655B and 755B Crawler Loader Repair

For complete service information also see:

655B and 755B Crawler Loader
Operation and Test TM1333
6068 Engine CTM8
6414 Engine CTM4
Starting Motor and Actuator CTM77
Undercarriage Appraisal Manual SP326

John Deere Dubuque Works
TM1478 (11MAY94)
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 operation and tests. Repair sections tell how to repair the components. Operation and tests sections help you identify the majority of routine failures quickly.

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

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

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

TX,RR3043 -19-30SEP93

JOHN DEERE DEALERS

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

This is a complete revision for TM-1478, 655B and 755B Crawler Loader.

Listed below is a brief explanation of “WHAT” was changed and “WHY” it was changed.

1. Removal and installation, disassembly and assembly of control pump and transmission charge pump, Group 0360.

2. Current information on fuel injection timing.

3. Current information on the air conditioning systems.

4. Current information on loader control valve.

1478,DLR -19-10MAY94

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Continued on next page

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.

TM1478-19-11MAY94

Section 00
GENERAL INFORMATION

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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

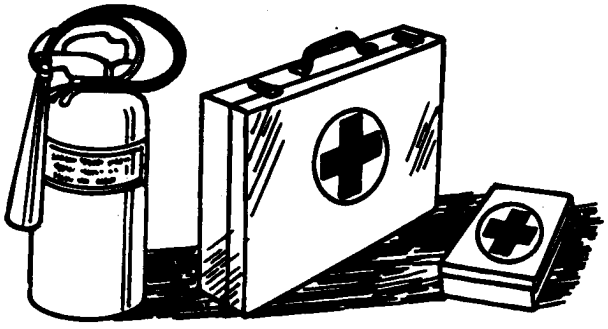
DX,SPARKS -19-03MAR93

PREPARE FOR EMERGENCIES

Be prepared if a fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.



TS291 -UN-23AUG88

DX,FIRE2 -19-03MAR93

0001
2

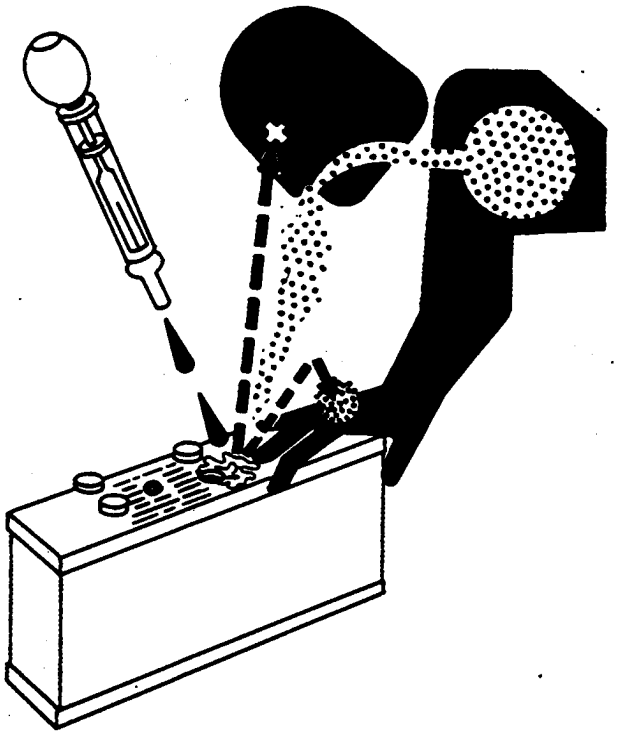
PREVENT ACID BURNS

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

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

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

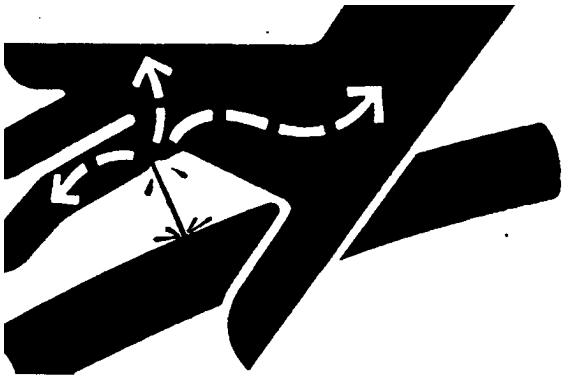
If acid is swallowed:
1. Do not induce vomiting.
2. Drink large amounts of water or milk, but do not exceed 2 L (2 quarts).
3. Get medical attention immediately.



TS203 -UN-23AUG88

DX,POISON -19-21APR93

AVOID HIGH-PRESSURE FLUIDS



X9811 -UN-23AUG88

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

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

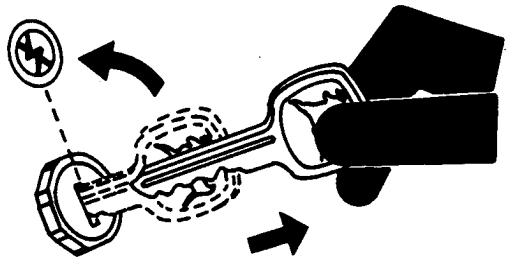
Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

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

DX,FLUID -19-03MAR93

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.



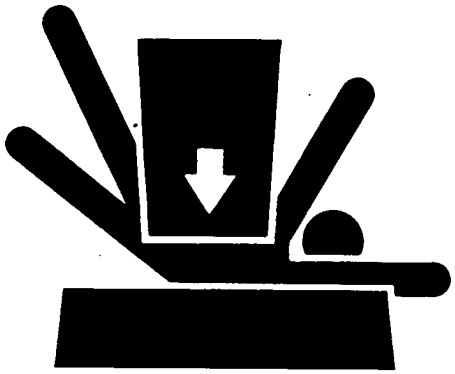
TS230 -UN-24MAY89

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

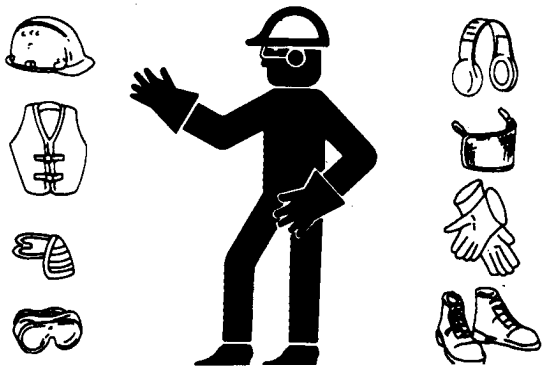
WEAR PROTECTIVE CLOTHING

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.



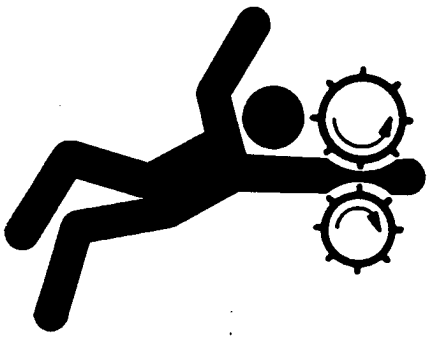
TS206 -UN-23AUG88

DX,WEAR -19-10SEP90

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.



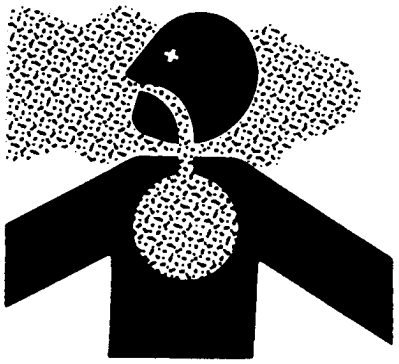
TS228 -UN-23AUG88

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.

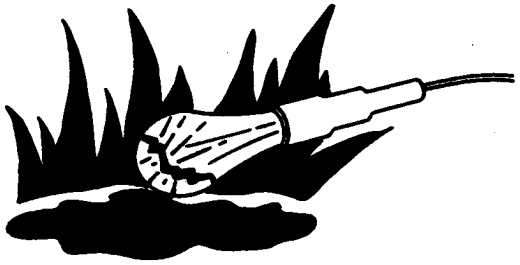


TS220 -UN-23AUG88

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.

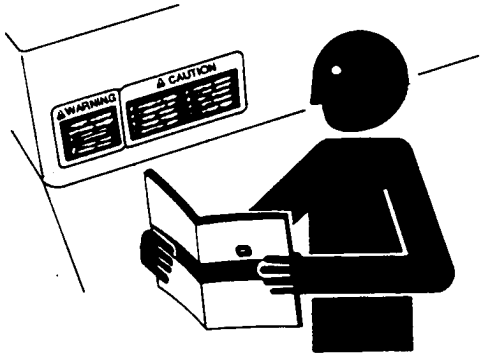


TS223 -UN-23AUG88

DX,LIGHT -19-04JUN90

REPLACE SAFETY SIGNS

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



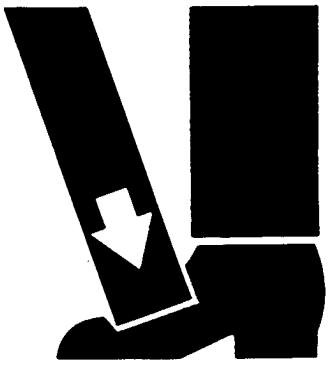
TS201 -UN-23AUG88

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.



