

# **Farm Loaders Technical Manual TM-1298**

**John Deere Welland Works  
TM1298 (27JUN90)**

LITHO IN U.S.A.  
ENGLISH

# Introduction

## FOREWORD

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

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



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

Technical manuals are divided in two parts: repair and 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.

## JOHN DEERE DEALERS

**IMPORTANT: Please remove this page and route through your service department.**

This is a complete revision for TM1298, Farm Loaders.

This manual was revised:

1. To include 80 and 110 Loaders.
2. To provide up to date Operating and Operational Specifications.
3. To include Loader/Cylinder identification.
4. To include installation of Competitive equipment adapters.
5. To include bucket bushing replacement.
6. To include 80 Loader boom bushing replacement.
7. To include 110 Loader boom bushing replacement.
8. To include up to date cylinder rebuilding information.
9. To include pressure oil connections for all tractors.

WX, TM1298, DPS -19-27JUN90

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

TM1298-19-08JAN02

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# Section 10 INTRODUCTION AND SAFETY INFORMATION

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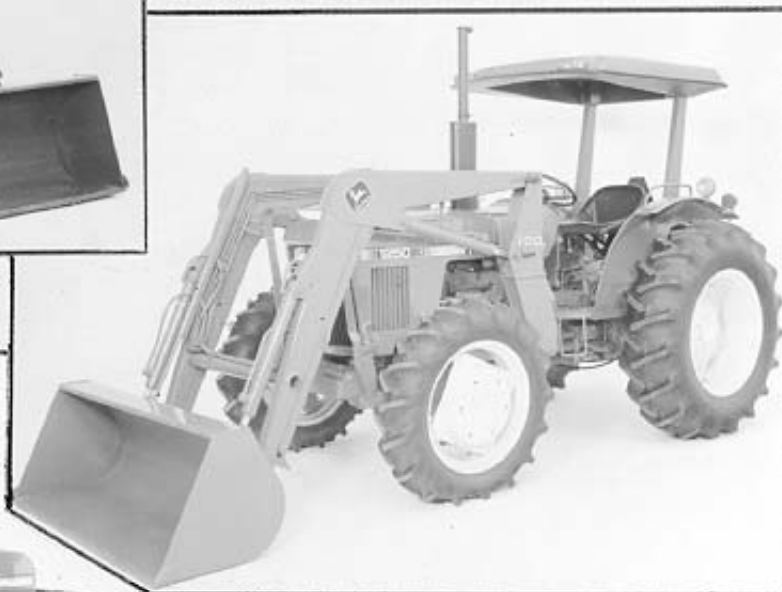
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W12751 -JUN-05OCT88

W01,1005,A -19-27FEB87

## DO NOT MODIFY MACHINE

Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.

W01,12SY,H -19-04APR85

## METRIC DESIGN

The 75, 80, 100, 175, 240, 245, 260, 265 and 280 Farm Loaders are of metric design. Specifications are given in metric with the US-customary equivalent following. Some specifications cannot be converted and appear in metric only. Most hardware is metric and must be replaced with metric hardware.



**CAUTION: Use only metric tools on metric hardware. Other tools may not fit properly. They may slip and cause injury.**

W01,1005,C -19-23NOV88

## CUSTOMARY DESIGN

The other Farm Loaders are of customary design. Specifications are given in metric with the US-customary equivalent following. Some specifications cannot be converted and appear in US-customary measure only. Most hardware is English and must be replaced with English hardware.



**CAUTION: Use only English tools on English hardware. Metric tools will not fit properly and may slip and cause injury.**

W01,1005,D -19-16JAN87

## 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.



DX,ALERT -19-04JUN90

T81389 -UN-07DEC88

## 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.



DX,SIGNAL -19-04JUN90

TS187 -19-30SEP88

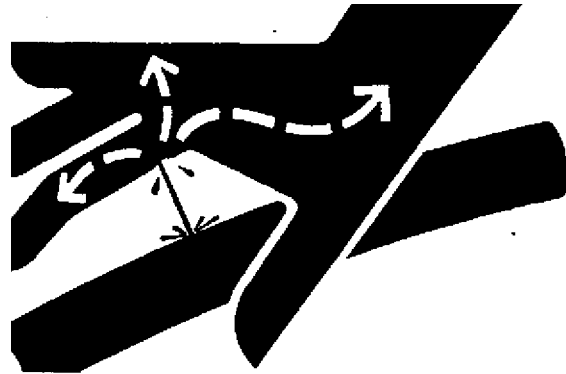
## AVOID HIGH-PRESSURE FLUIDS

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 may call the Deere & Company Medical Department in Moline, Illinois, or other knowledgeable medical source.



