5080R-5100R and 5080RN-5100RN Tractors Repair

TECHNICAL MANUAL
5080R-5100R and 5080RN-5100RN Tractors Repair

TM401819 22DEC09 (ENGLISCH)

For complete service information also see:

5080R-5100R and 5080RN-5100RN Tractors Diagnostics	TM401719
Front-Wheel Drive Axles	CTM4870
POWERTECH™ Diesel Engines	CTM104
Electronic Fuel Injection Systems Level 16	CTM502
Alternators and Starter Motors	CTM77

John Deere Werke Mannheim
European Version
Printed in U.S.A.

Contents

Section 60 Steering and Brakes

Section 70 Hydraulic System

Section 80 Miscellaneous

Section 90 Operator's Cab

Section 99 Special Tools

Foreword

This Repair Manual is valid for the following tractor types:

5080R, 5090R, 5100R, 5080RN, 5090RN and 5100RN.

This manual is written for experienced technicians. Special tools required in performing certain service work are identified in this manual and are recommended for use.

Live with safety: Read the safety messages in the initial section of this manual and the cautions presented throughout the text of the manual.

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

Technical Manuals are concise service guides for specific machines. They are on-the-job guides containing only the vital information needed for diagnosis, analysis, testing, and repair.

Fundamental service information is available from other sources covering basic theory of operation, fundamentals of troubleshooting, general maintenance and basic type of failures and their causes.

LX24888,000079C-19-20080818

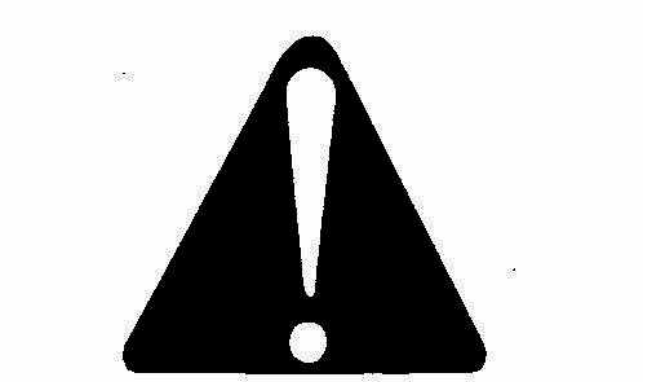
Contents

Group 05 - Safety Measures

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: Safety-alert symbol

DX,ALERT-19-19980929

”Important” Information

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

LX,CRA05 002885-19-19920409

”Note” Information

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

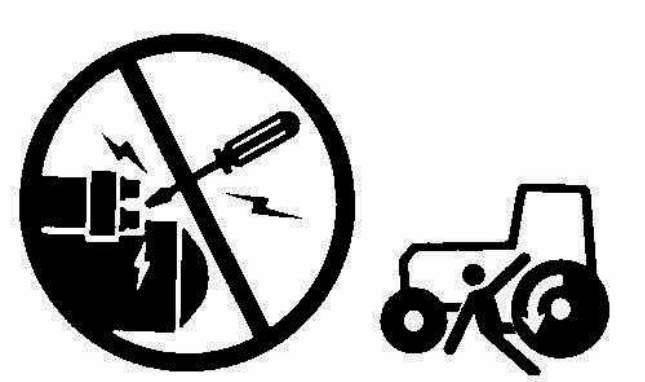
LX,CRA05 002886-19-19920409

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: Machinery Runaway

DX,BYPAS1-19-19980929

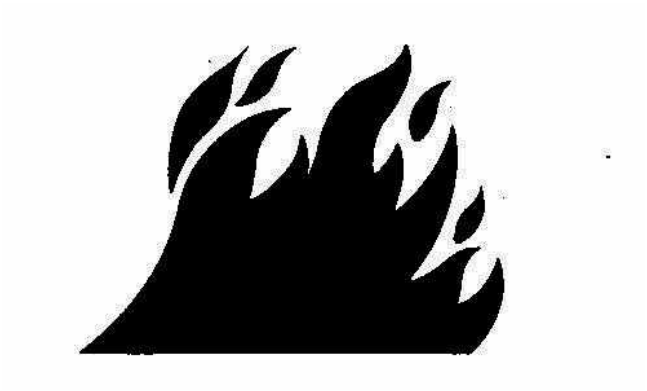
Handle Fluids Safely—Avoid Fires

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

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

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

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



TS227-UN: Avoid Fires

DX,FLAME-19-19980929

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: Battery Explosions

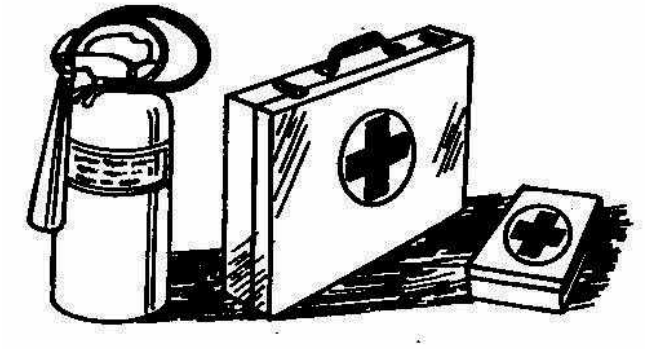
DX,SPARKS-19-19930303

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.



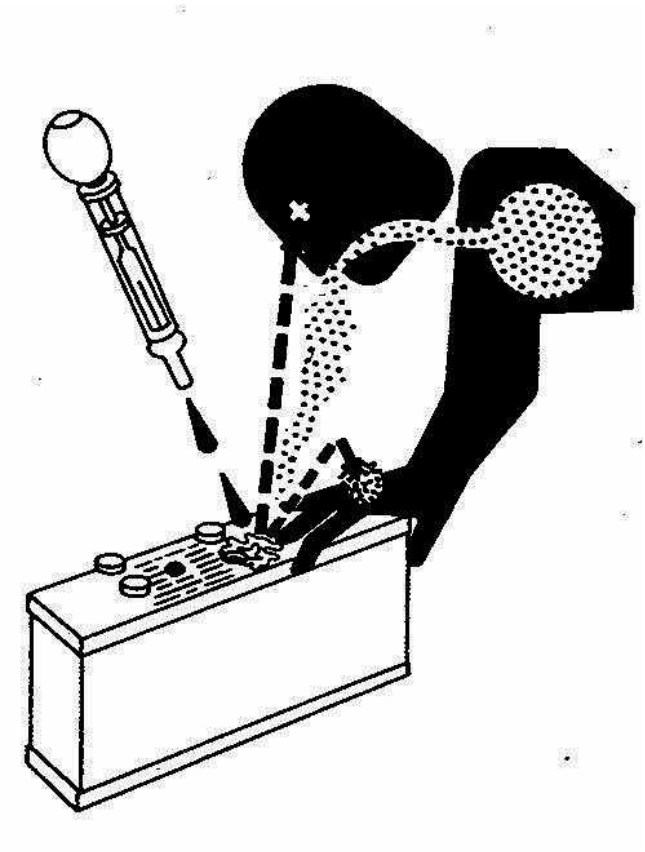
TS291-UN: First Aid Kit

DX,FIRE2-19-19930303

Prevent Acid Burns

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

Avoid the hazard by:



TS203-UN: Acid Burns

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

If you spill acid on yourself:

1. Flush your skin with water.
2. Apply baking soda or lime to help neutralize the acid.
3. Flush your eyes with water for 15—30 minutes. Get medical attention immediately.

If acid is swallowed:

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

DX,POISON-19-19930421

Avoid High-Pressure Fluids

Escaping fluid under pressure can penetrate the skin causing serious injury.

Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.

Search for leaks with a piece of cardboard. Protect hands and body from high-pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available in English from Deere & Company Medical Department in Moline, Illinois, U.S.A., by calling 1-800-822-8262 or +1 309-748-5636.

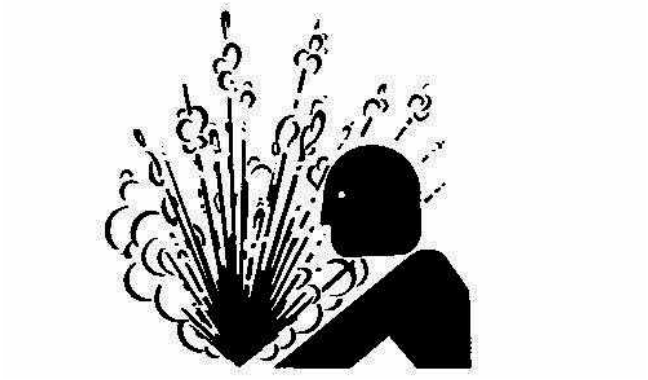
X9811-UN: High-Pressure Fluids

DX,FLUID-19-20090820

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.