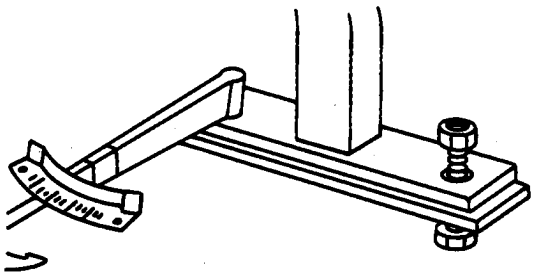
TS226 -UN-23AUG88

DX,LIFT -19-04JUN90

KEEP ROPS INSTALLED PROPERLY

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

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



TS212 -UN-23AUG88

DX,ROPS3 -19-03MAR93

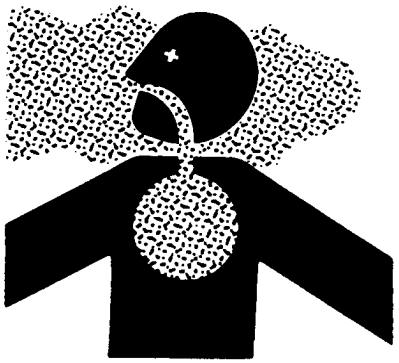
AVOID HARMFUL ASBESTOS DUST

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

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

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

Keep bystanders away from the area.

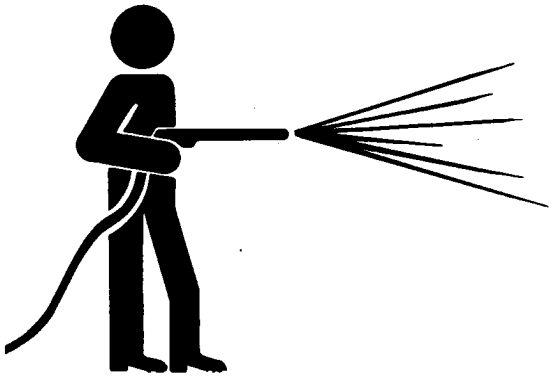


TS220 -UN-23AUG88

DX,DUST -19-15MAR91

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

USE PROPER TOOLS

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

Use power tools only to loosen threaded parts and fasteners.

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

Use only service parts meeting John Deere specifications.

TS779 -UN-08NOV89

DX,REPAIR -19-04JUN90

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DISPOSE OF WASTE PROPERLY

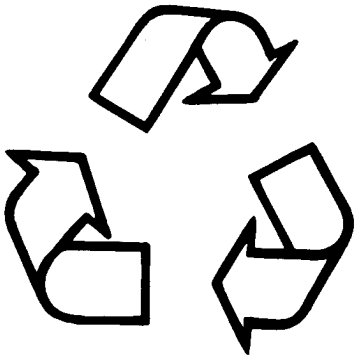
Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with John Deere equipment include such items as oil, fuel, coolant, brake fluid, filters, and batteries.

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

Do not pour waste onto the ground, down a drain, or into any water source.

Air conditioning refrigerants escaping into the air can damage the Earth's atmosphere. Government regulations may require a certified air conditioning service center to recover and recycle used air conditioning refrigerants.

Inquire on the proper way to recycle or dispose of waste from your local environmental or recycling center, or from your John Deere dealer.



TS1133 -UN-26NOV90

DX,DRAIN -19-03MAR93

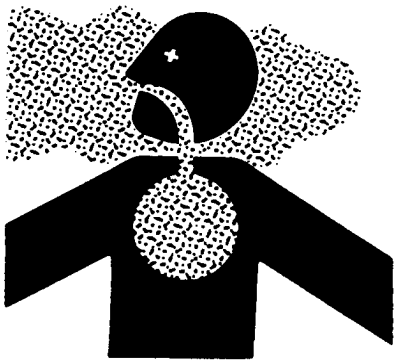
LIVE WITH SAFETY

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

TS231 -19-07OCT88

DX,LIVE -19-25SEP92

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 -19-03MAR93

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 -19-03MAR93

PRACTICE SAFE MAINTENANCE

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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.

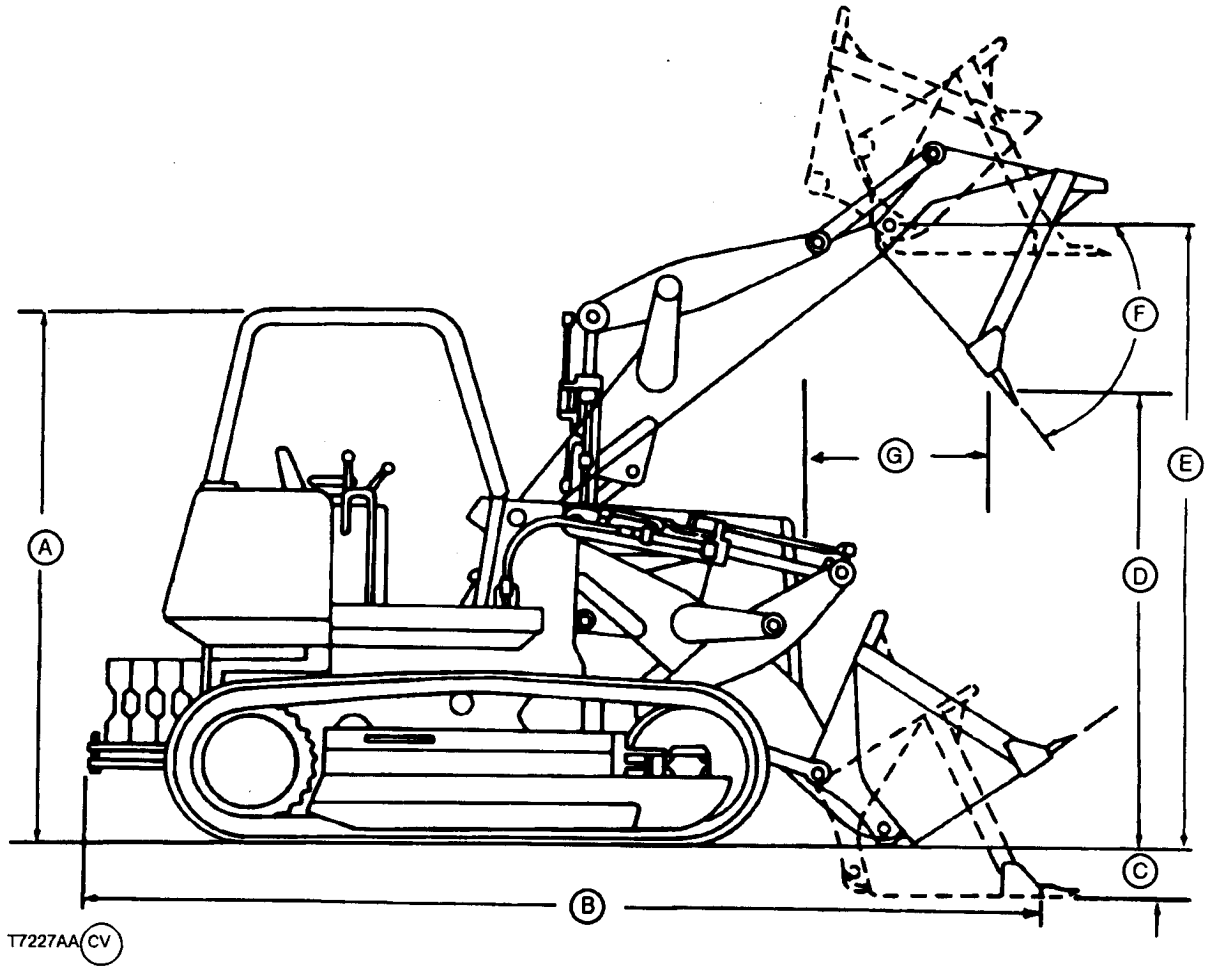
Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any buildup of grease, oil, or debris.

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

TS218 -UN-23AUG88

DX,SERV -19-03MAR93

655B CRAWLER LOADER



A—10 ft 1.5 in. (3.09 m)
B—18 ft 6.5 in. (5.65 m)
C—5.5 in. (140 mm)
D—9 ft 2.5 in. (2.81 m)
E—11 ft 10 in. (3.60 m)
F—45°
G—4 ft 0.0 in. (1.22 m)

NOTE: Specifications and design subject to change without notice. Wherever applicable specifications are in accordance with ICED and SAE standards. Except where otherwise noted, these specifications are based on a unit equipped with 2 cu. yd. (1.53 m^3) bucket with teeth, roll-over protective canopy, four counterweights, full fuel tank, 175 lb (79 kg) operator, and standard equipment.