DX,FLUID,NA -19-11JUN90

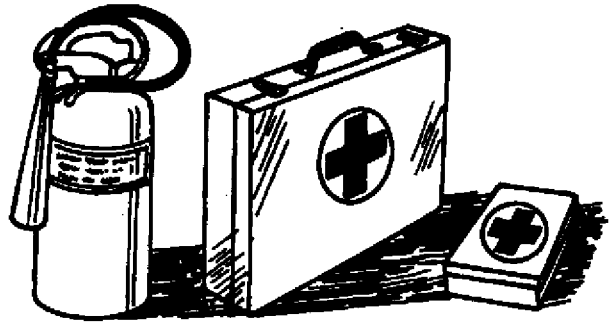
X9811 -UN-23AUG88

## 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.

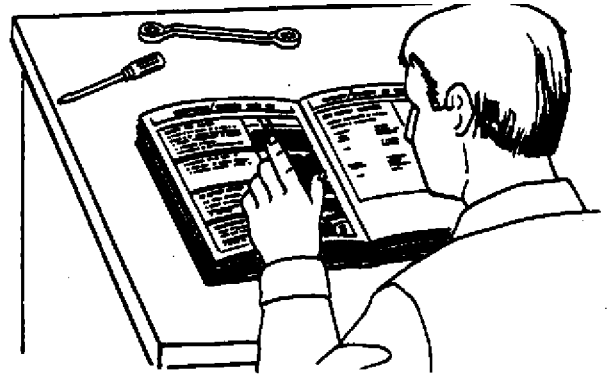


DX,FIRE2 -19-04JUN90

TS291 -JUN-23AUG88

## BE INFORMED

Use the machine and/or attachment Operator's Manual to assist you with operating and functional information when servicing.



W01,1010,A -19-16JAN87

TS183 -JUN-23AUG88

## UNDERSTAND CORRECT SERVICE

Be sure you understand a service procedure before you work on the machine.

If it is necessary to make checks with the engine running, ALWAYS USE TWO PEOPLE—with the operator at the controls, able to see the person doing the checking.

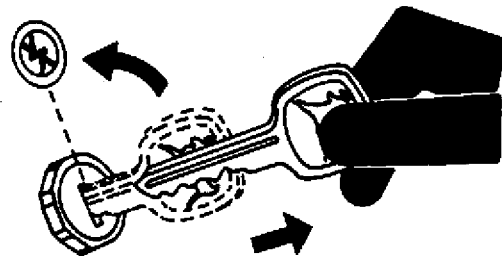
KEEP HANDS AWAY FROM MOVING PARTS.

W01,1010,D -19-16JAN87

## 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.



DX,PARK -19-04JUN90

TS230 -JUN-24MAY89

## DETACH LOADER SAFELY

Detach the loader on a hard, level surface.

Before disconnecting hydraulic hoses, relieve all hydraulic pressure.



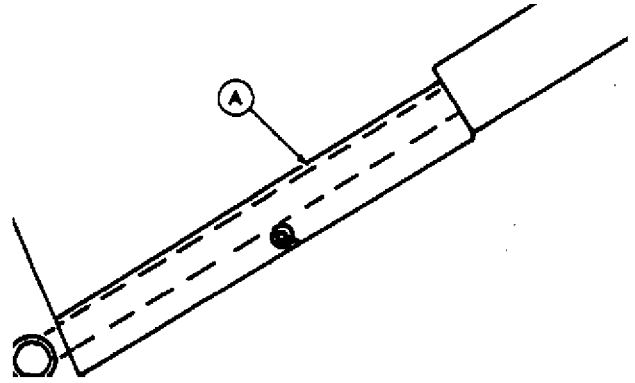
W01.1SY.A -19-01MAR88

W14000 -JUN-05OCT88

## SUPPORT RAISED EQUIPMENT

Place support (A) on lift cylinder rod when cylinder is extended and machine is raised.

