1800
Utility Vehicle

John Deere Horicon Works
TM1527 (10APR92)
LITHO IN U.S.A.
ENGLISH

FOREWORD

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

LIVE WITH SAFETY: Read the safety messages in the introduction of this manual and the cautions presented throughout the text of the manual.

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

Technical manuals are divided in two parts: repair and diagnostics. Repair sections tell how to repair the components. Diagnostic sections help you identify the majority of routine failures quickly.

Information is organized in groups for the various components requiring service instruction. At the beginning of each group are summary listings of all applicable essential tools, service equipment and tools, other materials needed to do the job, service parts kits, specifications, wear tolerances, and torque values.

Binders, binder labels, and tab sets can be ordered by John Deere dealers direct from the John Deere Distribution Service Center.

This manual is part of a total product support program.

FOS MANUALS—REFERENCE

TECHNICAL MANUALS—MACHINE SERVICE

COMPONENT MANUALS—COMPONENT SERVICE

Fundamentals of Service (FOS) Manuals cover basic theory of operation, fundamentals of troubleshooting, general maintenance, and basic type of failures and their causes. FOS Manuals are for training new personnel and for reference by experienced technicians.

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

Component Technical Manuals are concise service guides for specific components. Component technical manuals are written as stand-alone manuals covering multiple machine applications.

Contents

All information, illustrations and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

TM1527-19-10APR92

Section 10
GENERAL INFORMATION

Contents

RECOGNIZE SAFETY INFORMATION

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

Follow recommended precautions and safe operating practices.

T81389 -UN-07DEC88

DX,ALERT -19-04JUN90

UNDERSTAND SIGNAL WORDS

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

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

TS187 -19-30SEP88

DX,SIGNAL -19-09JAN92

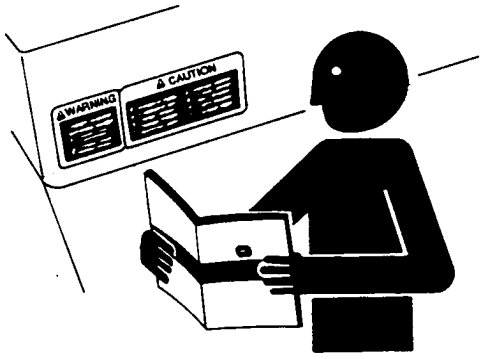
FOLLOW SAFETY INSTRUCTIONS

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 -19-04JUN90

HANDLE FLUIDS SAFELY—AVOID FIRES

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

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

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

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

TS227 -UN-23AUG88

DX,FLAME -19-04JUN90

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

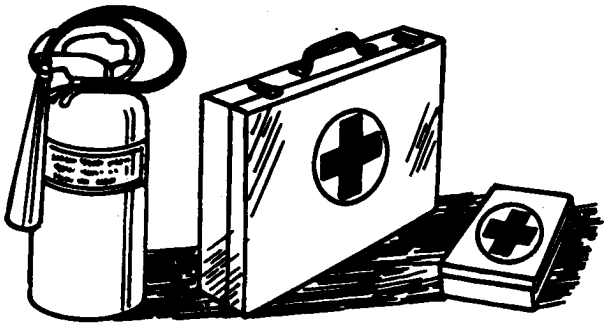
DX,SPARKS -19-04JUN90

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 -19-04JUN90

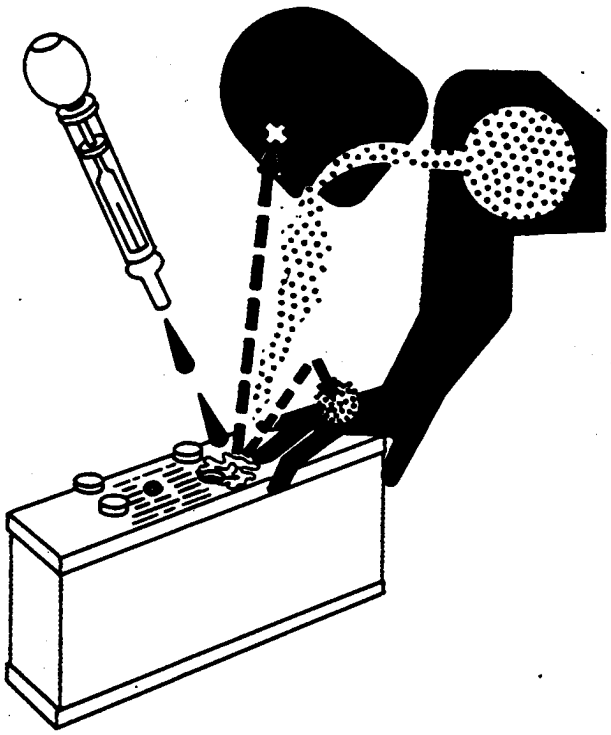
PREVENT ACID BURNS

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

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

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

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



TS203 -UN-23AUG88

DX,POISON -19-04JUN90

SERVICE COOLING SYSTEM SAFELY

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

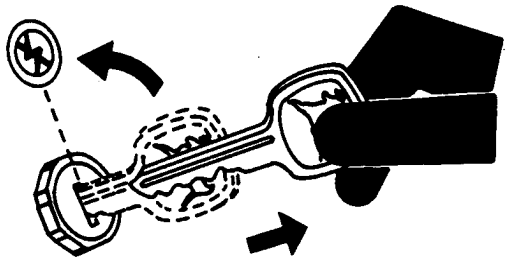
Shut off engine. Only remove filler cap when cool enough to touch with bare hands. Slowly loosen cap to first stop to relieve pressure before removing completely.