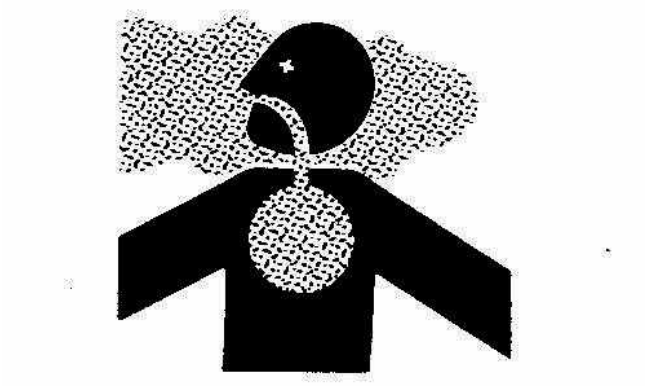
TS281-UN: Cooling System

DX,RCAP-19-19900604

Remove Paint Before Welding or Heating

Avoid potentially toxic fumes and dust.
Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch.
Remove paint before heating:

- Remove paint a minimum of 100 mm (4 in.) from area to be affected by heating. If paint cannot be removed, wear an approved respirator before heating or welding.
- If you sand or grind paint, avoid breathing the dust. Wear an approved respirator.
- If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.



TS220-UN: Toxic Fumes

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-19-20020724

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.

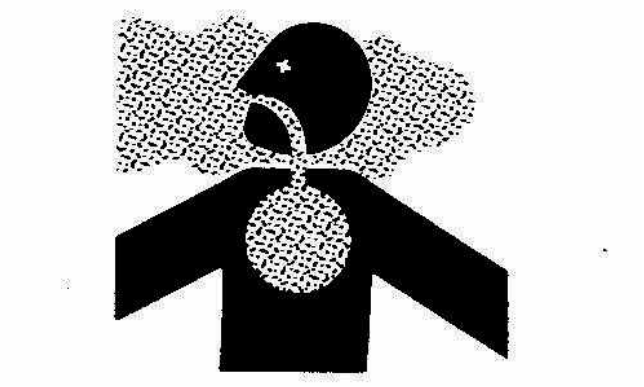
TS953-UN: Flammable Spray

DX,TORCH-19-20041210

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: Engine exhaust fumes

DX,AIR-19-19990217

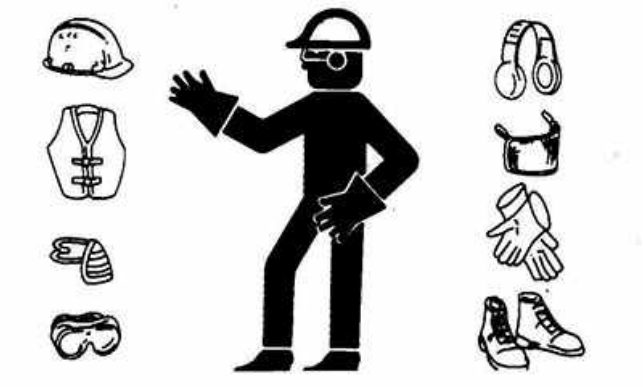
Wear Protective Clothing

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

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

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

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



TS206-UN: Protective Clothing

DX,WEAR-19-19900910

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.

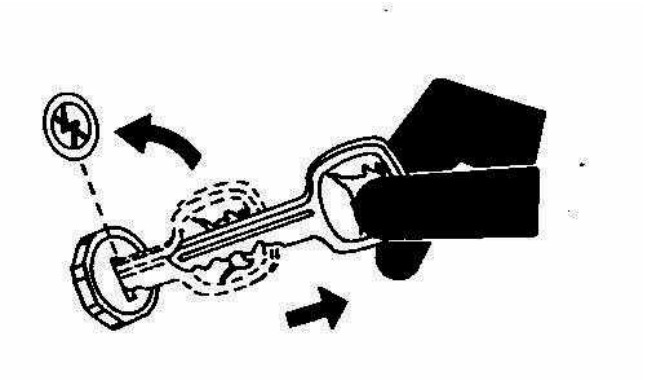
TS218-UN: Keep Area Clean

DX,SERV-19-19990217

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.



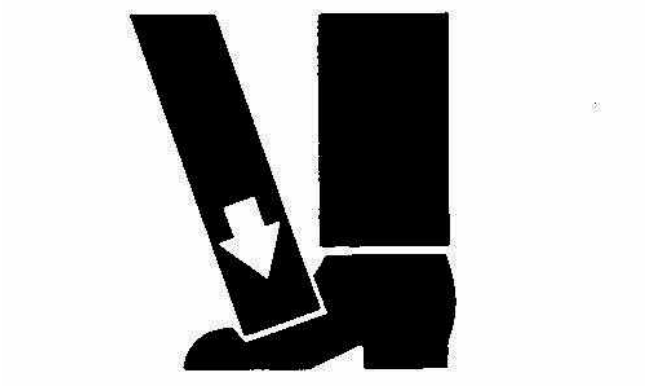
TS230-UN: Remove the Key

DX,PARK-19-19900604

Use Proper Lifting Equipment

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

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



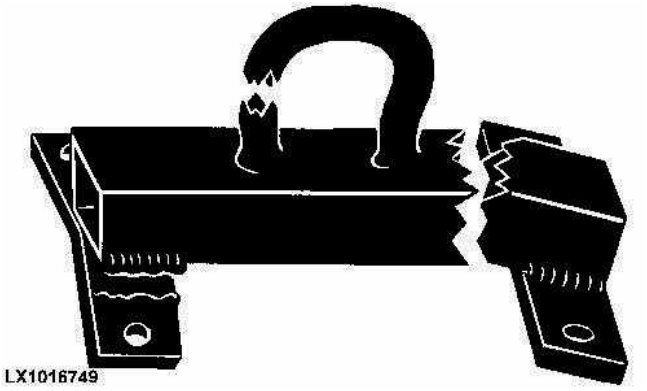
TS226-UN: Proper Lifting Equipment

DX,LIFT-19-19900604

Construct Dealer-Made Tools Safely

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

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



LX1016749-UN: Construct Dealer-Made Tools Safely

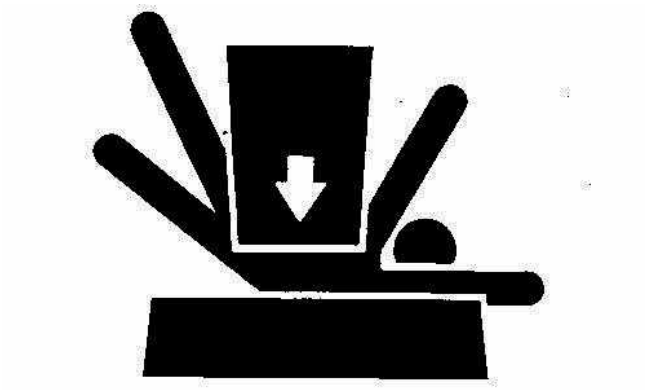
DX,SAFE,TOOLS-19-19971010

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.



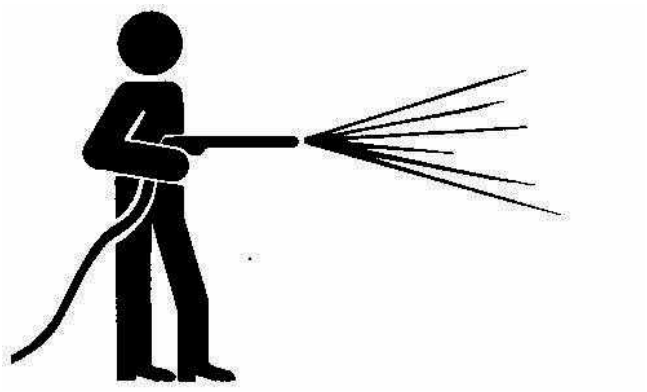
TS229-UN: Support Properly

DX,LOWER-19-20000224

Work in Clean Area

Before starting a job:

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



T6642EJ-UN: Clean Work Area

DX,CLEAN-19-19900604

Illuminate Work Area Safely

Illuminate your work area adequately but safely. Use a portable safety light for working inside or under the machine. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.