TX,115,DH971 -19-16MAR92

655B GENERAL SPECIFICATIONS

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Specifications and design are subject to change without notice. Whenever applicable, specifications are in accordance with SAE standards. Except where otherwise noted, these specifications are based on a unit with a 2 cu yd (1.5 m^3) bucket with teeth, roll-over protective canopy, four counterweights, full fuel tank, 175 lb (80 kg) operator and standard equipment.

Rated Power @ 2100 rpm:	**SAE**	**DIN 6270B**
Net	120 hp (90 kW)	90 kW
Gross	128 hp (95 kW)	

Net engine power is with standard equipment including air cleaner, exhaust system, alternator, and cooling fan, at standard conditions per SAE J1349 and DIN 6270B using No. 2-D fuel @ 35 API gravity. No derating is required up to 10 000 ft (3000 m) altitude. Gross power is without cooling fan.

Engine:

- John Deere 6-cylinder turbocharged diesel 6068T
  - SAE net horsepower . . . . . 120 hp (89 kW)
- Bore and stroke . . . . . 4.19 x 5 in. (106.4 x 127 mm)
- Maximum net torque @ 1300 rpm . . . . . 375 lb-ft (509 Nm) (51.8 kg-m)
- Piston displacement . . . . . 414 cu. in. (6.785 L)
- Compression ratio . . . . . 16.8 to 1
- Lubrication . . . . . Pressure system with full flow filters
- Cooling . . . . . Pressurized with thermostat and controlled bypass
- Fan . . . . . Blower
- Dual-stage aspirated air cleaner with restriction indicator . . . . . Dry
- Electrical system . . . . . 24 volt with alternator
- Batteries (two 12-volt) cold cranking capacity at 0°F (-18°C) . . . . . 625 amps
  - Reserve capacity . . . . . 160 minutes each

Transmission:

- Splitter drive . . . . . Pressure-lubricated helical gears drive both transmissions, main hydraulic pump, winch drive shaft and auxiliary pump drive
- Drive . . . . . Dual-Path, fully automatic, infinitely variable hydrostatic transmissions
- Speeds . . . . . Infinite from 0 to 6.5 mph (0 to 10.5 km/h) forward and reverse

Steering

Fully modulated, infinitely variable pedal steering for live power turns and counterrotation. No need for steering clutches or steering brakes.

Brakes:

- Service . . . . . Hydrostatic
- Parking . . . . . Wet-disk brakes are automatically applied when engine is stopped, or manually applied with center foot pedal during normal operation.

Hydraulic System (open center):

- Pressure . . . . . 2250 psi (15 514 kPa)
- Filter . . . . . 10 micron filter in return line with bypass
- Pump . . . . . Gear, 54 gpm (204) L/min) @ rated engine speed

Tracks:

- Track shoes each side 40
- Shoe width
  - Standard . . . . . 15 in. (381 mm)
  - Wide track . . . . . 21 in. (533 mm)
- Ground contact area
  - Standard . . . . . 2724 sq. in. (17 575 cm^2)
  - Wide track . . . . . 3814 sq. in. (24 600 cm^2)
- Ground pressure
  - Standard . . . . . 11.9 psi (82 kPa) (0.8 bar)
  - Wide track . . . . . 8.8 psi (59 kPa) (0.6 bar)
- Minimum ground clearance . . . . . 14 in. (356 mm)
- Track gauge
  - Standard . . . . . 64 in. (1.63 m)
- Wide track . . . . . 70 in. (1.78 m)

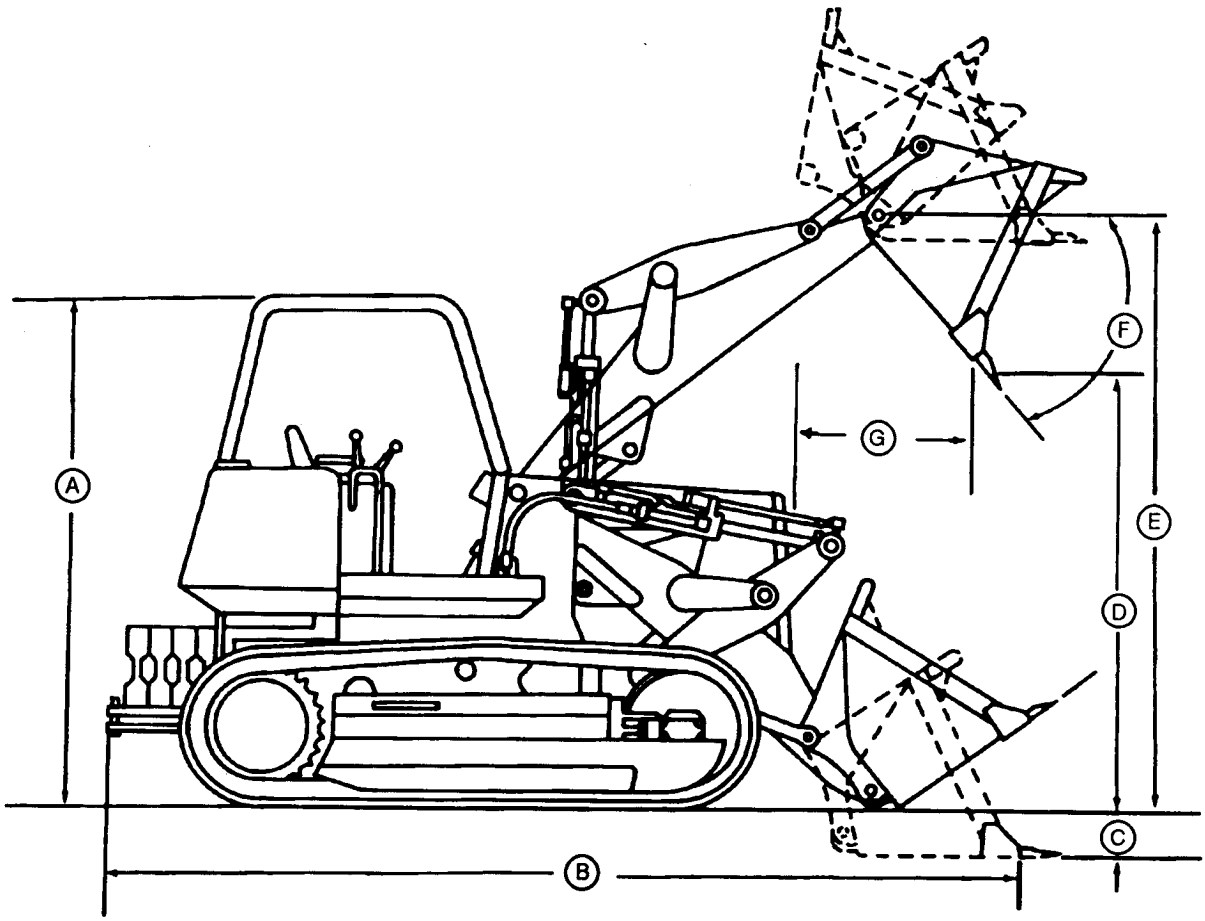
Hydraulic Cylinders:

	Bore	**Stroke**
Boom	5.50 in. (140 mm)	32 in. (813 mm)
Bucket	4.50 in. (114 mm)	21.52 in. (547 mm)
Boom cylinder rods		3.75 in. (95 mm) dia.
Bucket cylinder rods		2.25 in. (57 mm) dia.

SAE Operating weight w/ROPS . . . . . 32 400 lb (14 696 kg)
SAE Operating weight w/wide track and w/ROPS . . . . . 33 600 lb. (15 240 kg)

TX,115,DH972 -19-05JAN94

755B CRAWLER LOADER



A—10 ft 3.7 in. (3.14 m)
B—18 ft 6.5 in. (5.65 m)
C—4.2 in. (107 mm)
D—9 ft 4.0 in. (2.84 m)
E—11 ft 11 in. (3.63 m)
F—45˚
G—3 ft 11 in. (1.19 m)

TX,115,DH973 -19-16MAR92

755B GENERAL SPECIFICATIONS

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4

Specifications and design are subject to change without notice. Whenever applicable, specifications are in accordance with SAE standards. Except where otherwise noted, these specifications are based on a unit with a 2.25 cu yd (1.7 m^3) bucket with teeth, roll-over protective canopy, four counterweights, full fuel tank, 175 (80 kg) operator and standard equipment.

Rated Power @ 2100 rpm:	**SAE**	**DIN 6270B**
Net	140 hp (104 kW)	104 kW
Gross	148 hp (110 kW)	

Net engine power is with standard equipment including air cleaner, exhaust system, alternator, and cooling fan, at standard conditions per SAE J1349 and DIN 6270B using No. 2-D fuel @ 35 API gravity. No derating is required up to 10 000 ft (3000 m) altitude. Gross power is without cooling fan.