TS281 -UN-23AUG88

DX,RCAP -19-04JUN90

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.



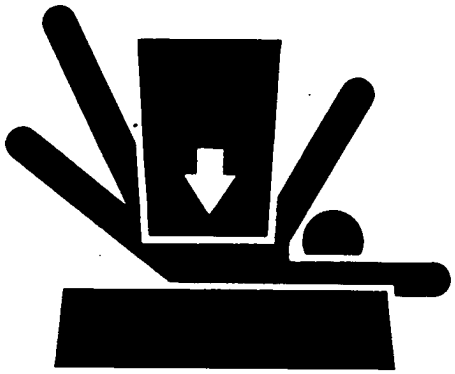
TS230 -UN-24MAY89

DX,PARK -19-04JUN90

SUPPORT MACHINE PROPERLY

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

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



TS229 -UN-23AUG88

DX,LOWER -19-04JUN90

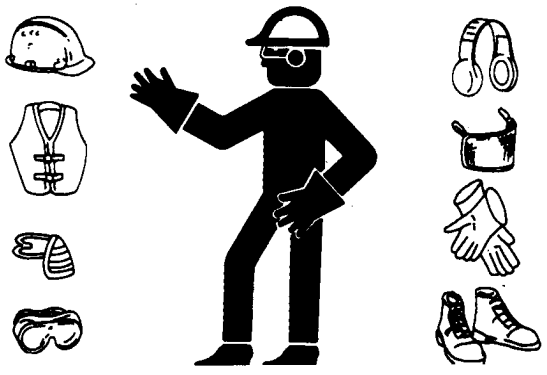
WEAR PROTECTIVE CLOTHING

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

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

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

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

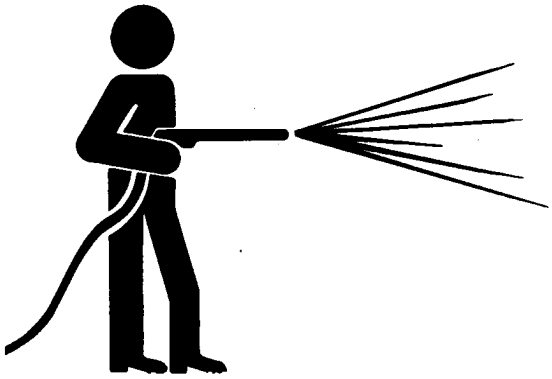


TS206 -UN-23AUG88

DX,WEAR -19-10SEP90

WORK IN CLEAN AREA

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



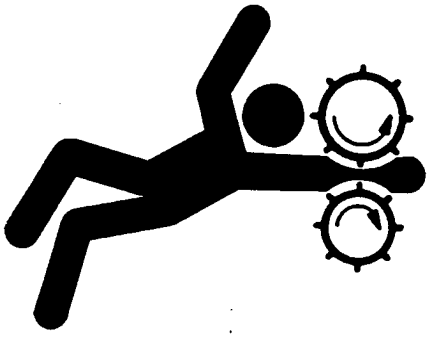
T6642EJ -UN-18OCT88

DX,CLEAN -19-04JUN90

SERVICE MACHINES SAFELY

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

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



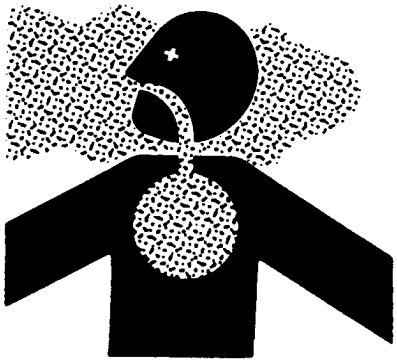
TS228 -UN-23AUG88

DX,LOOSE -19-04JUN90

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.