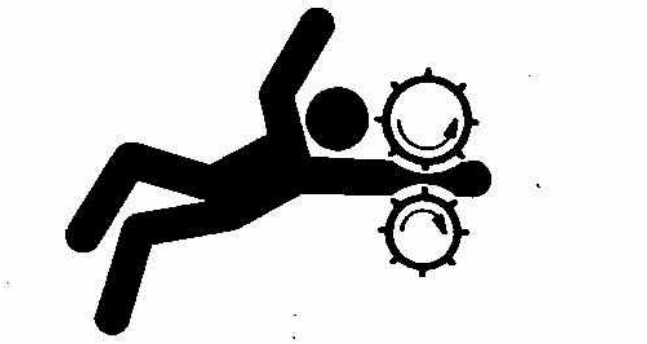
TS223-UN: Work Area Safely

DX,LIGHT-19-19900604

Service Machines Safely

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

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



TS228-UN: Moving Parts

DX,LOOSE-19-19900604

Use Proper Tools

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

Use power tools only to loosen threaded parts and fasteners.

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

Use only service parts meeting John Deere specifications.

TS779-UN: Proper Tools

DX,REPAIR-19-19990217

Service Tires Safely

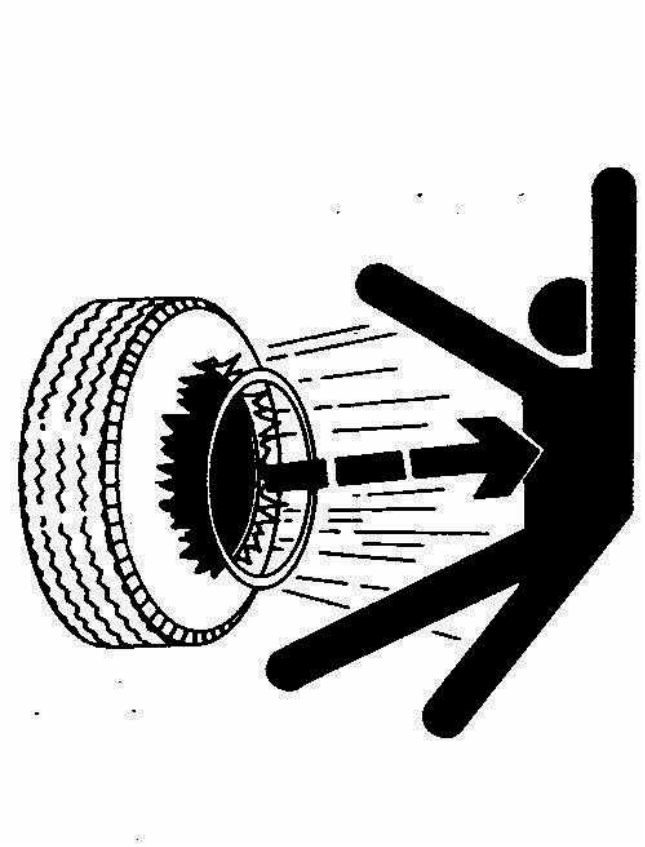
Explosive separation of a tire and rim parts can cause serious injury or death.

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

Always maintain the correct tire pressure. Do not inflate the tires above the recommended pressure. Never weld or heat a wheel and tire assembly. The heat can cause an increase in air pressure resulting in a tire explosion. Welding can structurally weaken or deform the wheel.

When inflating tires, use a clip-on chuck and extension hose long enough to allow you to stand to one side and NOT in front of or over the tire assembly. Use a safety cage if available.

Check wheels for low pressure, cuts, bubbles, damaged rims or missing lug bolts and nuts.

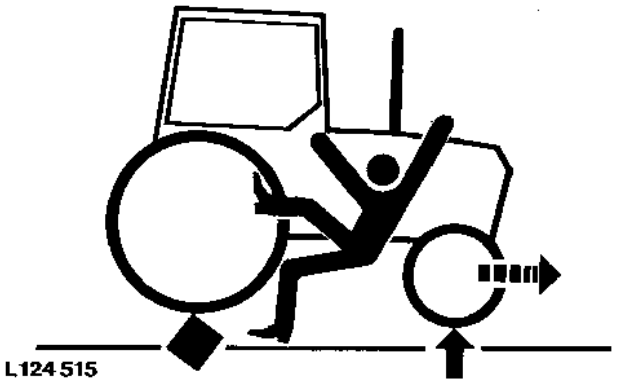


TS211-UN: Explosive Tire and Rim Parts

DX,RIM-19-19900824

Service Front-Wheel Drive Tractor Safely

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



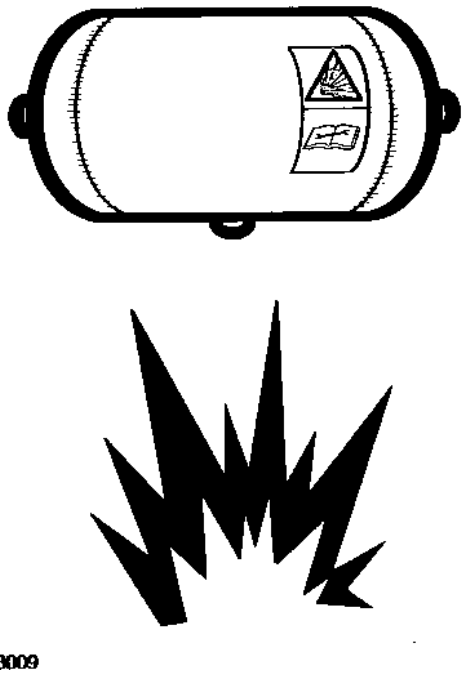
L124515-UN: Support Front and Rear Wheels

LX,MFWD2-19-19910501

Safety Information - Air Brake System

Compressed air tank is pressurized!

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

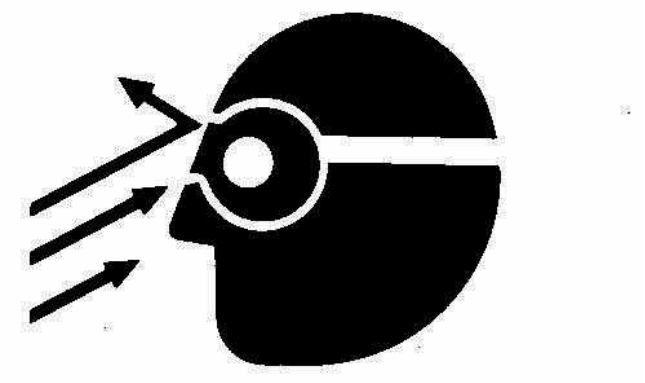


LX008009-UN: Compressed air tank

LX,AIRBRAKES-19-19940303

Avoid Eye Contact With Radar

Radar ground speed sensor emits a very low intensity microwave signal. It will not cause any ill effects during normal use. Although intensity is low, DO NOT look directly into face of sensor while in operation, to avoid any possible eye damage.



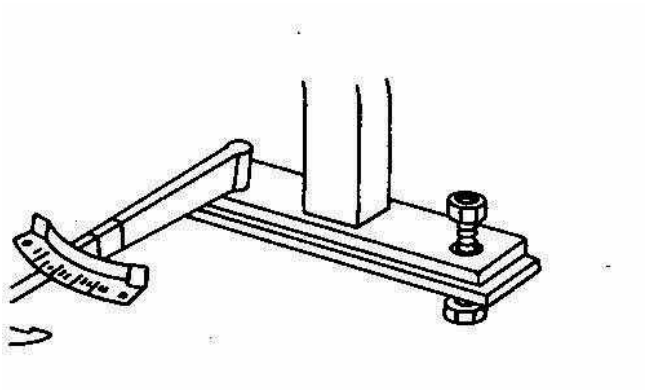
TS266-UN: Avoid Eye Contact With Radar

RX,SAFTY,RADAR1-19-19920921

Keep ROPS Installed Properly

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

The protection offered by ROPS will be impaired if ROPS is subjected to structural damage, is involved in an overturn incident, or is in any way altered by welding, bending, drilling, or cutting. A damaged ROPS should be replaced, not reused.