Engine:

John Deere 6-cylinder turbocharged diesel 6068T

SAE net horsepower	140 hp (104 kw)
Maximum net torque @ 1300 rpm	420 lb-ft (570 Nm) (58.1 kg-m)
Compression ratio	16.8 to 1
Bore and stroke	4.19 x 5 in. (106.4 x 127 mm)
Piston displacement	414 cu. in. (6.785 L)
Lubrication	Pressure system with full flow filters
Cooling	Pressurized with thermostat and controlled bypass
Fan	Blower
Dual-stage aspirated air cleaner with restriction indicator	Dry
Electrical system	24 volt w/alternator
Batteries (two 12-volt) cold cranking capacity at:	
0°F (-18°C)	625 amps
Reserve capacity	160 minutes each

Transmission:

Splitter drive	Pressure-lubricated helical gears drive both transmissions, main hydraulic pump, winch drive shaft and auxiliary pump drive
Drive	Dual-Path, fully automatic, infinitely variable hydrostatic transmissions.
Speeds	Infinite from 0 to 6.7 mph (0 to 10.8 km/h) forward and reverse

Steering:

Fully modulated, infinitely variable pedal steering for live power turns and counterrotation. No need for steering clutches or steering brakes.

Brakes:

Service	Hydrostatic
Parking	Wet-disk brakes are automatically applied when engine is stopped, or manually applied with center foot pedal during normal operation.

Hydraulic System (open center):

Pressure	2500 psi (17 237 kPa)
Pump	Gear, 54 gpm (204 L/min) @ rated engine speed
Filter	10 micron filter in return line w/bypass

Tracks:

Track shoes each side	36
Shoe width	
Standard	17 in. (432 mm)
Wide track	21 in. (533 mm)
Ground contact area	
Standard	3173 sq. in. (20 472 cm^2)
Wide track	3927 sq. in. (25 329 cm^2)
Ground pressure	
Standard	11.4 psi (77 kPa) (1.2 bar)
Wide track	9.5 psi (63 kPa) (0.6 bar)
Minimum ground clearance	15.3 in. (389 mm)
Track gauge	
Standard	66 in. (1.7 m)
Wide track	70 in. (1.8 m)

Hydraulic Cylinders:

	Bore	**Stroke**
Boom	5.50 in. (140 mm)	32 in. (813 mm)
Bucket	4.50 in. (114 mm)	21.52 in. (547 mm)
Boom cylinder rods		3.75 in. (95 mm) dia.
Bucket cylinder rods		2.25 in. (57 mm) dia.

SAE Operating weight w/ROPS	36 150 lb (16 400 kg)
SAE Operating weight w/wide track and w/ROPS	37 450 lb. (17 000 kg)

TX,115,DH974 -19-05JAN94

655B AND 755B DRAIN AND REFILL CAPACITIES

	U.S.	Metric
Cooling system	7 gal	26.5 L
Fuel tank	73 gal	276 L
Crankcase, including filter	20 qt	19 L
Splitter drive	6 qt	5.7 L
Inner final drive (655B) (each side)	5 gal	19 L
Inner final drive (widetrack) (each side)	7.25 gal	23.6 L
Outer final drive (each side)	3.25 gal	13.25 L
Hydraulic reservoir	27.5 gal	106 L
Hydrostatic transmission reservoir	23 gal	87 L

T82,CRSP,AG -19-05JAN94

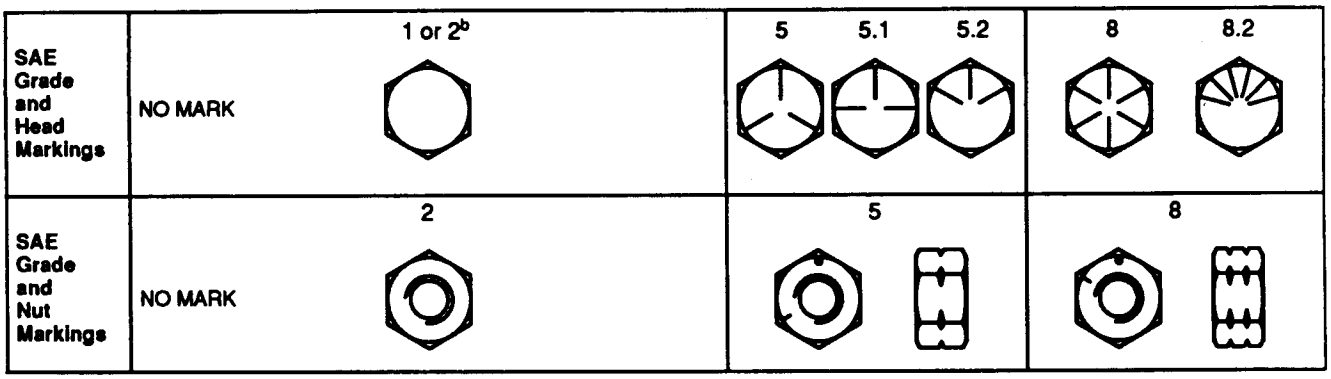
HARDWARE TORQUE SPECIFICATIONS

Check cap screws and nuts to be sure they are tight. If hardware is loose, tighten to torque shown on the following charts unless a special torque is specified.

T82,SKMA,AT -19-29JAN92

UNIFIED INCH BOLT AND CAP SCREW TORQUE VALUES

0003
2



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	400	300	510	375	400	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.

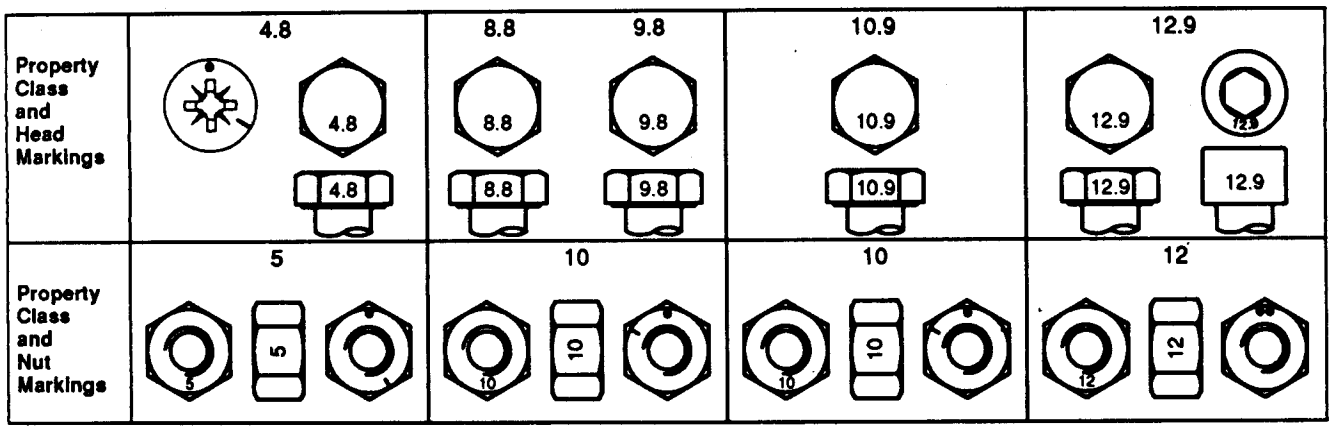
Tighten plastic insert or crimped steel-type lock nuts to approximately 50 percent of the dry torque shown in the chart, applied to the nut, not to the bolt head. Tighten toothed or serrated-type lock nuts to the full torque value.

[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 -19-22APR94

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	2200	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.

[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.

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.

DX,TORQ2 -19-16APR92

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ADDITIONAL METRIC CAP SCREW TORQUE VALUES

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

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

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 cap screws having lock nuts to approximately 50 percent of amount shown in chart.

METRIC CAP SCREW TORQUE VALUES*

Nominal Dia	T-Bolt N·m	T-Bolt lb-ft	H-Bolt N·m	H-Bolt lb-ft	M-Bolt N·m	M-Bolt lb-ft
8	29	21	20	15	10	7
10	63	46	45	33	20	15
12	108	80	88	65	34	25
14	176	130	137	101	54	40
16	265	195	206	152	78	58
18	392	289	294	217	118	87
20	539	398	392	289	167	125
22	735	542	539	398	216	159
24	931	687	686	506	274	202
27	1372	1012	1029	759	392	289
30	1911	1410	1421	1049	539	398
33	2548	1890	1911	1410	735	542
36	3136	2314	2401	1772	931	687

Torque tolerance is ±10%.

T6873AA

T-Bolt

T6873AB

H-Bolt

T6873AC

M-Bolt

-UN-18OCT88 T6873AA

-UN-18OCT88 T6873AB

-UN-18OCT88 T6873AC

04T,90,M170 -19-29JAN92

SERVICE RECOMMENDATIONS FOR 37˚ FLARE AND 30˚ CONE SEAT CONNECTORS

1. Inspect flare and flare seat. They must be free of dirt or obvious defects.

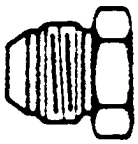
2. Defects in tube flare cannot be repaired. Overtightening a defective flared fitting will not stop leaks.