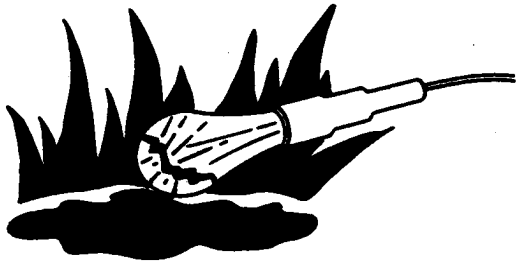


TS220 -UN-23AUG88

DX,AIR -19-04JUN90

ILLUMINATE WORK AREA SAFELY

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

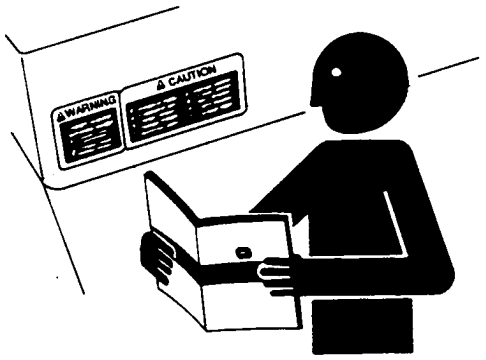


TS223 -UN-23AUG88

DX,LIGHT -19-04JUN90

REPLACE SAFETY SIGNS

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



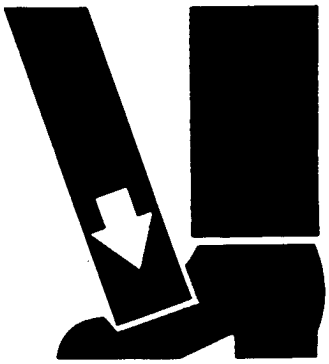
TS201 -UN-23AUG88

DX,SIGNS1 -19-04JUN90

USE PROPER LIFTING EQUIPMENT

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

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



TS226 -UN-23AUG88

DX,LIFT -19-04JUN90

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

AVOID HARMFUL ASBESTOS DUST

TS220 -UN-23AUG88

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

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

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

Keep bystanders away from the area.

DX,DUST -19-15MAR91

AVOID HEATING NEAR PRESSURIZED FLUID LINES

TS953 -UN-15MAY90

Flammable spray can be generated by heating near pressurized fluid lines, resulting in severe burns to yourself and bystanders. Do not heat by welding, soldering, or using a torch near pressurized fluid lines or other flammable materials. Pressurized lines can be accidentally cut when heat goes beyond the immediate flame area.

DX,TORCH -19-05OCT90

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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.

Do all work outside or in a well ventilated area. Dispose of paint and solvent properly.

Remove paint before welding or heating:

• If you sand or grind paint, avoid breathing the dust. Wear an approved respirator.

• If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.

DX,PAINT -19-04JUN90

USE PROPER TOOLS

TS779 -UN-08NOV89

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

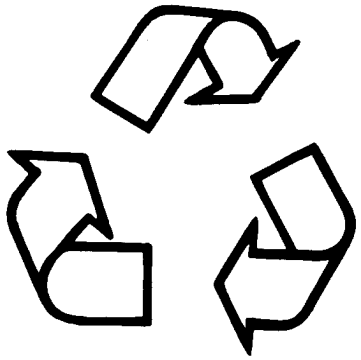
Use power tools only to loosen threaded parts and fasteners.

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.

DX,REPAIR -19-04JUN90

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 -19-09AUG91

LIVE WITH SAFETY

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

TS231 -19-07OCT88

DX,LIVE -19-04JUN90

MACHINE SPECIFICATIONS

ENGINE

Make	Kawasaki
Type	Gasoline
Model	FD620D
Horsepower	13.4 kW (18 hp)
Number of Cylinders	Two 90˚ V-Twin
Cycle	Four
Displacement	617 cc (37.7 cu. in.)
Bore	76 mm (2.99 in.)
Stroke	68 mm (2.66 in.)
Compression Ratio	9.0:1
Speed,Fast (no load)	3600 ± 50 rpm
Speed,idle (no load)	1550 ± 50 rpm
Lubrication	Full Pressure
Cooling System	Water Pump/Radiator
Oil Filter	Full Flow Replaceable
Air Cleaner	Dry, replaceable primary and secondary elements

FUEL SYSTEM

Fuel	Unleaded gasoline or leaded gasoline with an antilock index of 87 or higher
Fuel Filter	Replaceable in-line filter
Fuel Pump	Electric

ELECTRICAL SYSTEM

Type	12 volt, negative ground
Charging System	Stator
Capacity	20 amp Regulator
Battery Size	430 CCA at -18˚C (0˚ F), BCI-45, length 9.4 in., width 5.5 in., height 8.9 in.
Battery Reserve Capacity at 25 amps	80 min.

INSTRUMENTATION

Speedometer	Dash Mounted, In KPH and MPH readable to within ± .5 mph
Hourmeter	Dash Mounted, running with key in ON position
Tachometer	Dash Mounted, reading engine rpm
Low Battery Indicator Light	Dash Mounted, warning low battery voltage
Engine Coolant Temp. Indicator	Dash Mounted, warning high coolant temperature
Engine Oil Pressure Indicator Light	Dash Mounted, warning low oil pressure
Choke	Dash Mounted, for cold starting
Ignition Switch	Dash Mounted

POWER TRAIN

Transmission	Hydrostatic U-type
Manufacturer	Sauer Sundstrand 15 Series
Number of Speeds	Infinite
Travel Speeds	
Forward	0-18 km/h (0-11.5 mph)
Reverse	0-9.7 km/h (0-6 mph)
Differential	Peerless 2-Speed (without Differential Lock and with Park Lock)