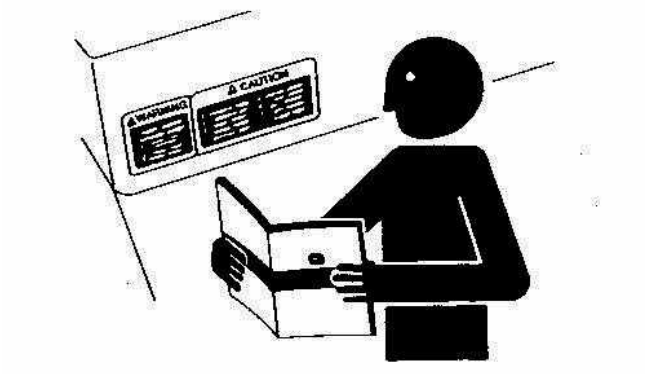


TS212-UN: Roll-Over Protective Structure

DX,ROPS3-19-19930303

Replace Safety Signs

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



TS201-UN: Safety Signs

DX,SIGNS1-19-19900604

Dispose of Waste Properly

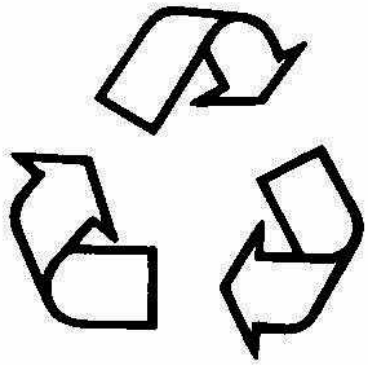
Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with John Deere equipment include such items as oil, fuel, coolant, brake fluid, filters, and batteries.

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: Recycle Waste

DX,DRAIN-19-19930303

Live With Safety

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

TS231-19: Safety Systems

DX,LIVE-19-19920925

Safety Measures on Electronic Control Units

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

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

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

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

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

LX25599,0000243-19-20070215

Section 10 - General Information

Contents

Engine Specifications

Engine model	4045HL284
Type	Diesel engine with turbocharger and intercooler
Number of cylinders	4
Valves per cylinder	2
Bore	106.5 mm (4.19 in.)
Stroke	127.0 mm (5.00 in.)
Displacement	4.5 L (276 cu.in.)
Firing order	1-3-4-2
Compression ratio	17,0 : 1
Valve clearance (engine hot or cold)	
- Intake valves.....	0.36 mm (0.014 in.)
- Exhaust valves.....	0.46 mm (0.018 in.)
Thermostat	
-Opening temperature.....	82°C (180°F)
-Operating temperature (fully open).....	94°C (202°F)
Slow idle	
-Speed.....	845 to 855 rpm
Fast idle	
-Speed.....	2455 to 2465 rpm
Rated engine speed	2300 rpm
Working speed range	1500 to 2300 rpm
Engine power according to 97/68/EC at rated engine speed with viscous fan	
- 5080R / 5080RN tractors.....	59 kW (80 hp)
- 5090R / 5090RN tractors.....	66 kW (90 hp)
- 5100R / 5100RN tractors.....	74 kW (100 hp)
Max. torque	
- 5080R / 5080RN tractors at 1600 rpm.....	334 N˙m (246 lb-ft)
- 5090R / 5090RN tractors at 1600 rpm.....	376 N˙m (277 lb-ft)
- 5100R / 5100RN tractors at 1600 rpm.....	416 N˙m (307 lb-ft)
Engine speed for PTO operation	
- 540 rpm rear PTO.....	2097 rpm
- 540E rpm rear PTO.....	1697 rpm
- 1000 rpm rear PTO.....	2074 rpm
- 540 rpm rear PTO (reversible or shiftable).....	2097 rpm
- 540E rpm rear PTO (reversible or shiftable).....	1701 rpm
- 1000 rpm front PTO.....	2180 rpm

OULXA64,0001E33-19-20080912

Cooling System

Type	pressurized system with two cooling circuits (high- and low-temperature circuit) with centrifugal pump and expansion tank
Temperature control	thermostat and viscous fan drive
Pressure valve in expansion tank cap opens from	
- Pressure at which high-pressure valve opens.....	70 to 90 kPa (0.70 to 0.90 bar; 10 to 13 psi)
- Max. pressure at which low-pressure valve opens.....	10 kPa (100 mbar; 1.5 psi)
Cooling system test pressure	50 to 60 kPa (0.5 to 0.6 bar; 7 to 8.7 psi)

OULXA64,0001E3A-19-20080807

Electronic Fuel System with Common Rail (Denso)

Type	Common Rail
Injection pressure	up to approx. 115 MPa (1150 bar; 16679 psi)

OULXA64,0001E34-19-20080818

Air Intake System

Air cleaner	dry-type air cleaner, self-cleaned by pressure from the fan blade; with safety element
Charge pressure of air intake system with turbocharger	
-Engines with a power rating of 59 kW (80 hp).....	64 kPa (640 mbar; 9.3 psi)
-Engines with a power rating of 66 kW (90 hp).....	76 kPa (760 mbar; 11 psi)
-Engines with a power rating of 74 kW (100 hp).....	90 kPa (90 mbar; 13.1 psi)

OULXA64,0001E35-19-20080813

Electrical System

Battery	12 V, 110 Ah or 12 V, 154 Ah
Alternator with overvoltage protection	14 V, 115 A or 12 V, 150 A
Starting motor	12 V, 3.0 kW (4.0 hp)
Ground connection	negative

OULXA64,0001E36-19-20080912

Hydrostatic Steering

Type	fully hydraulic

OULXA64,0000A9C-19-20040331

Clutch

Type	hydraulically controlled wet disk clutch
Control	solenoid valve, electro-hydraulic
Operation	mechanical / hydraulic with pre-tensioned Belleville springs

OULXA64,0001E37-19-20080807

Transmission

Type	planetary gears, hydraulically actuated
Number of ranges	4 ranges
Range shifting	mechanically, synchronized
Number of gears	16 forward gears, 16 reverse gears
Gear shifting	electrical/hydraulic, under load, without operating the clutch
Actuation of reverse drive lever	electrical/hydraulic, under load, without operating the clutch
Reduction gear	provides a further 16 forward gears and 16 reverse gears
Clutch	electro-hydraulic

OULXA64,0001E39-19-20080811

Reduction Gear

Type ..... non-synchronized reduction gear
Reduction of ground speed in ranges A, B, C and D as well as in the reverse range ..... approx. 55 %
Shifting the two speed ranges ..... mechanically, non-synchronized

OULXA64,0000A9F-19-20080812

Rear PTO

Type ..... independent, engaging/disengaging under load
Engine speed for PTO operation
- 540 rpm rear PTO..... 2097 rpm
- 540E rpm rear PTO..... 1697 rpm
- 1000 rpm rear PTO..... 2074 rpm
- 540 rpm rear PTO (reversible or shiftable)..... 2097 rpm
- 540E rpm rear PTO (reversible or shiftable)..... 1701 rpm

OULXA64,0001E3B-19-20080813

Front PTO

Type ..... independent, engaging/disengaging under load
Engine speed for 1000 rpm front PTO (viewed in direction of travel)
- clockwise rotating (6 splines)..... 2180 rpm

OULXA64,0001E3C-19-20080807

Differential

Type ..... helical bevel gear drive

OULXA64,0000AA2-19-20040331

Differential Lock

Operation ..... electrical/hydraulic, selectable under load via selector button
Disengaging ..... electrical/hydraulic, when brake pedal is actuated (including action of brake on one side only)

OULXA64,0000AA3-19-20040331

Final Drives

Type ..... planetary reduction gear

OULXA64,0000AA4-19-20040331

Front-Wheel Drive

Type ..... operated under load, hydraulically controlled drive with wet disk clutch
Control ..... solenoid valve, electrical-hydraulic
Engagement ..... with pre-tensioned Belleville springs
Disengagement ..... hydraulic

OULXA64,0000AA7-19-20040331

Hydraulic Brakes

Type ..... self-adjusting, hydraulically operated wet disk brakes, individually acting in field operation

OULXA64,0000AA8-19-20040331

Park Brake

Type ..... mechanical disk brake acting on differential

OULXA64,0000AA9-19-20091110

Parking Lock

Type ..... mechanically operated locking pawl, acting on front wheel drive gear

OULXA64,0000AAA-19-20040331

Hydraulic System

Type	open-center system with load sensing control and fixed-displacement pump
Pump type	Gear pump
Pump displacement	23 cm^3(1.4 in^3) or 28 cm^3(1.7 in^3)
System pressure:	
min. (standby).....	1400 kPa (14 bar; 203 psi)
max.....	20600 kPa (206 bar; 2988 psi)
Steering system	hydrostatic