Do not work under a raised bucket. Lower the bucket to the ground or onto blocks.



W01.1010.C -19-16JAN87

W12259 -JUN-10MAY89

## PREPARE MACHINE FOR REPAIR

1. Lower loader to the ground.
2. Place transmission in PARK or engage parking brake.
3. Stop the engine.
4. Operate all hydraulic control levers to release hydraulic pressure in the system.
5. If extensive repair is required, remove loader from tractor.



W01.1010.F -19-16JAN87

W11723 -JUN-06OCT88

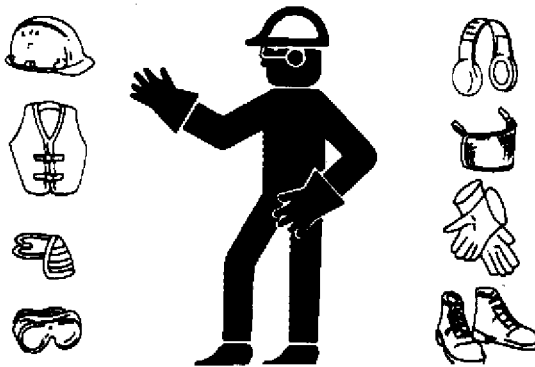
10  
10  
4

## 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.



DX,WEAR -19-04JUN90

TS206 -JUN-23AUG88

## PROTECT AGAINST FLYING DEBRIS

When driving pins in or out, guard against injury from flying pieces of metal or debris. Wear goggles or safety glasses, hard hat and gloves.



W01,1010,G -19-16JAN87

W12729 -JUN-05OCT88

## KEEP ROPS INSTALLED PROPERLY

IF ROLL-GARD® protective frame or ROLL-OVER protective equipment is loosened or removed for any reason, make certain all parts are reinstalled correctly. Tighten mounting bolts to proper torque. The protection offered by ROPS will be impaired if the ROPS is subject to structural damage, has been involved in an overturn incident or is in anyway altered. Damaged ROPS should be replaced, not reused.



T82,BHSA,AB -19-25JAN83

T88915 -JUN-09NOV85

## INSPECT MACHINE

Inspect machine carefully before servicing.



W01,1010,E -19-16JAN87

W12726 -JUN-05OCT88

## PRACTICE SAFE MAINTENANCE

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

Never lubricate or service 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.

Disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.



DX,SERV -19-04JUN90

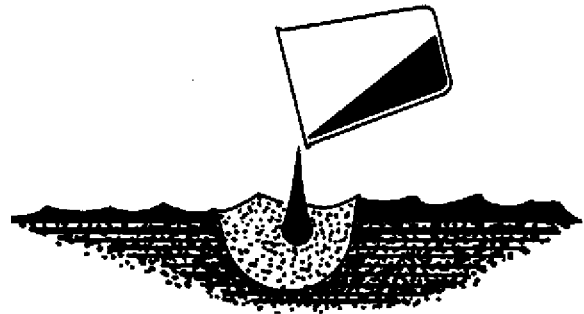
TS218 -JUN-23AUG88

## DISPOSE OF FLUIDS PROPERLY

Improperly disposing of fluids can harm the environment and ecology. Before draining any fluids, find out the proper way to dispose of waste from your local environmental agency.

Use proper containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them.

DO NOT pour oil into the ground, down a drain, or into a stream, pond, or lake. Observe relevant environmental protection regulations when disposing of oil, fuel, coolant, brake fluid, filters, batteries, and other harmful waste.



DX,DRAIN -19-05JUN90

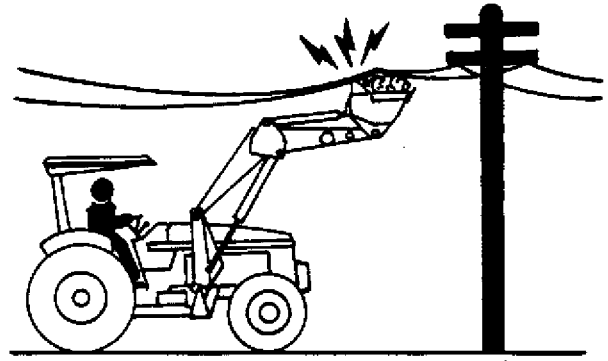
TS222 -JUN-23AUG88

### AVOID POWER LINES

Serious injury or death can result from contact with electric lines. Use care to avoid contact with electric lines when moving or operating the loader.