MX,1010HJ,1 -19-14APR92

MACHINE SPECIFICATIONS—CONTINUED

STEERING/BRAKES

Steering	Power, Hydrostatic
Brakes	Independent, shoe and drum. Rear Axle Mounted
Park Brake	1 Motion Release

CAPACITIES

Fuel Tank	Translucent With No Graduations, 30 L (8 gallon) capacity
Transmission	7.1 L (7.5 U.S. qt)
Cooling System	3.5 L (3.8 U.S. qt)
Crankcase (w/ filter)	2.1 L (4.44 U.S. qt)
Crankcase (w/o filter)	1.9 L (4.0 U.S. qt)

TIRES

Front Tire Size/Type	23 x 10.5 - 12 Softrac
Front Tire Operating PSI	(8-12 psi)
Rear Tire Size/Type	26 x 12.0 - 12 Softrac
Rear Tire Operating PSI	(8-12 psi)

DIMENSIONS (BASE VEHICLE)

Wheel Base	61.5 in. (1562 mm)
Front Tread Width (center line)	54 in. (1372 mm)
Rear Tread Width (center line)	54 in. (1372 mm)
Outside Turning Radius	24 ft(7.32 m)
Inside Turning Radius	23.4 ft (7.11 m)
Ground Clearance	7 in. (178 mm)
Overall Length	120 in. (3048 mm)
Overall Width	65.6 in. (1667 mm)
Overall Height	50.5 in. (1283 mm)
Overall Weight*	1325 lbs (602 kg)
Front Axle Weight*	857 lbs (390 kg)
Rear Axle Weight*	468 lbs (213 kg)
Noise Levels	
Low Idle at Operators Ear	
High Idle at Operators Ear	

VEHICLE USAGE (BASE VEHICLE WITH SPRAYER)

Spraying Speed ± tolerance	3-6 mph ± .5 mph
Speed Reduction Up 10% Grade	
Transporting	2.3 mph (20% Reduction)
Spraying	.6 - 1.5 mph (20% Reduction)
Max. Slope During Spraying Operation	20% (11.3 Degree)
Satisfies Stability Standards	ANSI B71.4

**ALL WEIGHTS INCLUDE A 200 LB OPERATOR, FULL TANK OF FUEL, AND BATTERY.*

MX,1010HJ,1A -19-14APR92

REPAIR SPECIFICATIONS

Item	Measurement	Specification
SECTION 20 - ENGINE REPAIR		
For all engine repair specs-Use CTM39		
Engine-to-Frame Cap Screw	Torque	18 N·M (160 lb-in.)
Drive Shaft-to-Engine Cap Screw	Torque	35 N·M (27 lb-ft)
Cylinder Head Cap Screw	Torque	21 N·M (0.800 in.)
Outer Sheave Half-to-Flywheel Cap Screw	Torque	13 N·M (115 lb-in.)
Spark Plugs	Torque	20 N·M (177 lb-in.)
SECTION 30 - FUEL AND AIR REPAIR		
For all carburetor repair specifications - Use CTM39		
Transfer Pump	Flow Pressure	207 mL (7 oz)/30 sec min. 19.6 kPa (0.196 bar) (2.8 psi)
SECTION 50 - POWER TRAIN REPAIR		
TRANSMISSION		
Swashplate	Full Movement	25 mm (1 in.)
Meter Shaft Bearing Race	Mounting surface to bearing race	5 mm (0.187 in.)
Spring Pin-to-Swashplate	Depth	6 mm (0.250 in.)
Valve Plate Needle Bearings	Top of bearing to cover surface	3 mm (0.109 in.)
Cover-to-Housing Cap Screws	Torque	35 N·m (28 lb-ft)
Hydraulic Line Fitting	Torque	24 N·m (215 lb-in.)
Transmission-to-Differential cap screws	Torque	45 N·m (35 lb-ft)
CHARGE PUMP		
Pump-to-Transmission Cap Screws	Torque	70 N·m (50 lb-ft)
DIFFERENTIAL		
Carrier-to-Holder Cap Screw	Torque	52 N·m (37 lb-ft)
Cover-to-Case Cap Screw	Torque	22 N·m (192 lb-in.)
AXLES		
Axle-to-Differential Seal	Depth	3 mm (0.125 in.)
Axle-to-Differential Cap Screw	Torque	80 N·m (60 lb-ft)
Axle-to-Frame Cap Screw	Torque	106 N·m (78 lb-ft)