OULXA64,0001E4C-19-20080912

Rockshaft

Type	three-point hitch with two lift cylinders, activated via stepper motor and valve
Control types	load, depth, load-and depth control, float position
Control	electronic/hydraulic control of draft links
- actual value.....	draft-sensing pins or position sensor
- desired value.....	operation unit
- co-ordinator.....	electronic control unit

OULXA64,0000AAC-19-20040331

Front Hitch

Front hitch ..... controlled via selective control valve

OULXA64,0000AAD-19-20040331

Ground Travel Speeds

Ground travel speeds ..... see Operator's Manual

OULXA64,0000AAE-19-20040331

Front and Rear Wheels

Tires, wheel treads, tire pressure and ballast ..... see Operator's Manual

OULXA64,0000AAF-19-20040331

Dimensions and Weights

Dimensions and weights ..... see Operator's Manual

OULXA64,0000AB1-19-20040331

Capacities

Fuel tank	
- 5RN series.....	114 liters (30.1 U.S.gal.)
- 5R series.....	130 liters (34.3 U.S.gal.) or 150 liters (39.6 U.S.gal.)
Engine cooling system	16 liters (4.2 U.S.gal.)
Engine crankcase with oil filter	13 liters (3.4 US.gal.)
Transmission/hydraulic system with filter	
- PowrQuad Plus transmission.....	55 liters (14.5 U.S.gal.)
- AutoQuad Plus transmission.....	55 liters (14.5 U.S.gal.)
- extra with reduction gear.....	1 liter (0.3 U.S.gal.)
Front-wheel drive axle	
- axle housing.....	4.5 liters (1.2 U.S.gal.)
- Final drive housing.....	0.7 L (0.18 U.S.gal.)
Front PTO	3.1 liters (0.82 U.S.gal.)
Air-conditioning system	
- R134a refrigerant.....	1600 g (3.53 lb)
- Oil volume (PAG oil).....	280 ml (9.5 fl. oz.)

OULXA64,0001E3D-19-20080912

Handling and Storing Diesel Fuel

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,FUEL4-19-20031219

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.

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

Cetane number of 40 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) below the expected low temperature OR **Cloud Point** at least 5°C (9°F) below the expected low temperature.

Fuel lubricity should pass a minimum of 3100 gram load level as measured by the BOCLE scuffing test.

Sulfur content:

- Sulfur content should not exceed 0.5%. Sulfur content less than 0.05% is preferred.
- If diesel fuel with sulfur content greater than 0.5% sulfur content is used, reduce the service interval for engine oil and filter by 50%.
- DO NOT use diesel fuel with sulfur content greater than 1.0%

Bio-diesel fuels to DIN 51606 or an equivalent standard (RME) etc. should be used only after consultation with your John Deere dealer.

NOTE:

If the injection pump has been adapted for bio-diesel fuel (RME), the tractor can be used in temperatures as low as -10°C. If the tractor is operated frequently at temperatures of around -10°C or lower and the fuel used is either bio-diesel or normal diesel, the engine oil level should be checked every day before the engine is started. If the oil level is 10 mm higher than the max. level, a change of oil is required. Oil change intervals should be reduced when operating in low temperatures under the conditions described above.

Do NOT mix used engine oil or any other type of lubricant with diesel fuel.

LX,FUEL1-19-20001201

Biodiesel 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)
- 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,FUEL7-19-20071004

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,FUEL5-19-20071005

Diesel Engine Break-In Oil

New engines are filled at the factory with either John Deere Break-In™ or Break-In™ Plus Engine Oil. During the break-in period, add John Deere Break-In™ or Break-In™ Plus Engine Oil, respectively, as needed to maintain the specified oil level.
Operate the engine under various conditions, particularly heavy loads with minimal idling, to help seat engine components properly.
Change the oil and filter at 100 hours maximum for Break-In™ Oil or 500 hours maximum for Break-In™ Plus Oil during the initial operation of a new or rebuilt engine.
After engine overhaul, fill the engine with either John Deere Break-In™ or Break-In™ Plus Engine Oil.
If John Deere Break-In™ or Break-In™ Plus Engine Oil is not available, use a 10W-30 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

IMPORTANT:
Do not use Plus-50™ II, Plus-50 or engine oils meeting any of the following for the initial break-in of a new or rebuilt engine:

API CJ-4
API CI-4 PLUS
API CI-4
API CH-4
API CG-4
API CF-4
API CF-2
API CF
ACEA E9
ACEA E7
ACEA E6
ACEA E5
ACEA E4
ACEA E3

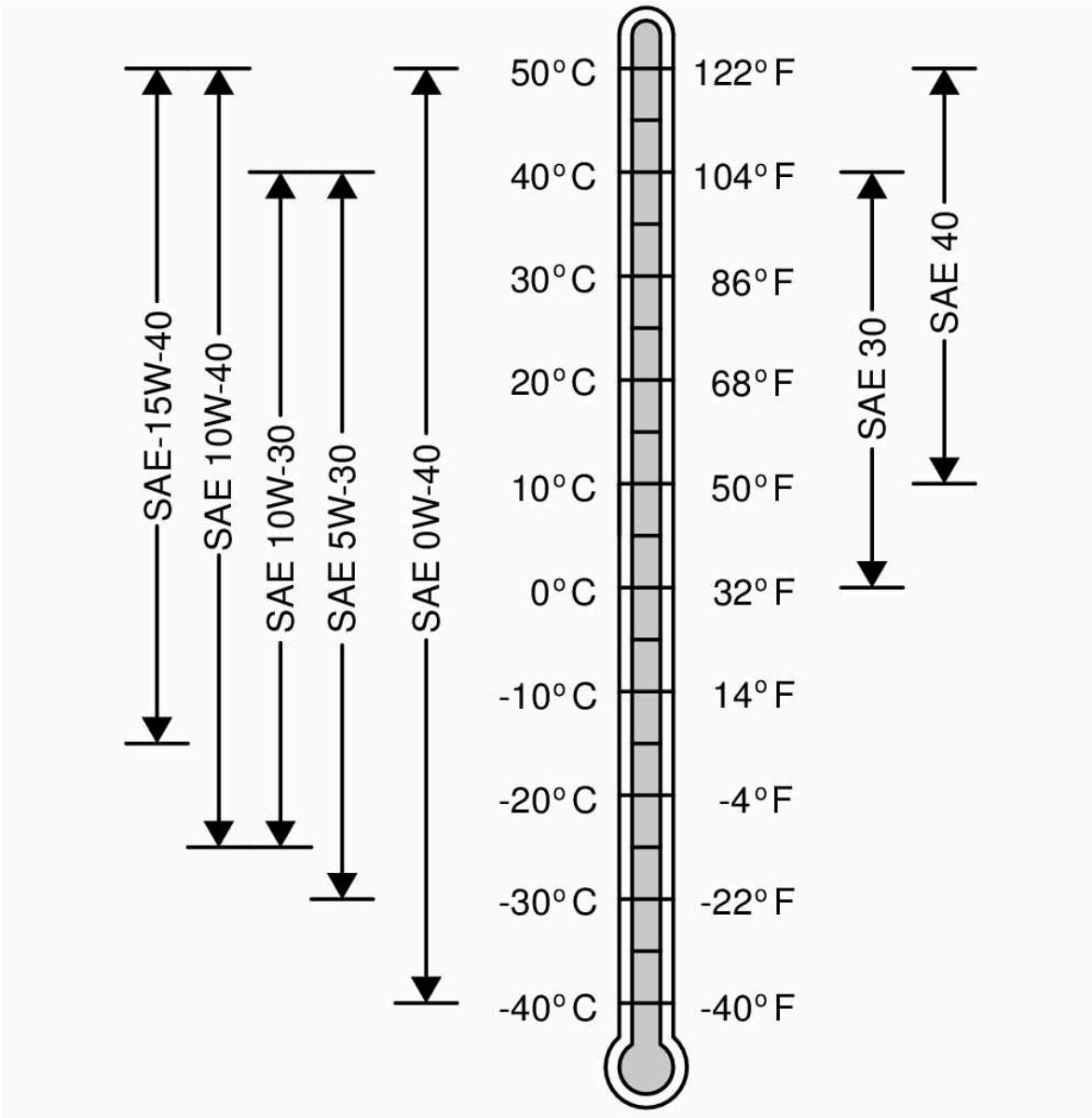
These oils will not allow the engine to break in properly.

John Deere Break-In™ Plus Engine Oil can be used for all John Deere diesel engines at all emission certification levels.
After the break-in period, use John Deere Plus-50™ II, John Deere Plus-50, or other diesel engine oil as recommended in this manual.