3. Align tube with fitting before attempting to start nut.

4. Lubricate male threads with hydraulic fluid or petroleum jelly.

5. Index angle fittings and tighten by hand.

6. Tighten fitting or nut to torque value shown on torque chart. Do not allow hoses to twist when tightening fittings.



T6234AC -UN-18OCT88

STRAIGHT FITTING OR SPECIAL NUT TORQUE CHART*

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

**Torque tolerance is ± 10%.*

T82,BHMA,EL -19-16MAR92

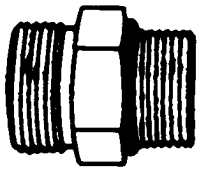
SERVICE RECOMMENDATIONS FOR O-RING BOSS FITTINGS

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

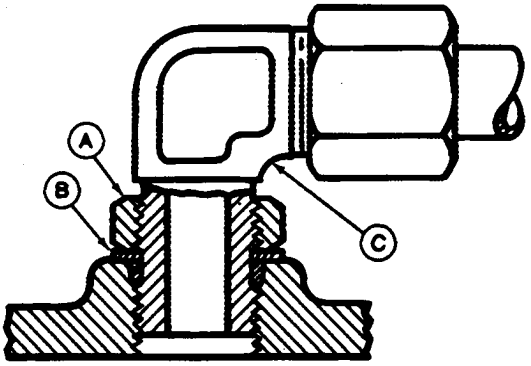
ANGLE FITTING

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.

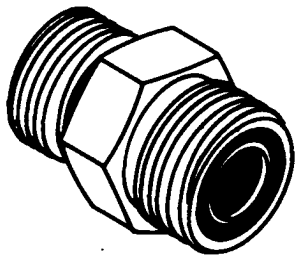
TORQUE VALUE

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 -19-09DEC93

SERVICE RECOMMENDATIONS FOR FLAT FACE O-RING SEAL FITTINGS



T6243AD -UN-18OCT88

1. Inspect the fitting sealing surfaces. They must be free of dirt or defects.

2. Inspect the O-ring. It must be free of damage or defects.

3. Lubricate O-rings and install into groove using petroleum jelly to hold in place.

4. Push O-ring into the groove with plenty of petroleum jelly so O-ring is not displaced during assembly.

5. Index angle fittings and tighten by hand pressing joint together to insure O-ring remains in place.

6. Tighten fitting or nut to torque value shown on the chart per dash size stamped on the fitting. Do not allow hoses to twist when tightening fittings.

FLAT FACE O-RING SEAL FITTING TORQUE

Nominal Tube O.D. mm	Nominal Tube O.D. in.	Dash Size	Thread Size in.	Swivel Nut N·m	Swivel Nut lb-ft	Bulkhead Nut N·m	Bulkhead Nut lb-ft
6.35	0.250	-4	9/16-18	16	12	5.0	3.5
9.52	0.375	-6	11/16-16	24	18	9.0	6.5
12.70	0.500	-8	13/16-16	50	37	17.0	12.5
15.88	0.625	-10	1-14	69	51	17.0	12.5
19.05	0.750	-12	1 3/16-12	102	75	17.0	12.5
22.22	0.875	-14	1 3/16-12	102	75	17.0	12.5
25.40	1.000	-16	1 7/16-12	142	105	17.0	12.5
31.75	1.250	-20	1 11/16-12	190	140	17.0	12.5
38.10	1.500	-24	2-12	217	160	17.0	12.5

NOTE: Torque tolerance is +15 -20%.

04T,90,K67 -19-21JAN92

0003
8

SERVICE RECOMMENDATIONS FOR FLARED CONNECTIONS—STRAIGHT OR TAPERED THREADS

1. Inspect flare and flare seat. They must be free of dirt or obvious defects.

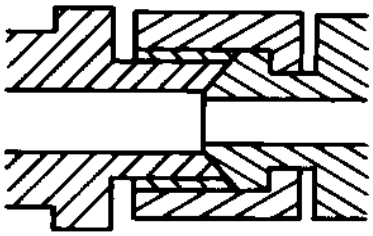
2. Defects in the tube flare cannot be repaired. Overtightening a defective flared fitting will not stop leaks.

3. Align the tube with the fitting before attempting to start the nut.

4. Lubricate the male threads with hydraulic fluid or petroleum jelly.

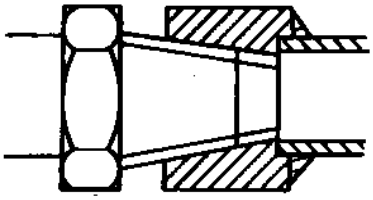
5. Index angle fittings and tighten by hand.

6. Tighten fitting or nut to torque value shown on the chart. Do not allow hoses to twist when tightening fittings.



T6873AE -UN-18OCT88

Straight Thread



T6873AD -UN-18OCT88

Tapered Thread

TORQUE CHART*

Thread Size	Straight Thread**		Tapered Thread	
	N·m	lb-ft	N·m	lb-ft
1/8	15	11		
1/4	20	15	45	33
3/8	29	21	69	51
1/2	49	36	93	69
3/4	69	51	176	130
1	157	116	343	253
1-1/2	196	145	539	398
2	255	188	588	434

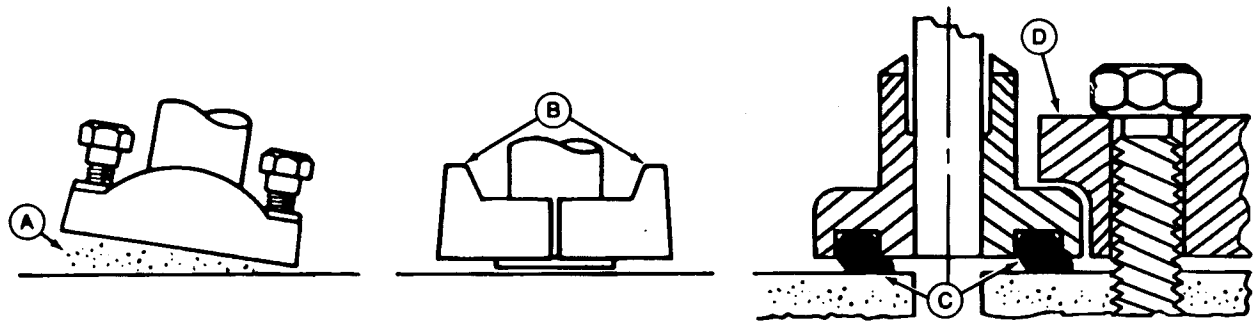
NOTE: If female thread is cast iron (control valves, brake valves motors, etc.), torque must be reduced approximately 10%.

**Torque tolerance is ±10%.*

***With seat face.*

04T,90,M171 -19-28JAN92

SERVICE RECOMMENDATIONS FOR INCH SERIES FOUR BOLT FLANGE FITTINGS



T6890BB -UN-01MAR90

A—Sealing Surface **B—Split Flange** **C—Pinched O-Ring** **D—Single Piece Flange**

1. Clean sealing surfaces (A). Inspect. Scratches cause leaks. Roughness causes seal wear. Out-of-flat causes seal extrusion. If defects cannot be polished out, replace component.

2. Install O-ring (and backup washer if required) into groove using petroleum jelly to hold it in place.

3. Split flange: Loosely assemble split flange (B) halves. Make sure split is centrally located and perpendicular to port. Hand tighten cap screws to hold parts in place. Do not pinch O-ring (C).

4. Single piece flange (D): Place hydraulic line in center of flange and install cap screws. Flange must be centrally located on port. Hand tighten cap screws to hold flange in place. Do not pinch O-ring.

5. Tighten one cap screw, then tighten the diagonally opposite cap screw. Tighten two remaining cap screws. Tighten all cap screws as specified in the chart below.

DO NOT use air wrenches. DO NOT tighten one cap screw fully before tightening the others. DO NOT over tighten.