MX,1015HJ,1 -19-14APR92

REPAIR SPECIFICATIONS—CONTINUED

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Item	Measurement	Specification
SECTION 60 - STEERING AND BRAKE REPAIR		
STEERING		
Steering Wheel-to-column Nut	Torque	14 N·m (12 lb-in.)
Steering Valve Rotor-to-Stator	Maximum Clearance	0.08 N·m (0.003 in.)
Bushing	Depth below top of steering tube	2.5 mm (0.100 in.)
METERING ASSEMBLY-TO-VALVE		
Screw	Torque	1.4 N·m (12 lb-in.)
Steering Valve Nuts	Torque	30 N·m (22 lb-ft)
Relief Valve Plug	Torque	14 N·m (124 lb-in.)
Implement Relief Valve	Torque	14 N·m (124 lb-in.)
Steering Link-to-Axle Nut	Torque	75 N·m (55 lb-ft)
BRAKES		
Brake Plate-to-Frame Cap Screw	Torque	68 N·m (50 lb-ft)
Brake Drum-to-Axle Shaft Nut	Torque	115-156 N·m (85-115 lb-ft)
Hub-to-Drum Cap Screws	Torque	95 N·m (70 lb-ft)
FRONT AXLE		
Steering Link-to-Axle Nut	Torque	75 N·m (55 lb-ft)
Front Wheel Cap Screws	Torque	81-95 N·m (60-70 lb-ft)
Axle-to-Tie Rod End Nut	Torque	61 N·m (45 lb-ft)
Front Axle Mounting Bolt	Torque	668 N·m (150 lb-ft)

MX,1015HJ,1A -19-14APR92

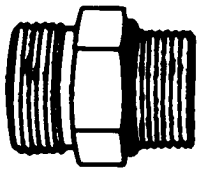
SERVICE RECOMMENDATIONS FOR O-RING BOSS FITTINGS

STRAIGHT FITTING

1. Inspect O-ring boss seat for dirt or defects.

2. Lubricate O-ring with petroleum jelly. Place electrical tape over threads to protect O-ring. Slide O-ring over tape and into O-ring groove of fitting. Remove tape.

3. Tighten fitting to torque value shown on chart.



T6243AE -UN-18OCT88

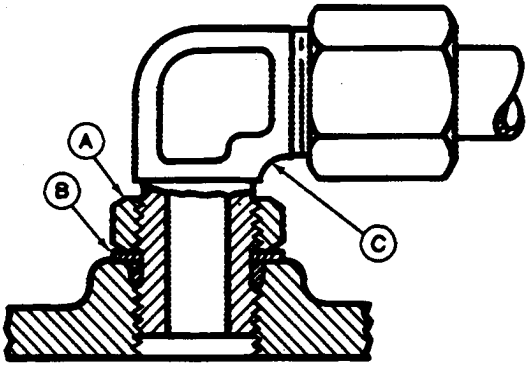
ANGLE FITTING

1. Back-off lock nut (A) and back-up washer (B) completely to head-end (C) of fitting.

2. Turn fitting into threaded boss until back-up washer contacts face of boss.

3. Turn fitting head-end counterclockwise to proper index (maximum of one turn).

4. Hold fitting head-end with a wrench and tighten locknut and back-up washer to proper torque value.



T6520AB -UN-18OCT88

NOTE: Do not allow hoses to twist when tightening fittings.

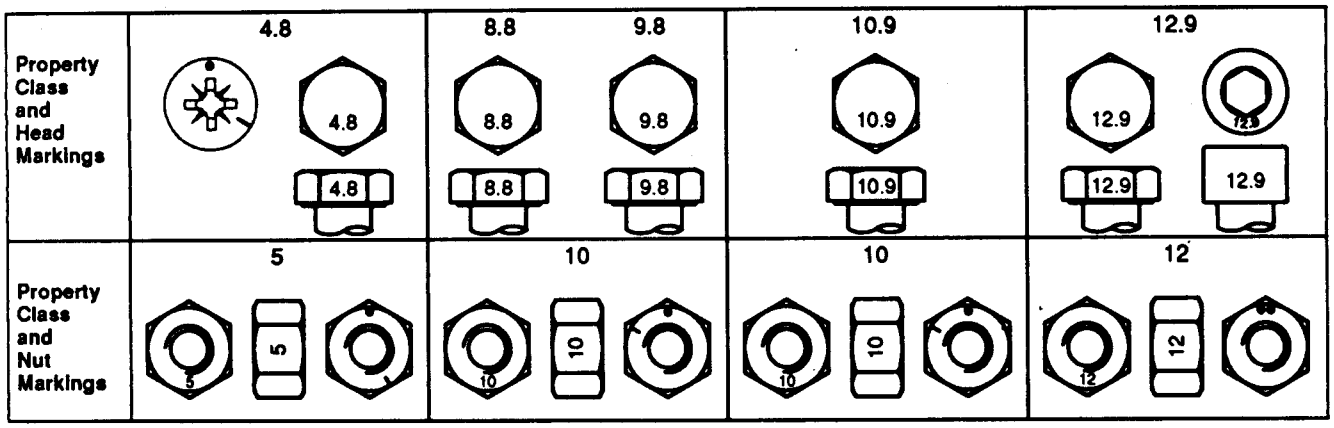
TORQUE VALUE

Thread Size	N·m	lb-ft
3/8-24 UNF	8	6
7/16-20 UNF	12	9
1/2-20 UNF	16	12
9/16-18 UNF	24	18
3/4-16 UNF	46	34
7/8-14 UNF	62	46
1-1/16-12 UN	102	75
1-3/16-12 UN	122	90
1-5/16-12 UN	142	105
1-5/8-12 UN	190	140
1-7/8-12 UN	217	160

NOTE: Torque tolerance is ± 10%.