Break-In is a trademark of Deere & Company.
Plus-50 is a trademark of Deere & Company.

DX,ENOIL4-19-20090803

Diesel Engine Oil



TS1687-UN: Oil Viscosities for Air Temperature Ranges

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

John Deere Plus-50™ II oil is preferred.

John Deere Plus-50™ is also recommended.
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 E9
- ACEA Oil Sequence E7
- ACEA Oil Sequence E6
- ACEA Oil Sequence E5
- ACEA Oil Sequence E4
- 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 mg/kg) is used, reduce the service interval by 50%.

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

Plus-50 is a trademark of Deere & Company
Torq-Gard Supreme is a trademark of Deere & Company

DX,ENOIL-19-20090803

Transmission and Hydraulic Oil

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

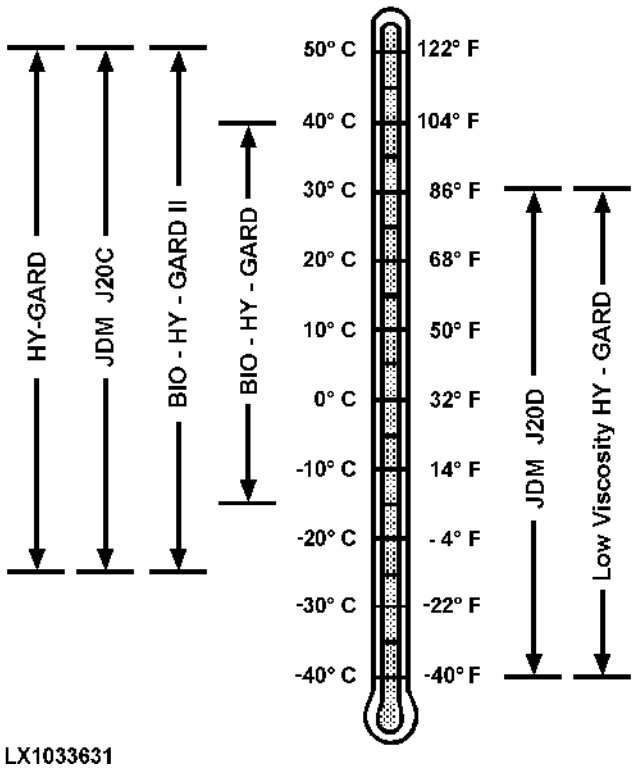
The following oils are preferred:

- 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 II™ [BIO-HY-GARD II meets or exceeds the minimum biodegradability of 80 % within 21 days according to CEC L-33-A-93 test method. BIO-HY-GARD meets or exceeds the minimum biodegradability of 80 % within 21 days according to CEC L-33-T-82 test method. These oils should not be mixed with mineral oils because this reduces the biodegradability and makes proper oil recycling impossible.] or BIO-HY-GARD™ [BIO-HY-GARD II meets or exceeds the minimum biodegradability of 80 % within 21 days according to CEC L-33-A-93 test method. BIO-HY-GARD meets or exceeds the minimum biodegradability of 80 % within 21 days according to CEC L-33-T-82 test method. These oils should not be mixed with mineral oils because this reduces the biodegradability and makes proper oil recycling impossible.] when a biodegradable fluid is required.



LX1033631-UN: Transmission and hydraulic oil

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

LX,ANTI2-19-20040430

Front-Wheel Drive Axle Oil

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

The following oil is recommended:

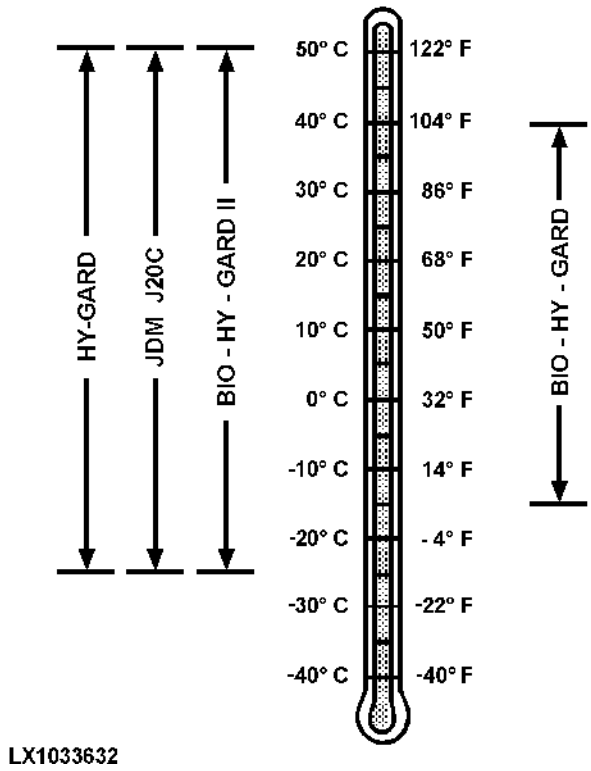
John Deere HY-GARD™

Other oils may be used if they meet the following:

John Deere Standard JDM J20C

Use one of the following oils when a biodegradable fluid is required:

John Deere BIO-HY-GARD II™ [BIO-HY-GARD II meets or exceeds the minimum biodegradability of 80 % within 21 days according to CEC L-33-A-93 test method. BIO-HY-GARD meets or exceeds the minimum biodegradability of 80 % within 21 days according to CEC L-33-T-82 test method. These oils should not be mixed with mineral oils because this reduces the biodegradability and makes proper oil recycling impossible.] or BIO-HY-GARD™ [BIO-HY-GARD II meets or exceeds the minimum biodegradability of 80 % within 21 days according to CEC L-33-A-93 test method. BIO-HY-GARD meets or exceeds the minimum biodegradability of 80 % within 21 days according to CEC L-33-T-82 test method. These oils should not be mixed with mineral oils because this reduces the biodegradability and makes proper oil recycling impossible.]



LX1033632-UN: Front-wheel drive axle oil

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

LX,OILFA2-19-20040430

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).

John Deere COOL-GARD is preferred for service.

If John Deere COOL-GARD is not available, use a low silicate ethylene glycol or propylene glycol base coolant concentrate in a 50% mixture of concentrate with quality water.

The coolant concentrate shall be of a quality that provides cavitation protection to cast iron and aluminum parts in the cooling system. John Deere COOL-GARD meets this requirement.

Freeze protection

A 50% mixture of ethylene glycol engine coolant in water provides freeze protection to -37°C (-34°F).

A 50% mixture of propylene glycol engine coolant in water provides freeze protection to -33°C (-27°F).

If protection at lower temperatures is required, consult your John Deere dealer for recommendations.

Water quality

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,COOL8-19-20011116

Supplemental Coolant Additives

Some coolant additives will gradually deplete during engine operation. For John Deere COOL-GARD™ Premix, COOL-GARD Concentrate, or John Deere COOL-GARD PG Premix, replenish coolant additives between drain intervals by adding a supplemental coolant additive as determined necessary by coolant testing.

John Deere LIQUID COOLANT CONDITIONER is recommended as a supplemental coolant additive for John Deere COOL-GARD Premix, COOL-GARD Concentrate, and COOL-GARD PG Premix.

John Deere LIQUID COOLANT CONDITIONER is not designed for use with COOL-GARD II Premix or COOL-GARD II Concentrate.

IMPORTANT:
Do not add a supplemental coolant additive when the cooling system is drained and refilled with any of the following:

- **John Deere COOL-GARD II**
- **John Deere COOL-GARD**
- **John Deere COOL-GARD PG**

If other coolants are used, consult the coolant supplier and follow the manufacturer's recommendation for use of supplemental coolant additives.

The use of non-recommended supplemental coolant additives may result in additive drop-out and gelation of the coolant.

Add the manufacturer's recommended concentration of supplemental coolant additive. DO NOT add more than the recommended amount.

COOL-GARD is a trademark of Deere & Company

DX,COOL4-19-20081103

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.

