seat.

ML70882,00007A3 –19–07FEB08–1/1

Operator's Platform Serial Number

The serial number plate is located on the left-hand side of operator's seat.

ML70882,00007A4 –19–07FEB08–1/1

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John Deere Keeps You On The Job

John Deere Parts

We help minimize downtime by putting genuine John Deere parts in your hands in a hurry.

That's why we maintain a large and varied inventory—to stay a jump ahead of your needs.

TS100 –UN–23AUG88

DX,IBC,A –19–04JUN90–1/1

The Right Tools

Precision tools and testing equipment enable our Service Department to locate and correct troubles quickly . . . to save you time and money.

TS101 –UN–23AUG88

DX,IBC,B –19–04JUN90–1/1

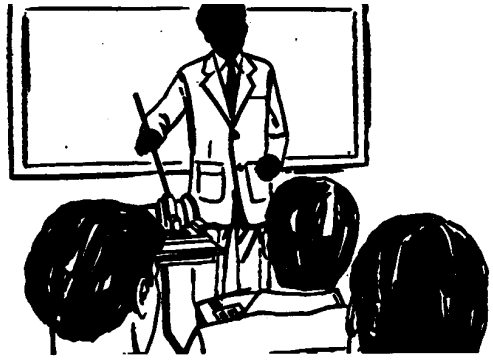
Well-Trained Technicians

School is never out for John Deere service technicians.

Training schools are held regularly to be sure our personnel know your equipment and how to maintain it.

Result?

Experience you can count on!



TS102 –UN–23AUG88

DX,IBC,C –19–04JUN90–1/1

Prompt Service

Our goal is to provide prompt, efficient care when you want it and where you want it.

We can make repairs at your place or at ours, depending on the circumstances: see us, depend on us.

JOHN DEERE SERVICE SUPERIORITY: We'll be around when you need us.

TS103 –UN–23AUG88

DX,IBC,D –19–04JUN90–1/1