04T,90,K66 -19-21JAN92

METRIC BOLT AND CAP SCREW TORQUE VALUES



-19-04MAR91
TS1163

Size	Class 4.8				Class 8.8 or 9.8				Class 10.9				Class 12.9			
	Lubricated[a]		Dry[a]		Lubricated[a]		Dry[a]		Lubricated[a]		Dry[a]		Lubricated[a]		Dry[a]	
	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft
M6	4.8	3.5	6	4.5	9	6.5	11	8.5	13	9.5	17	12	15	11.5	19	14.5
M8	12	8.5	15	11	22	16	28	20	32	24	40	30	37	28	47	35
M10	23	17	29	21	43	32	55	40	63	47	80	60	75	55	95	70
M12	40	29	50	37	75	55	95	70	110	80	140	105	130	95	165	120
M14	63	47	80	60	120	88	150	110	175	130	225	165	205	150	260	190
M16	100	73	125	92	190	140	240	175	275	200	350	225	320	240	400	300
M18	135	100	175	125	260	195	330	250	375	275	475	350	440	325	560	410
M20	190	140	240	180	375	275	475	350	530	400	675	500	625	460	800	580
M22	260	190	330	250	510	375	650	475	725	540	925	675	850	625	1075	800
M24	330	250	425	310	650	475	825	600	925	675	1150	850	1075	800	1350	1000
M27	490	360	625	450	950	700	1200	875	1350	1000	1700	1250	1600	1150	2000	1500
M30	675	490	850	625	1300	950	1650	1200	1850	1350	2300	1700	2150	1600	2700	2000
M33	900	675	1150	850	1750	1300	220	1650	2500	1850	3150	2350	2900	2150	3700	2750
M36	1150	850	1450	1075	2250	1650	2850	2100	3200	2350	4050	3000	3750	2750	4750	3500

DO NOT use these values if a different torque value or tightening procedure is given for a specific application. Torque values listed are for general use only. Check tightness of fasteners periodically.

Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical property class.

Fasteners should be replaced with the same or higher property class. If higher property class fasteners are used, these should only be tightened to the strength of the original.

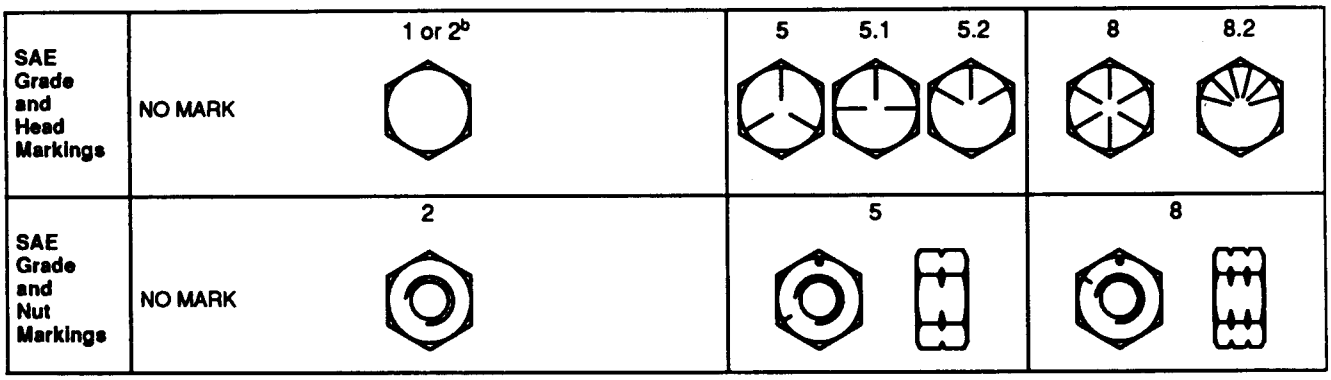
Make sure fasteners threads are clean and that you properly start thread engagement. This will prevent them from failing when tightening.

Tighten plastic insert or crimped steel-type lock nuts to approximately 50 percent of the dry torque shown in the chart, applied to the nut, not to the bolt head. Tighten toothed or serrated-type lock nuts to the full torque value.

[a] "Lubricated means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings. "Dry means plain or zinc plated without any lubrication.