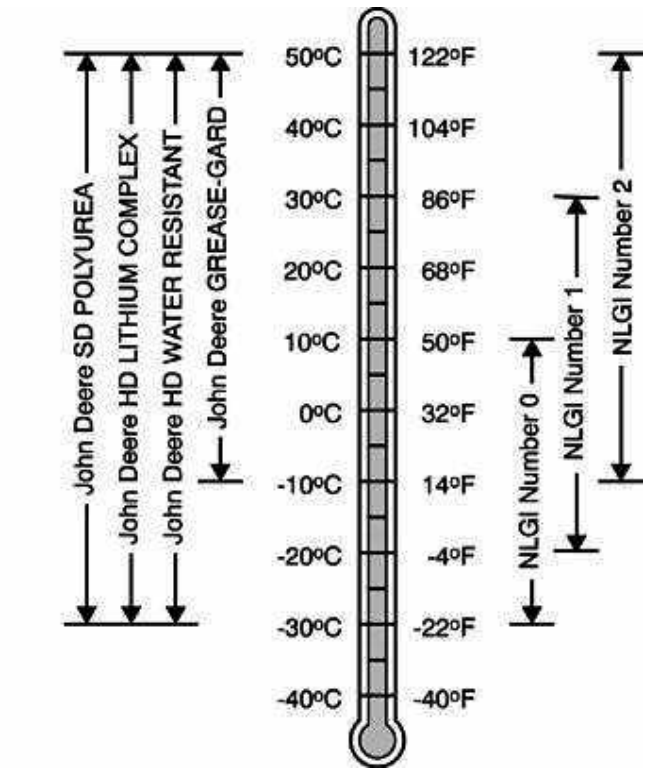
The following greases are also recommended

- 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.



TS1673-UN: Grease

GREASE-GARD is a trademark of Deere & Company

DX,GREA1-19-20031107

Oil Filters

Filtration of oils is critical to proper operation and lubrication.
Always change filters regularly as specified in this manual.
Use filters meeting John Deere performance specifications.

DX,FILT-19-19960318

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-19-19960318

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-19-19960318

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.

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.

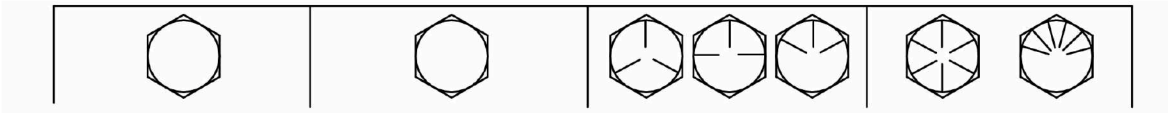
Re-refined base stock products may be used if the finished lubricant meets the performance requirements.

Avoid mixing different brands or types of oils. Oil manufacturers blend base stock and additives to create their oils and to meet certain specifications and performance requirements. Mixing different oils can interfere with proper functioning of these formulations and degrade lubricant performance.

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

DX,ALTER-19-20091111

Unified Inch Bolt and Screw Torque Values



TS1671-UN: Unified Inch Bolt and Screw

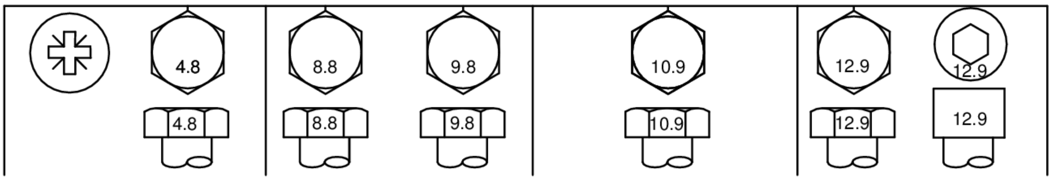
Bolt or Screw	SAE Grade 1				SAE Grade 2 [Grade 2 applies for hex cap screws (not hex bolts) up to 6. in (152 mm) long. Grade 1 applies for hex cap screws over 6 in. (152 mm) long, and for all other types of bolts and screws of any length.]				SAE Grade 5, 5.1 or 5.2				SAE Grade 8 or 8.2			
	Lubricated ["Lubricated" means coated with a lubricant such as engine oil, fasteners with phosphate and oil coatings, or 7/8 in. and larger fasteners with JDM F13C zinc flake coating.]		Dry ["Dry" means plain or zinc plated without any lubrication, or 1/4 to 3/4 in. fasteners with JDM F13B zinc flake coating.]		Lubricated ["Lubricated" means coated with a lubricant such as engine oil, fasteners with phosphate and oil coatings, or 7/8 in. and larger fasteners with JDM F13C zinc flake coating.]		Dry ["Dry" means plain or zinc plated without any lubrication, or 1/4 to 3/4 in. fasteners with JDM F13B zinc flake coating.]		Lubricated ["Lubricated" means coated with a lubricant such as engine oil, fasteners with phosphate and oil coatings, or 7/8 in. and larger fasteners with JDM F13C zinc flake coating.]		Dry ["Dry" means plain or zinc plated without any lubrication, or 1/4 to 3/4 in. fasteners with JDM F13B zinc flake coating.]		Lubricated ["Lubricated" means coated with a lubricant such as engine oil, fasteners with phosphate and oil coatings, or 7/8 in. and larger fasteners with JDM F13C zinc flake coating.]		Dry ["Dry" means plain or zinc plated without any lubrication, or 1/4 to 3/4 in. fasteners with JDM F13B zinc flake coating.]	
Size	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.
1/4	3.7	33	4.7	42	6	53	7.5	66	9.5	84	12	106	13.5	120	17	150
													N·m	lb.-ft.	N·m	lb.-ft.
5/16	7.7	68	9.8	86	12	106	15.5	137	19.5	172	25	221	28	20.5	35	26
									N·m	lb.-ft.	N·m	lb.-ft.				
3/8	13.5	120	17.5	155	22	194	27	240	35	26	44	32.5	49	36	63	46
			N·m	lb.-ft.	N·m	lb.-ft.	N·m	lb.-ft.								
7/16	22	194	28	20.5	35	26	44	32.5	56	41	70	52	80	59	100	74
	N·m	lb.-ft.														
1/2	34	25	42	31	53	39	67	49	85	63	110	80	120	88	155	115
9/16	48	35.5	60	45	76	56	95	70	125	92	155	115	175	130	220	165
5/8	67	49	85	63	105	77	135	100	170	125	215	160	240	175	305	225
3/4	120	88	150	110	190	140	240	175	300	220	380	280	425	315	540	400
7/8	190	140	240	175	190	140	240	175	490	360	615	455	690	510	870	640
1	285	210	360	265	285	210	360	265	730	540	920	680	1030	760	1300	960
1-1/8	400	300	510	375	400	300	510	375	910	670	1150	850	1450	1075	1850	1350
1-1/4	570	420	725	535	570	420	725	535	1280	945	1630	1200	2050	1500	2600	1920
1-3/8	750	550	950	700	750	550	950	700	1700	1250	2140	1580	2700	2000	3400	2500
1-1/2	990	730	1250	930	990	730	1250	930	2250	1650	2850	2100	3600	2650	4550	3350

Torque values listed are for general use only, based on the strength of the bolt or screw. DO NOT use these values if a different torque value or tightening procedure is given for a specific application. For plastic insert or crimped steel type lock nuts, for stainless steel fasteners, or for nuts on U-bolts, see the tightening instructions for the specific application. Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical grade.

Replace fasteners with the same or higher grade. If higher grade fasteners are used, tighten these to the strength of the original. Make sure fastener threads are clean and that you properly start thread engagement. When possible, lubricate plain or zinc plated fasteners other than lock nuts, wheel bolts or wheel nuts, unless different instructions are given for the specific application.