Beware of lift clearance when raising loader to maximum height.

Do not dismount from tractor if any component is in contact with lines.



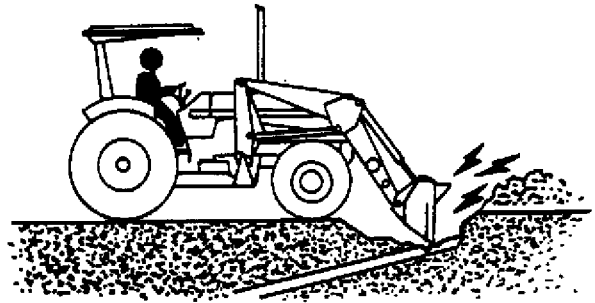
W01.1SY,E -19-10AUG88

W14321 -JUN-02FEB89

### DIG SAFELY

Before digging, check location of cables, gas lines and water lines.

Do not dismount from tractor if any component is in contact with lines.



W01.1SY,F -19-10AUG88

W14322 -JUN-02FEB89

### LIVE WITH SAFETY

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



DX,LIVE -19-04JUN90

TS231 -19-07OCT88

**NORTH AMERICAN**

Loader	Tractor
75 .....	850*, 950*, 1050*
80 .....	850*, 950*, 1050*, 870*, 970* 1070*
100 .....	1250*, 1450*, 1650*
110 .....	2155GP, 2355GP*, 2555GP*, 2755GP*
146 .....	2020, 2120, 1830, 2030, 2130 HFWD, 2630, 1640, 1840, 2140, 2240, 2440, 2640, 2150, 2350, 2550, 2750, 2155, 2255, 2355, 2355N, 2555, 2755, 2855N
148 .....	2520, 3020, 4000, 4020, 4320, 3130, 3130 HFWD, 4030, 4030 HFWD, 4230, 4230 HFWD, 4430, 4430 HFWD, 2840, 2940, 3140, 4040, 4040 HFWD, 4240, 4240 HFWD, 4440, 4440 HFWD, 2950, 2955, 4050, 4250, 4055, 4255
158 .....	4000, 4020, 4320, 4520, 4620, 4230, 4230 HFWD, 4430, 4430 HFWD, 4630, 4040, 4040 HFWD, 4240, 4240 HFWD, 4440, 4440 HFWD, 4050, 4250, 4450, 4055, 4255, 4455
175 .....	820, 920, 1020, 1120, 1520, 2020, 2120, 830, 1030, 1530, 1630, 1830, 2030, 2130, 2130 HFWD, 2630, 1040, 1140, 1640, 1840*, 2040*, 2140, 2240*, 2440, 2640, 2150*, 2350*, 2550*, 2750*, 2155*, 2355*, 2355N, 2555*, 2755*, 2855N
245 .....	2020, 2120, 1830, 2030, 2130, 2130 HFWD, 2630, 1640, 1840*, 2140, 2440, 2640, 2350*, 2550*, 2750*, 2355*, 2555*, 2755*
260 and 265 .....	3130, 3130 HFWD, 4030, 4030 HFWD, 4230, 4230 HFWD, 4430, 4430 HFWD, 2840, 2940*, 3140*, 4040, 4040 HFWD, 4240, 4240 HFWD, 4440, 4440 HFWD, 2950*, 3150 MFWD, 4050, 4250, 2955*, 3155 MFWD
265 .....	4050 MFWD, 4250 MFWD, 4450, 4055, 4255*, 4455
280 .....	4640, 4640 HFWD, 4840, 4050 MFWD, 4250 MFWD, 4450*, 4650*, 4850*, 4055 MFWD, 4255 MFWD, 4455 MFWD, 4555*, 4755*, 4955*