TORQUE CHART*

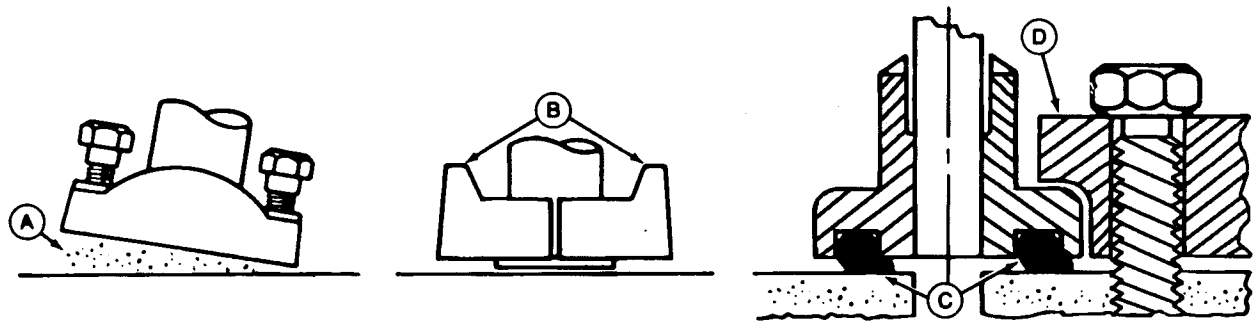
Nominal Flange Size	Cap Screw Size	N·m Min	N·m Max	lb-ft Min	lb-ft Max
1/2	5/16-18 UNC	20	31	15	23
3/4	3/8-16 UNC	28	54	21	40
1	3/8-16 UNC	37	54	27	40
1-1/4	7/16-14 UNC	47	85	35	63
1-1/2	1/2-13 UNC	62	131	46	97
2	1/2-13 UNC	73	131	54	97
2-1/2	1/2-13 UNC	107	131	79	97
3	5/8-11 UNC	158	264	117	195
3-1/2	5/8-11 UNC	158	264	117	195
4	5/8-11 UNC	158	264	117	195
5	5/8-11 UNC	158	264	117	195

**Tolerance ± 10%. The torques given are enough for the given size connection with the recommended working pressure. Torques can be increased to the maximum shown for each cap screw size if desired. Increasing cap screw torque beyond this maximum will result in flange and cap screw bending and connection failures.*

04T,90,K174 -19-21JAN92

SERVICE RECOMMENDATIONS FOR METRIC SERIES FOUR BOLT FLANGE FITTING

0003
10



T6890BB -UN-01MAR90

A—Sealing Surface **B—Split Flange** **C—Pinched O-Ring** **D—Single Piece Flange**

1. Clean sealing surfaces (A). Inspect. Scratches cause leaks. Roughness causes seal wear. Out-of-flat causes seal extrusion. If defects cannot be polished out, replace component.

2. Install the correct O-ring (and backup washer if required) into groove using petroleum jelly to hold it in place.

3. Split flange: Loosely assemble split flange (B) halves. Make sure split is centrally located and perpendicular to the port. Hand tighten cap screws to hold parts in place. Do not pinch O-ring (C).

4. Single piece flange (D): Place hydraulic line in center of flange and install four cap screws. Flange must be centrally located on port. Hand tighten cap screws to hold flange in place. Do not pinch O-ring.

5. After components are properly positioned and cap screws are hand tightened, tighten one cap screw, then tighten the diagonally opposite cap screw. Tighten two remaining cap screws. Tighten all cap screws as specified in the chart below.

DO NOT use air wrenches. DO NOT tighten one cap screw fully before tightening the others. DO NOT over tighten.

TORQUE CHART*

Thread**	N·m	lb-ft
M6	12	9
M8	30	22
M10	57	42
M12	95	70
M14	157	116
M16	217	160
M18	334	246
M20	421	318

**Tolerance ± 10%. The torques given are enough for the given size connection with the recommended working pressure. Increasing cap screw torque beyond these amounts will result in flange and cap screw bending and connection failures.*

***Metric standard thread.*

04T,90,K175 -19-21JAN92

CHECK TRACK SHOE BOLT TORQUE—EXCEPT SPLIT MASTER LINK

Check track shoe screws periodically for tightness.

MINIMUM TORQUE

755B . . . . . 440 lb-ft (597 N·m)
655B . . . . . 280 lb-ft (380 N·m)

If cap screws check less than above specification, remove shoes and clean paint or other foreign material from chain and shoe mating surfaces.

Lubricate cap screws and assemble shoes.

CAP SCREW TORQUE SPECIFICATION

	Initial Torque	Additional Turn
755B	220 lb-ft (298 N·m)	1/3 turn (120˚)
655B	120 lb-ft (163 N·m)	1/3 turn (120˚)

T82,CRMA,FU -19-29APR86

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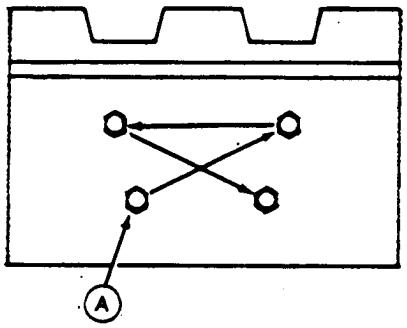
12

CHECK SPLIT MASTER LINK TRACK SHOE BOLT TORQUE



T96302 -UN-01NOV88

MINIMUM TORQUE

755B . . . . . 440 lb-ft (597 N·m)
655B . . . . . 280 lb-ft (380 N·m)

If cap screws check less than above specification, remove shoe and clean paint or other foreign material from chain and shoe mating surfaces.

Lubricate cap screw threads and bearing surface of cap screw head using PT569 John Deere NEVER-SEEZ® Lubricant or equivalent.

IMPORTANT: DO NOT use impact wrench to start master shoe cap screws to avoid cross-threading.

Use only the torque turn method described below when assembling master track shoe. This method provides the optimum tightness level for this critical area.

Install master shoe on master links and start cap screws by hand to avoid cross-threading.

Tighten master cap screws in a criss-cross sequence (A). Repeat sequence a second time. Use same tightening sequence for additional turns.

MASTER CAP SCREW TORQUE SPECIFICATIONS

	Initial Torque	Additional Turn
755B	220 lb-ft (298 N·m)	1/2 turn (180˚)
655B	120 lb-ft (163 N·m)	1/3 turn (120˚)

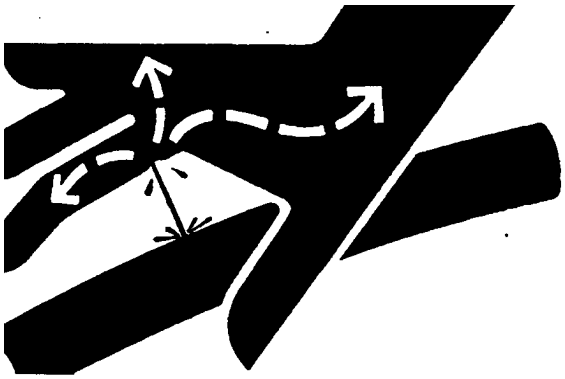
NEVER-SEEZ is a trademark of the Never-Seez Compound Corp.

02T,45,K7 -19-29APR86

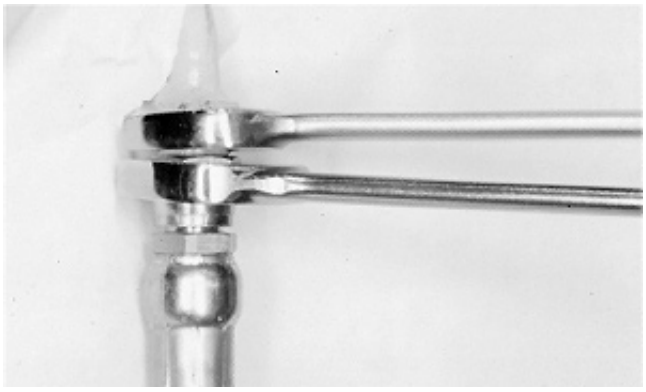
CHECK OIL LINES AND FITTINGS

N **CAUTION: 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.



X9811 -UN-23AUG88



T85401 -UN-24JAN89

Check all oil lines, hoses and fittings regularly for leaks or damage. Make sure all clamps are in position and tight. Make sure hoses are not twisted or touching machine parts which are moving.

Tubing with dents may cause the oil to overheat. If you find tubing with dents, install new tubing immediately.

IMPORTANT: Tighten fittings as specified in torque chart.

When you tighten connections, use two wrenches to prevent bending or breaking tubing and fittings.

T82,FLMA,AI -19-14MAR90

USE THE PERIODIC MAINTENANCE CHART

The chart and the operator's manual list all the service points and the procedures for maintaining the machine. Use them to check, and adjust your customer's machine.

T82,CRPD,GO -19-06MAR85

FUEL SPECIFICATIONS

Use ONLY clean, high-quality fuel.

Use Grade No. 2-D fuel above 4˚C (40˚F).

Use Grade No. 1-D fuel below 4˚C (40˚F).

Use Grade No. 1-D fuel for all air temperatures at altitudes above 1 500 m (5000 ft).

IMPORTANT: If fuel sulfur content exceeds 0.5 per cent, the engine oil drain interval must be reduced by 50 per cent (to 125 hours).

Use fuel with less than 1.0 per cent sulfur. If possible, use fuel with less than 0.5 per cent sulfur.

For maximum filter life, sediment and water should not be more than 0.10 per cent.

The cetane number should be 40 minimum. If you operate your machine where air temperatures are normally low or where altitudes are high, you may need fuel with a higher cetane number.

Cloud Point—For cold weather operation, cloud point should be 6˚C (43˚F) below lowest normal air temperature.