DX,TORQ2 -19-05JUN91

UNIFIED INCH BOLT AND CAP SCREW TORQUE VALUES



TS1162 -19-04MAR91

Size	Grade 1				Grade 2[b]				Grade 5, 5.1, or 5.2				Grade 8 or 8.2			
	Lubricated[a]		Dry[a]		Lubricated[a]		Dry[a]		Lubricated[a]		Dry[a]		Lubricated[a]		Dry[a]	
	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft
1/4	3.7	2.8	4.7	3.5	6	4.5	7.5	5.5	9.5	7	12	9	13.5	10	17	12.5
5/16	7.7	5.5	10	7	12	9	15	11	20	15	25	18	28	21	35	26
3/8	14	10	17	13	22	16	27	20	35	26	44	33	50	36	63	46
7/16	22	16	28	20	35	26	44	32	55	41	70	52	80	58	100	75
1/2	33	25	42	31	53	39	67	50	85	63	110	80	120	90	150	115
9/16	48	36	60	45	75	56	95	70	125	90	155	115	175	130	225	160
5/8	67	50	85	62	105	78	135	100	170	125	215	160	215	160	300	225
3/4	120	87	150	110	190	140	240	175	300	225	375	280	425	310	550	400
7/8	190	140	240	175	190	140	240	175	490	360	625	450	700	500	875	650
1	290	210	360	270	290	210	360	270	725	540	925	675	1050	750	1300	975
1-1/8	470	300	510	375	470	300	510	375	900	675	1150	850	1450	1075	1850	1350
1-1/4	570	425	725	530	570	425	725	530	1300	950	1650	1200	2050	1500	2600	1950
1-3/8	750	550	950	700	750	550	950	700	1700	1250	2150	1550	2700	2000	3400	2550
1-1/2	1000	725	1250	925	990	725	1250	930	2250	1650	2850	2100	3600	2650	4550	3350

DO NOT use these values if a different torque value or tightening procedure is given for a specific application. Torque values listed are for general use only. Check tightness of fasteners periodically.

Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical grade.

Fasteners should be replaced with the same or higher grade. If higher grade fasteners are used, these should only be tightened to the strength of the original.

Make sure fasteners threads are clean and that you properly start thread engagement. This will prevent them from failing when tightening.

Tighten plastic insert or crimped steel-type lock nuts to approximately 50 percent of the dry torque shown in the chart, applied to the nut, not to the bolt head. Tighten toothed or serrated-type lock nuts to the full torque value.

[a] "Lubricated" means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings. "Dry" means plain or zinc plated without any lubrication.

[b] Grade 2 applies for hex cap screws (not hex bolts) up to 152 mm (6-in.) long. Grade 1 applies for hex cap screws over 152 mm (6-in.) long, and for all other types of bolts and screws of any length.

DX,TORQ1 -19-15MAR91

FUEL

CAUTION: Handle fuel carefully. If engine is hot or running, do not fill the fuel tank. Stop engine and allow to cool several minutes before filling fuel tank. Do not smoke while you fill the fuel tank or service the fuel system. Fill fuel tank only to bottom of filler neck.

IMPORTANT: To avoid engine damage, DO NOT mix oil with gasoline.

Unleaded fuel is recommended because it burns cleaner and leaves less unburned deposits in engine combustion chamber. Regular leaded gasoline with an anti-knock index of 87 or higher may be used.

Use of gasohol is acceptable as long as the ethyl alcohol blend does not exceed 10 percent. Unleaded gasohol is preferred over leaded gasohol.

Fuel Tank Capacity . . . . . 30 L (8 U.S. gal)

Fill fuel tank at end of each day's operation.

MX,1020HJ,1 -19-14APR92

STORING FUEL

If there is a very slow turnover of fuel in the fuel tank or supply tank, it may be necessary to add a fuel conditioner to prevent water condensation. Contact your John Deere dealer for proper service or maintenance recommendations.

DX,FUEL -19-04JUN90

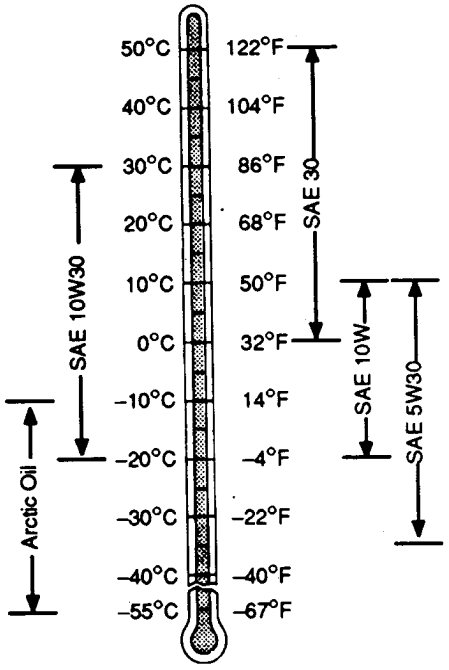
GASOLINE ENGINE OIL

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

John Deere PLUS-4® engine oil is recommended.

Other oils may be used if they meet API Service Classification SG or SF.

Oils meeting Military Specification MIL-L-46167A may be used as arctic oils.



TS239 -19-28NOV90

DX,GAS -19-15MAR91

ENGINE COOLANT

John Deere Low Silicate Antifreeze is recommended.