\* Both 2-Wheel Drive and MFWD

**EUROPEAN**

Loader	Tractor
175 .....	820, 920, 1020, 1120, 2020, 2120, 830, 930, 1030*, 1130*, 1630*, 2030*, 2130*, 2130 HFWD, 840, 940, 1040, 1140, 1640*, 2040*, 2140*, 1350, 1550*, 1750*, 1850*, 2250*, 2450*, 2650*, 2850*
245 .....	2020, 2120, 1630 MFWD, 2030*, 2130*, 2130 HFWD, 1640*, 2040*, 2140*, 2250*, 2450*, 2650*, 2850*
260 .....	3030, 3030 HFWD, 3130, 3130 HFWD, 4030, 4030 HFWD, 4230, 4230 HFWD, 4430, 4430 HFWD, 3040*, 3140*, 3640 MFWD, 4040, 4040 HFWD, 4240, 4240 HFWD, 4440, 4440 HFWD, 3050*, 3350*, 3650 MFWD
265 .....	3030, 3030 HFWD, 3130, 3130 HFWD, 4030, 4030 HFWD, 4230, 4230 HFWD, 4430, 4430 HFWD, 3040*, 3140*, 3640 MFWD, 4040, 4040 HFWD, 4240, 4240 HFWD, 4440, 4440 HFWD, 3050*, 3350*, 3650 MFWD

\* Both 2-Wheel Drive and MFWD

### LOCATE SERIAL NUMBER 200 SERIES LOADERS

The serial number plate is located on inside of left-hand boom, close to mast.

When ordering parts, you will require the loader model and serial numbers.



W13182 -UN-06OCT88

W01,1020,A -19-24FEB87

### LOCATE SERIAL NUMBER 100 SERIES LOADERS

The serial number plate is located on left-hand mast.

When ordering parts, you will require the model and serial number as given on serial number plate.



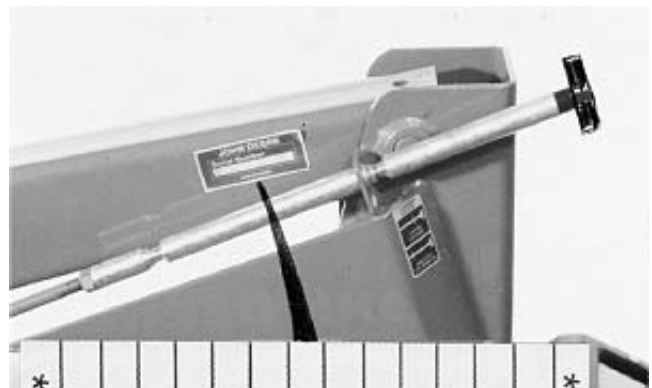
W13034 -UN-06OCT88

W01,1020,B -19-24FEB87

### LOCATE SERIAL NUMBER 80 LOADER

The serial number plate is located on inside of right-hand boom.

When ordering parts, you will require the model and serial number as given on serial number plate.



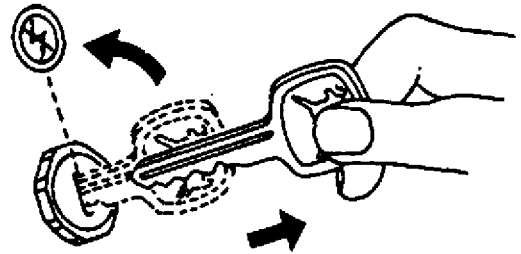
W14876 -UN-24JAN89

W01,1020,C -19-24FEB87

## LUBRICATING AND MAINTAINING LOADER SAFELY

**CAUTION:** Help prevent bodily injury from accidental lowering of loader. Engage parking brake or place transmission in "PARK", lower loader to ground, shut off engine and remove key before lubricating or servicing the loader.

Perform each lubrication and maintenance item illustrated in the appropriate loader Operator's Manual.



W01,1025,A -19-16JAN87

10  
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1  
-JUN-24/JAN89  
W9765

## SELECTING GREASE

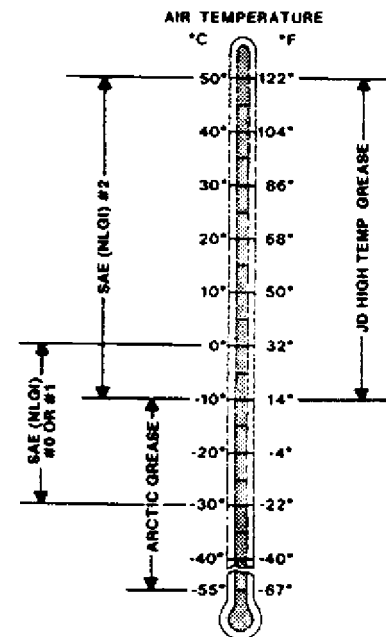
Depending upon the expected air temperature range during the service interval, use grease as shown on the temperature chart.