T82,BHFL,F -19-14MAR90

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 -19-03MAR93

FUEL TANK

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CAUTION: Handle fuel carefully. If the engine is hot or running, do not fill the fuel tank. Do not smoke while you fill fuel tank or work on fuel system.

To avoid condensation, fill the fuel tank at the end of each day's operation. Capacity is 73 gal (276 L).

X,655B,DS5252 -19-10MAY94

DO NOT USE GALVANIZED CONTAINERS

IMPORTANT: Diesel fuel stored in galvanized containers reacts with zinc coating on the container to form zinc flakes. If fuel contains water, a zinc gel will also form. The gel and flakes will quickly plug fuel filters and damage fuel injectors and fuel pumps.

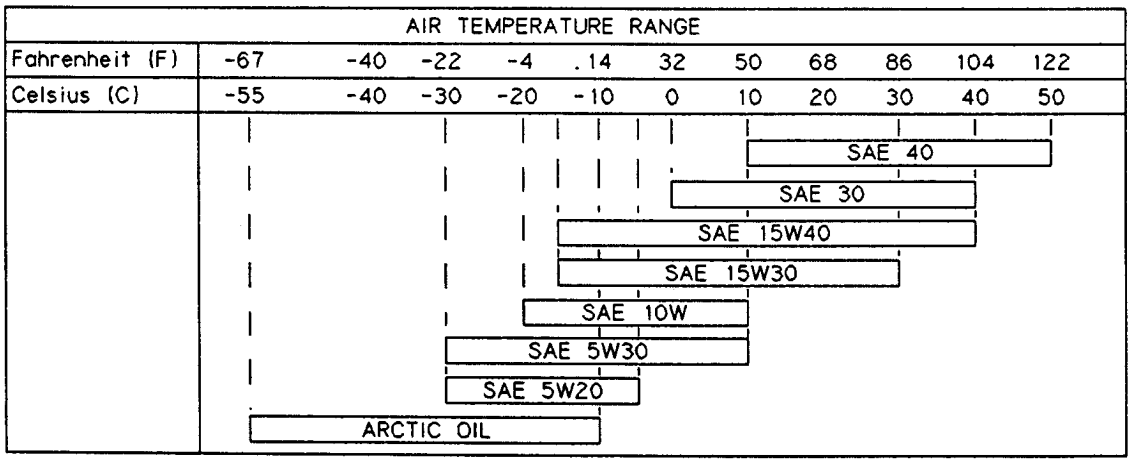
DO NOT USE a galvanized container to store diesel fuel.

Store fuel in:
—plastic containers.
—aluminum containers.
—specially coated steel containers made for diesel fuel.

DO NOT USE brass-coated containers: brass is an alloy of copper and zinc.

MX,FLBT,C -19-04JUN90

ENGINE OIL



Depending upon the expected air temperature range between oil changes, use oil viscosity shown on the temperature chart above.

Additives are not required nor recommended.

John Deere engine oil filters are highly recommended because they are of known high quality and effectiveness.

John Deere TORQ-GARD SUPREME PLUS 50® engine oil is recommended. It is a specifically balanced formulation to provide superior protection against oil thickening, carbon deposits, lacquer, and mechanical wear during high temperature operation.

John Deere TORQ-GARD SUPREME® engine oil is also recommended.

If other oils are used, the required specification is:

API Service Class CE or CD (1)
Military Spec MIL-L-2104D or MIL-L-2104C

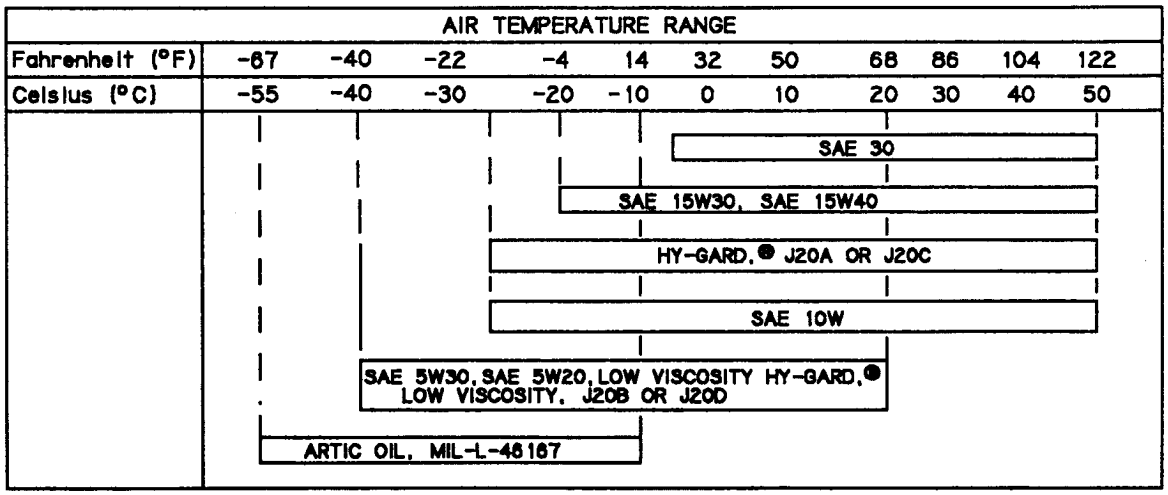
Most oil containers or specifications list several API Service Classes (such as SC, SG, CE, CC) met by the oil. For the oil you use, either CE or CD must be among the classes listed.

NOTE: Oils meeting API Service Classes CE or CD are not always available in viscosity grades SAE 5W20, SAE 5W30, and Arctic Oils. For these viscosity grades only, the following oil specification may be used but the oil and filter change interval must be reduced to 125 hours.

API Service Class CC (MIL-L-46152B)
Military Spec MIL-L-46167A (arctic oil)

TX,45,DH1532 -19-13FEB92

HYDRAULIC OIL



T7673AO -19-17JAN92

Depending upon the expected air temperature range between oil changes, use oil viscosity shown on the temperature chart above.

JOHN DEERE HY-GARD® TRANSMISSION AND HYDRAULIC OIL IS RECOMMENDED because it is specifically formulated to minimize brake chatter, and to provide maximum protection against mechanical wear.

Engine oil may be used provided it meets one or more of the following: API Service CD/SF, CD/SE, CD/SD, CD/SC, CC/SF, CC/SE, CC/SD, CC/SC (MIL-L-2104C, MIL-L-2104D, MIL-L-46152B).

You may also use oils which meet minimum John Deere standards, or other oils meeting John Deere Standard JDM J20A or J20C and J20B or J20D.

Oils meeting MIL-L46167A may be used as arctic oil.

TX,45,RR,2153 -19-13FEB92

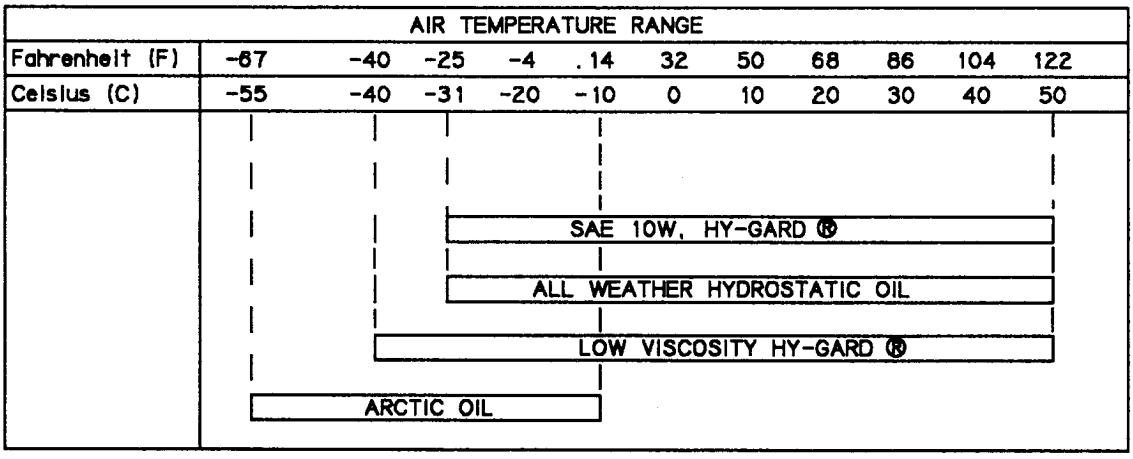
SPLITTER GEARBOX OIL

Use SAE 30 engine oil meeting one or more of the following:

API Service CD/SF, CD/SE, CD/SD, CD/SC, CC/SF, CC/SE, CC/SD, CC/SC (MIL-L-2104D, MIL-L-2104C, MIL-L-46152B, MIL-L-46152).

02T,45,C15 -19-16MAR92

TRANSMISSION OIL



Depending upon the expected air temperature range between oil changes, use oil viscosity shown on the temperature chart above.

The following oils are recommended:

John Deere HY-GARD® Transmission and Hydraulic Oils.