DX,TORQ1-19-20091208

Metric Bolt and Screw Torque Values



TS1670-UN: Metric Bolt and Screw

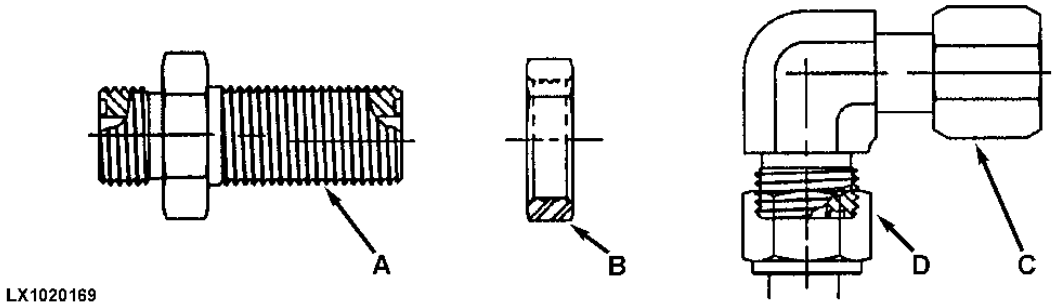
Bolt or Screw	Class 4.8				Class 8.8 or 9.8				Class 10.9				Class 12.9			
	Lubricated ["Lubricated" means coated with a lubricant such as engine oil, fasteners with phosphate and oil coatings, or M20 and larger fasteners with JDM F13C zinc flake coating.]		Dry ["Dry" means plain or zinc plated without any lubrication, or M6 to M18 fasteners with JDM F13B zinc flake coating.]		Lubricated ["Lubricated" means coated with a lubricant such as engine oil, fasteners with phosphate and oil coatings, or M20 and larger fasteners with JDM F13C zinc flake coating.]		Dry ["Dry" means plain or zinc plated without any lubrication, or M6 to M18 fasteners with JDM F13B zinc flake coating.]		Lubricated ["Lubricated" means coated with a lubricant such as engine oil, fasteners with phosphate and oil coatings, or M20 and larger fasteners with JDM F13C zinc flake coating.]		Dry ["Dry" means plain or zinc plated without any lubrication, or M6 to M18 fasteners with JDM F13B zinc flake coating.]		Lubricated ["Lubricated" means coated with a lubricant such as engine oil, fasteners with phosphate and oil coatings, or M20 and larger fasteners with JDM F13C zinc flake coating.]		Dry ["Dry" means plain or zinc plated without any lubrication, or M6 to M18 fasteners with JDM F13B zinc flake coating.]	
Size	**N·m**	**lb.-in.**	**N·m**	**lb.-in.**	**N·m**	**lb.-in.**	**N·m**	**lb.-in.**	**N·m**	**lb.-in.**	**N·m**	**lb.-in.**	**N·m**	**lb.-in.**	**N·m**	**lb.-in.**
M6	4.7	42	6	53	8.9	79	11.3	100	13	115	16.5	146	15.5	137	19.5	172
									N·m	**lb.-ft.**	**N·m**	**lb.-ft.**	**N·m**	**lb.-ft.**	**N·m**	**lb.-ft.**
M8	11.5	102	14.5	128	22	194	27.5	243	32	23.5	40	29.5	37	27.5	47	35
			N·m	**lb.-ft.**	**N·m**	**lb.-ft.**	**N·m**	**lb.-ft.**								
M10	23	204	29	21	43	32	55	40	63	46	80	59	75	55	95	70
	N·m	**lb.-ft.**														
M12	40	29.5	50	37	75	55	95	70	110	80	140	105	130	95	165	120
M14	63	46	80	59	120	88	150	110	175	130	220	165	205	150	260	190
M16	100	74	125	92	190	140	240	175	275	200	350	255	320	235	400	300
M18	135	100	170	125	265	195	330	245	375	275	475	350	440	325	560	410
M20	190	140	245	180	375	275	475	350	530	390	675	500	625	460	790	580
M22	265	195	330	245	510	375	650	480	725	535	920	680	850	625	1080	800
M24	330	245	425	315	650	480	820	600	920	680	1150	850	1080	800	1350	1000
M27	490	360	625	460	950	700	1200	885	1350	1000	1700	1250	1580	1160	2000	1475
M30	660	490	850	625	1290	950	1630	1200	1850	1350	2300	1700	2140	1580	2700	2000
M33	900	665	1150	850	1750	1300	2200	1625	2500	1850	3150	2325	2900	2150	3700	2730
M36	1150	850	1450	1075	2250	1650	2850	2100	3200	2350	4050	3000	3750	2770	4750	3500

Torque values listed are for general use only, based on the strength of the bolt or screw. DO NOT use these values if a different torque value or tightening procedure is given for a specific application. For stainless steel fasteners or for nuts on U-bolts, see the tightening instructions for the specific application. Tighten plastic insert or crimped steel type lock nuts by turning the nut to the dry torque shown in the chart, unless different instructions are given for the specific application.

Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical property class. Replace fasteners with the same or higher property class. If higher property class fasteners are used, tighten these to the strength of the original. Make sure fastener threads are clean and that you properly start thread engagement. When possible, lubricate plain or zinc plated fasteners other than lock nuts, wheel bolts or wheel nuts, unless different instructions are given for the specific application.

DX,TORQ2-19-20091208

Hydraulic system inch fitting torques



LX1020169

LX1020169-UN: Torques values; hydraulic system

A - Bulkhead fitting **B - Lock nut** **C - Collar nut** **D - Collar nut**

	Collar nut		Fittings with flat-faced ring seal Lock nut for bulkhead fitting	
Thread size	**N˙m**	**lb-ft**	N˙m	**lb-ft**
9/16—18	16	12	5	3.5
11/16—16	24	18	9	6.5
13/16—16	50	37	17	12.5
1—14	69	51	17	12.5
1-3/16—12	102	75	17	12.5
1-7/16—12	142	105	17	12.5
1-11/16—12	190	140	17	12.5
2—12	217	160	17	12.5

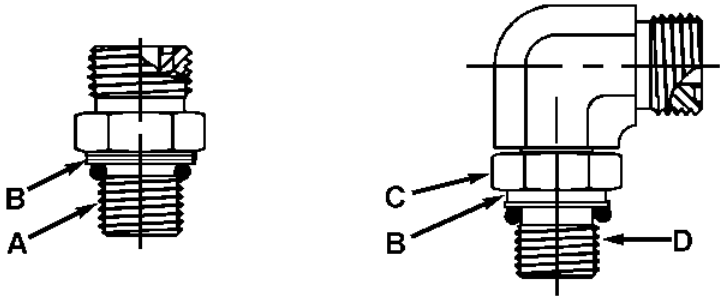
The torques in the table above are intended only as approximate values, and do NOT apply if a different torque value is listed for specific fittings at other points in this manual. Check fittings regularly to make sure they are seated properly.

When replacing fittings, be sure to use parts with an equal or higher grade to the parts you are replacing. Items of hardware (e.g. collar nuts) that are of a higher grade should be tightened to the same torque value as the parts they replace.

It is vitally important to make sure that the sealing faces are clean and that the O-rings have been inserted properly.

AG,LX25458,28-19-19991203

Hydraulic system metric fitting torques



LX1020170

LX1020170-UN: Torques values, hydraulic system

A - Stud-end fitting **B - Groove for metric spec.** **C - Lock nut** **D - Adjustable stud-end fitting**

Straight stud-end fitting and lock nut for adjustable stud-end fitting

		Steel or grey-cast iron	Aluminium	
Thread size	**N˙m**	**lb–ft**	**N˙m**	**lb–ft**
M12x1.5	21	15.5	9	6.6
M14x1.5	33	24	15	11
M16x1.5	41	30	18	13
M18x1.5	50	37	21	15
M22x1.5	69	51	28	21
M27x2	102	75	46	34
M33x2	158	116	71	52
M38x2	176	130	79	58
M42x2	190	140	85	63
M48x2	217	160	98	72

The torques in the table above are intended only as approximate values, and do NOT apply if a different torque value is listed for specific fittings at other points in this Manual. Check fittings regularly to make sure they are seated properly.

When replacing fittings, be sure to use parts with an equal or higher grade to the parts you are replacing. Items of hardware (e.g. union nuts) that are of a higher grade should be tightened to the same torque value as the parts they replace.

It is vitally important to make sure that the sealing faces are clean and that the O-rings have been inserted properly.

AG,LX25458,29-19-20051125

Product Identification Number

The plate bearing the product identification number is located on the right-hand side of the main frame.

* *

LX1045398-UN: Product Identification Number

OULXA64,0001E4D-19-20080818

Engine Serial Number

The engine serial number plate is located on the right-hand side of engine block.

NOTE:

Besides the engine serial number, the plate shows the engine type as well. When ordering spare parts for the engine, please quote all the numbers and letters on this plate.

* *

LX1045395-UN: Engine serial number

OULXA64,0001E47-19-20080811

Transmission Serial Number

The transmission serial number plate is located on the right-hand side of differential housing. It provides details of the gear pair in the differential (e.g. 53/10) and the transmission ratio of the front-wheel drive axle (e.g. 1.712). This information will be required if a different tire combination is to be used.

* *

LX1045396-UN: Transmission Serial Number

OULXA64,0001E48-19-20080811

Front-Wheel Drive Axle Serial Number

The plate bearing the front-wheel drive axle serial number is located on the r.h. end of the axle, at the rear. Information provided on it includes the transmission ratio of the front axle. This information will be required if the type of tires used at the front is to be changed.

* *

OU12401,0000C9E-19-20030102

Operator's Cab Serial Number

The operator's cab serial number plate is located behind the operator's seat on the rear cab wall.

* *

LX1045399-UN: Operator's cab serial number

OULXA64,0001E4E-19-20080814