The following greases are recommended:

—John Deere Moly High Temperature/Extreme Pressure Grease

—SAE-Multipurpose High Temperature Grease with Extreme Pressure [EP] Performance with 3 to 5% molybdenum disulfide.

*NOTE: Moly-type grease is recommended, however, if not available, a multipurpose grease is acceptable.*



W11,5LB,C -19-29SEP88

-19-01DEC88  
X9328

## **ALTERNATIVE LUBRICANTS**










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Additional information on cold weather operation is available from your John Deere dealer.

Conditions in certain geographical areas may require special lubricants and lubrication practices which do not appear in this operator's manual. If you have any questions, consult your John Deere dealer to obtain the latest information and recommendations.

DX,ALTER -19-04JUN90

INCH CAP SCREW TORQUE VALUES

SAE Grade	Head Markings	SAE Grade	Nut Markings	SAE Grade	Head Markings	SAE Grade	SAE Grade	Nut Markings	SAE Grade
SAE GRADE 1 SAE GRADE 2	 No Mark	2	 No Mark	SAE GRADE 5 SAE GRADE 5.1 SAE GRADE 5.2	  	5 Nut Markings 	SAE GRADE 8 SAE GRADE 8.2	 	8 Nut Markings 

DIA.	WRENCH SIZE	SAE GRADE 1		*SAE GRADE 2		SAE GRADE 5		SAE GRADE 8	
		OIL N·m(lb-in)	DRY N·m(lb-in)	OIL N·m(lb-in)	DRY N·m(lb-in)	OIL N·m(lb-in)	DRY N·m(lb-in)	OIL N·m(lb-in)	DRY N·m(lb-in)
#6 #8		0.5(4.5) 0.9(8)	0.7(6) 1.2(11)			1.4(12) 2.4(21)	1.7(15) 3.2(28)		
#10 #12		1.4(12) 2(19)	1.8(16) 2.8(25)			3.4(30) 5.4(48)	4.6(41) 7.3(65)		
		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 5/16	7/16 1/2	3.5(2.5) 7(5)	4(3) 9(6.5)	5(4) 10(7.5)	7(5) 14(10)	8(6) 15(12)	11(8) 23(17)	12(8.5) 24(18)	16(12) 33(24)
3/8 7/16	9/16 5/8	12(8.5) 19(14)	16(12) 26(19)	19(14) 30(22)	24(18) 41(30)	30(22) 47(35)	41(30) 68(50)	41(30) 68(50)	54(40) 95(70)
1/2 9/16	3/4 13/16	24(21) 41(30)	41(30) 54(40)	47(35) 68(50)	61(45) 88(65)	75(55) 108(80)	102(75) 142(105)	102(75) 149(110)	142(105) 203(150)
5/8 3/4	15/16 1-1/8	54(40) 102(75)	75(55) 136(100)	88(65) 163(120)	122(90) 217(160)	149(110) 258(190)	197(145) 353(260)	203(150) 366(270)	278(205) 495(365)
7/8 1	1-5/16 1-1/2	163(120) 244(180)	244(165) 332(245)	163(120) 244(180)	224(165) 332(245)	414(305) 624(460)	563(415) 848(625)	590(435) 881(650)	800(590) 1193(880)
1-1/8 1-1/4	1-11/16 1-7/8	346(255) 488(360)	468(345) 664(490)	346(255) 488(360)	468(345) 665(490)	780(575) 1098(810)	1058(780) 1492(1100)	1248(920) 1763(1300)	1695(1250) 2393(1765)
1-3/8 1-1/2	2-1/16 2-1/4	637(470) 848(625)	868(640) 1153(850)	637(470) 848(625)	868(640) 1153(850)	1438(1061) 1912(1410)	1953(1440) 2590(1910)	2312(1705) 3065(2260)	3140(2315) 4163(3070)

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

\*For SAE Grade 2 fasteners (152 mm) 6-in. or less in length, use torque values for SAE Grade 2. For fasteners longer than (152 mm) 6-in., use SAE Grade 1 torque values.

Make sure fastener threads are clean and 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 amount shown in chart. Tighten toothed or serrated-type lock nuts to full torque value.