Engine oil (SAE 10W) meeting one or more of the following:

API Service CD/SF, CD/SE, CD/SD, CD/SC (MIL-L-2104D, MIL-L-2104C).

John Deere All Weather Hydrostatic Oil.

TX,45,RR,2161 -19-13FEB92

INNER AND OUTER FINAL DRIVES OIL

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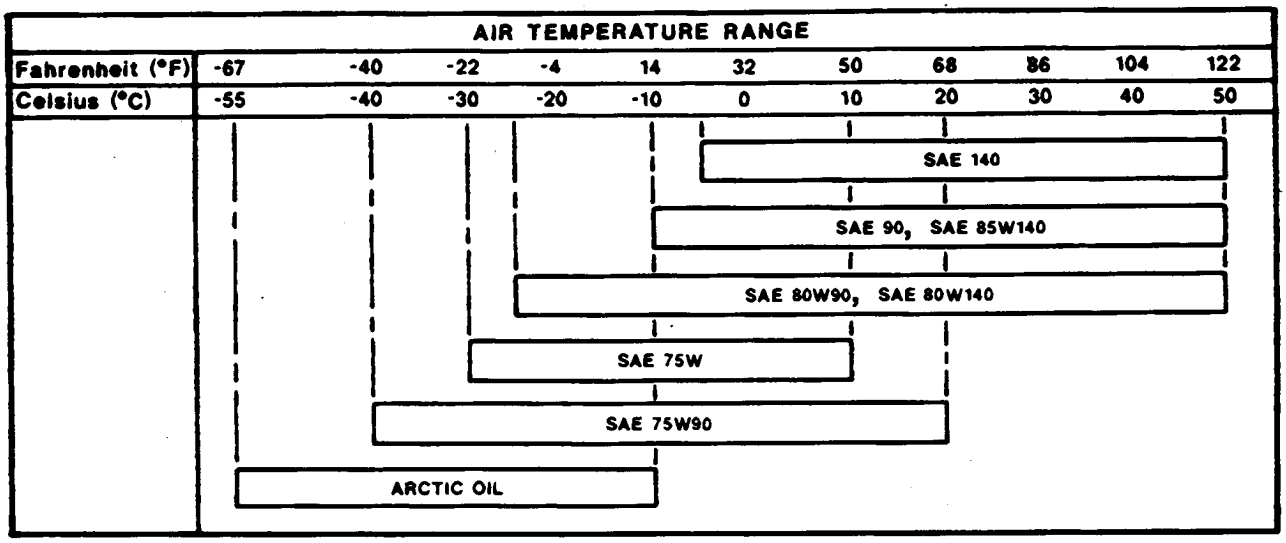


Depending on the expected air temperature range between oil changes, use oil viscosity shown on the chart above.

The following oils are recommended:

John Deere API GL-5 Gear Oil

Oils meeting API Service GL-5 (MIL-L-2105B or MIL-2105C)

Oil meeting MIL-L-10324A may be used as arctic oil.

02T,45,C17 -19-07JUN91

TRACK ROLLERS, FRONT IDLER, CARRIER ROLLER AND TRACK FRAME PIVOT

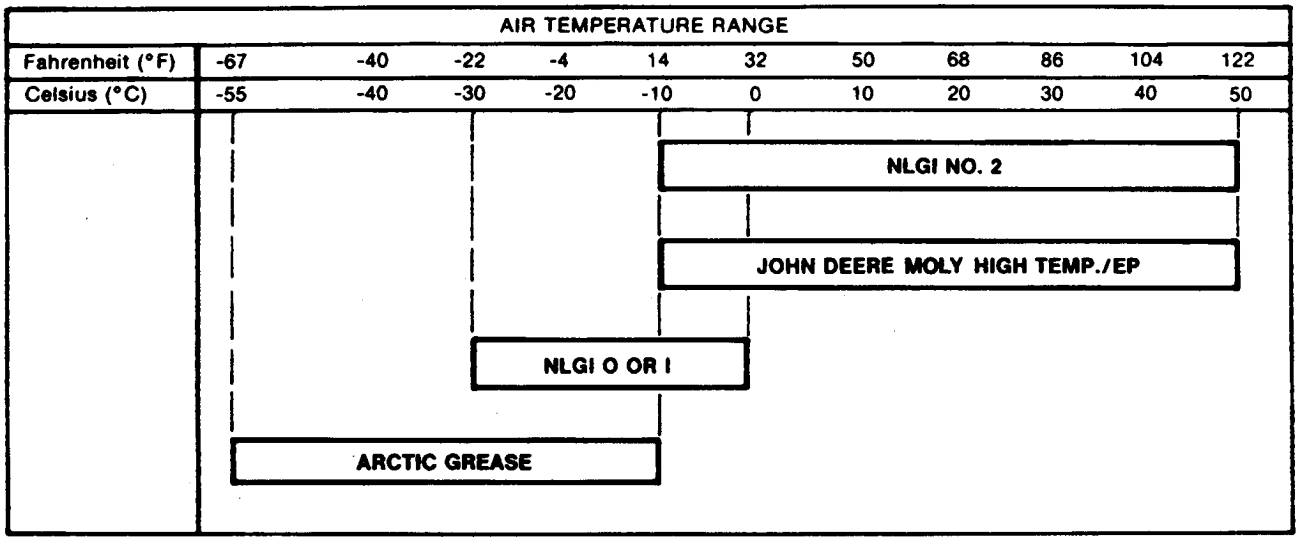
The following oils are recommended:

API GL-5 gear oil (SAE 80W90)

SAE 80W90 gear oil meeting API Service GL-5 (MIL-L-2105B or MIL-L-2105C).

02T,45,C18 -19-07JUN91

GREASE



T6722AA -19-27JAN89

Depending on the expected air temperature range, use grease shown on chart above.

Greases recommended are:

• John Deere Moly High Temperature/EP Grease (Preferred)

• SAE Multipurpose Grease with Extreme Pressure (EP) performance and containing 3 to 5 per cent molybdenum disulfide

• SAE multi-purpose EP Grease

• Grease meeting MIL-G-10924C specifications may be used as arctic grease.

02T,45,C49 -19-04DEC91

WINCH OIL

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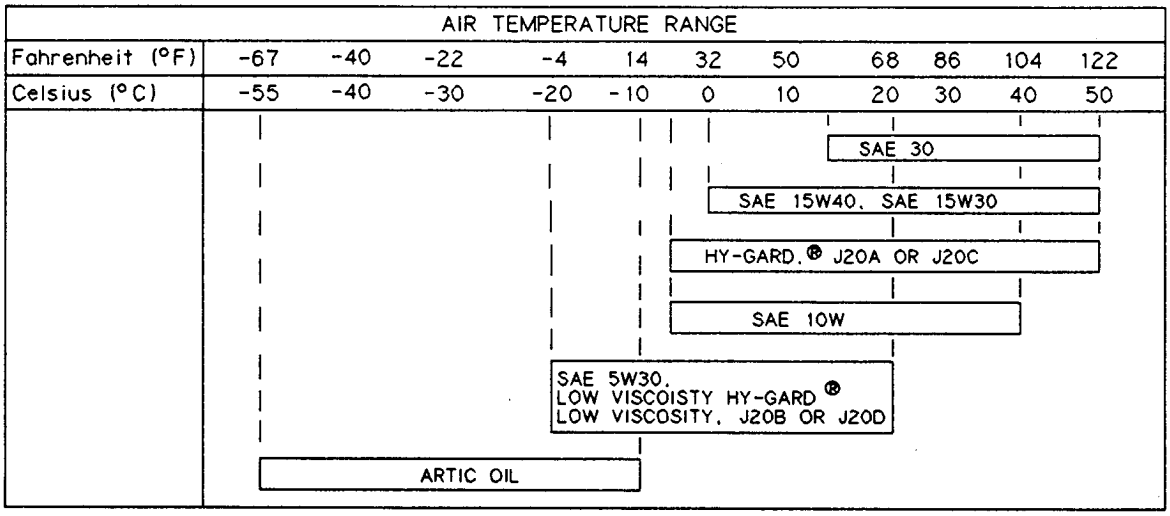
8



T7784AD -19-17JUN92

Depending upon the expected air temperature range between oil changes, use oil viscosity shown on the temperature chart above.

John Deere HY-GARD® Transmission and Hydraulic Oil is recommended because it is specifically formulated to provide optimum clutch engagement, and to provide maximum protection against mechanical wear, rust, corrosion, and foaming.

Engine oil may be used provided it meets the TO2 oil test and one or more of the following: API Service CD/SF, CD/SE, CD/SD, CD/SC, CC/SF, CC/SE, CC/SD, CC/SC (MIL-L-2104D, MIL-L-2104C, MIL-L-46152B.)

You may also use oils that meet minimum John Deere Standard J20A and J20C or J20B and J20D.

Oil meeting MIL-L-5606A may also used as an arctic oil.

TX,45,RR2426 -19-03AUG92

Thank you very much for your reading.

Please Click Here Then Get More Information.