Also recommended is low silicate antifreeze formulated to GM6038M or equivalent.

Other antifreezes that may be used:
- Ethylene-glycol type.
- Those containing not more than 0.1 percent anhydrous metasilicate.
- Those meeting General Motors Performance Specification GM1899M

IMPORTANT: Some types of ethylene-glycol antifreeze are intended for automotive use. These products are often labeled for use in aluminum engines and usually contain more than 0.1 percent of anhydrous metasilicate.

Check container label or consult with antifreeze supplier before using.

Mix 50-67 percent low silicate antifreeze with 33-50 percent distilled or deionized water.

Low silicate antifreeze provides:
- Adequate heat transfer.
- Corrosion-resistant environment within the cooling system.
- Compatibility with cooling system hose and seal material.
- Protection during cold and hot weather operations.

Certain geographical areas may require special antifreeze or coolant practices. If you have any questions, consult your authorized servicing dealer to obtain the latest information and recommendations.

DX,COOL -19-04JUN90

HYDROSTATIC DRIVE OIL

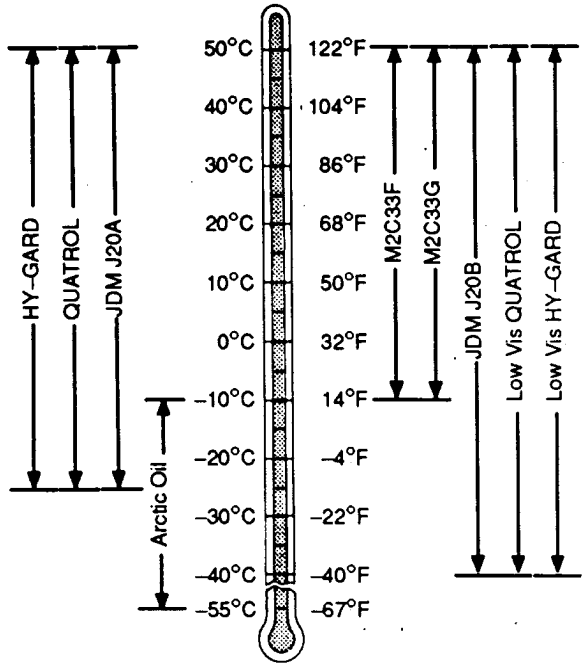
Use oil viscosity based on the expected air temperature range during the period between oil changes.

John Deere HY-GARD® Transmission/Hydraulic Oil is recommended.

Other oils may be used if they are QUATROL® oils or if they meet John Deere Standard JDM J20A or J20B.

Automatic transmission fluids of Type M2C33F or M2C33G may also be used.

Oils meeting Military Specification MIL-L-46167A may be used as arctic oils.



TS244 -19-28NOV90

DX,HOIL2 -19-15MAR91

EXTREME PRESSURE OR MULTIPURPOSE GREASE

Use grease based on the expected air temperature range during the service interval.

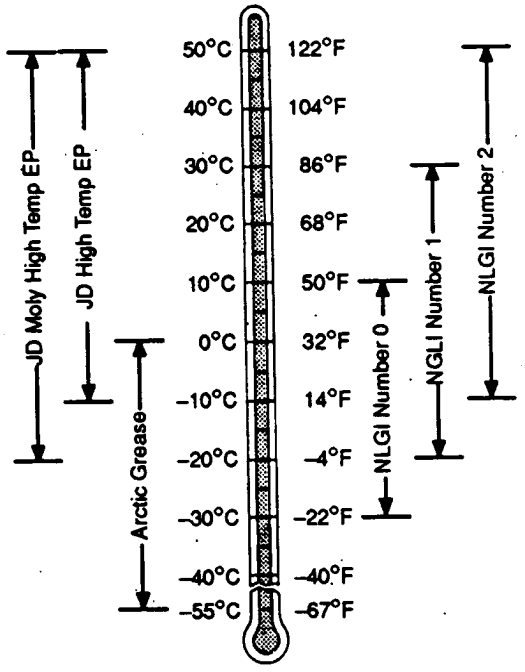
John Deere Moly High Temperature EP Grease and John Deere High Temperature EP Grease are recommended.

Other greases that may be used are:

• SAE Multipurpose EP Grease with 3 to 5 percent molybdenum disulfide.

• SAE Multipurpose EP Grease.

• Greases meeting Military Specification MIL-G-10924C may be used as arctic grease.



TS248 -19-28NOV90

DX,GREA1 -19-15MAR91

LUBRICANT STORAGE

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

Use clean containers to handle all lubricants.

Store lubricants and containers in an area protected from dust, moisture, and other contamination.

DX,LUBST -19-15MAR91

ALTERNATIVE LUBRICANTS

Conditions in certain geographical areas outside the United States and Canada may require different lubricant recommendations than these printed in the operator's manual. Consult manufacturer to obtain the alternative lubricant recommendations.

WX,622,FUEL,E -19-09MAY90