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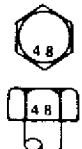
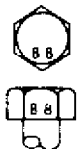
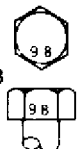

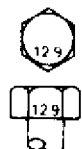
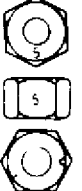
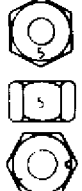
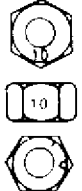
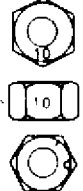
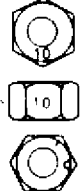
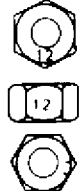
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**METRIC CAP SCREW TORQUE VALUES**

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2

<b>Property Class and Head Markings</b>	4.6 	4.8 	8.8 	9.8 	10.9 	12.9 
<b>Property Class and Nut Markings</b>	5 	5 	10 	10 	10 	12 

DIA.	WRENCH SIZE	4.6		4.8		8.8 or 9.8		10.9		12.9	
		OIL	DRY	OIL	DRY	OIL	DRY	OIL	DRY	OIL	DRY
		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)	N•m(lb-ft)	N•m(lb-ft)
M3	5.5mm	0.4(0.2)	0.5(0.3)	0.5(0.4)	0.7(0.5)	1(0.8)	1.3(1)	1.5(1)	2(1.5)	1.5(1)	2(1.5)
M4	7mm	0.9(0.6)	1.1(0.8)	1(0.9)	1.5(1)	2.5(1.5)	3(2)	3.5(2.5)	4.5(3)	4(3)	5(4)
M5	8mm	1.5(1)	2.5(1.5)	2.5(1.5)	3(2)	4.5(3.5)	6(4.5)	6.5(4.5)	9(6.5)	7.5(5.5)	10(7.5)
M6	10mm	3(2)	4(3)	4(3)	5.5(4)	7.5(5.5)	10(7.5)	11(8)	15(11)	13(9.5)	18(13)
M8	13mm	7(5)	9.5(7)	10(7.5)	13(10)	18(13)	25(18)	25(18)	35(26)	30(22)	45(33)
M10	16mm	14(10)	19(14)	20(15)	25(18)	35(26)	50(37)	55(41)	75(55)	65(48)	85(63)
M12	18mm	25(18)	35(26)	35(26)	45(33)	65(48)	85(63)	95(70)	130(97)	110(81)	150(111)
M14	21mm	40(30)	50(37)	55(41)	75(55)	100(74)	140(103)	150(111)	205(151)	175(129)	240(177)
M16	24mm	60(44)	80(59)	85(63)	115(85)	160(118)	215(159)	235(173)	315(232)	275(203)	370(273)
M18	27mm	80(59)	110(81)	115(85)	160(118)	225(166)	305(225)	320(236)	435(321)	375(277)	510(376)
M20	30mm	115(85)	160(118)	165(122)	225(166)	320(236)	435(321)	455(356)	620(457)	535(395)	725(535)
M22	33mm	160(118)	215(159)	225(167)	305(225)	435(321)	590(435)	620(457)	840(620)	725(535)	985(726)
M24	36mm	200(148)	275(203)	285(210)	390(288)	555(409)	750(553)	790(583)	1070(789)	925(682)	1255(926)
M27	41mm	295(218)	400(295)	415(306)	565(417)	810(597)	1100(811)	1155(852)	1565(1154)	1350(996)	1835(1353)
M30	46mm	400(295)	545(402)	565(417)	770(568)	1100(811)	1495(1103)	1570(1158)	2130(1571)	1835(1353)	2490(1837)
M33	51mm	545(402)	740(546)	770(568)	1050(774)	1500(1106)	2035(1500)	2135(1575)	2900(2139)	2500(1844)	3390(2500)
M36	55mm	700(516)	950(700)	990(730)	1345(992)	1925(1420)	2610(1925)	2740(2021)	3720(2744)	3205(2364)	4355(3212)

**CAUTION:** Use only metric tools on metric hardware. Other tools may not fit properly. They may slip and cause injury.

DO NOT use these values if a different torque value or tightening procedure is listed for a specific application. Torque values listed are for general use only. Check tightness of cap screws 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 fastener threads are clean and 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 amount shown in chart. Tighten toothed or serrated-type lock nuts to full torque value.

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