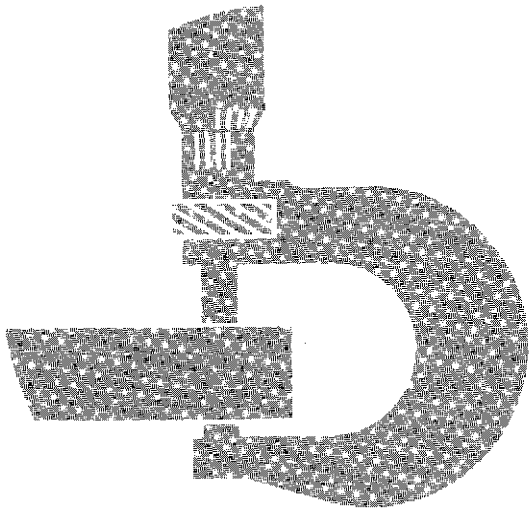
84
Loader
Repair



TECHNICAL MANUAL

TM1398 (08MAY90)

LITHO IN U.S.A.

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.

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

This is a complete revision for TM1398, 84 Loader.

To make miscellaneous additions and corrections.

To update material per earlier and later units throughout manual.

TX,1398,DCL -19-20APR90

110590

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.

TM1398-19-08MAY90

Section I
GENERAL INFORMATION

Contents

110590

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

O53,FLAME -19-26JAN90

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

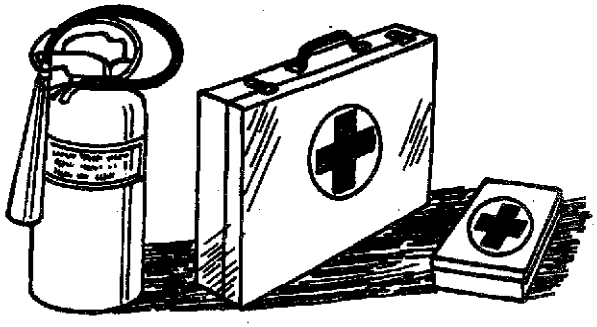
O53,SPARKS -19-26JAN90

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

O53,FIRE2 -19-26JAN90

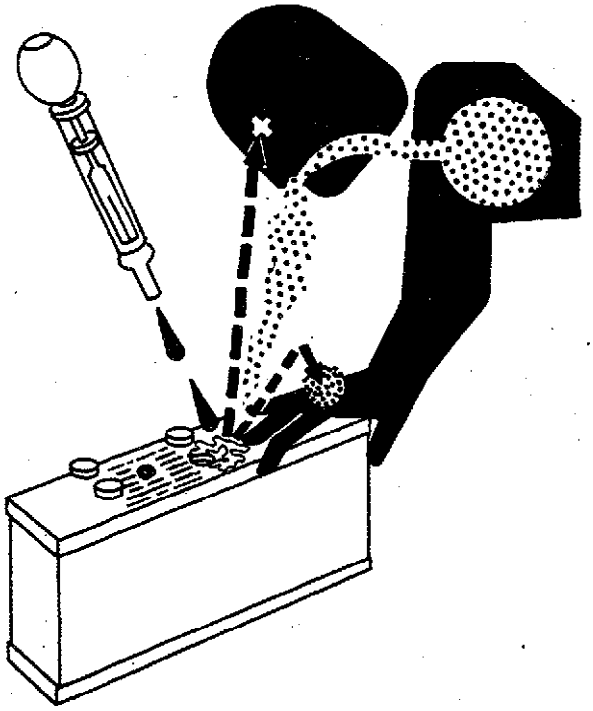
PREVENT ACID BURNS

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

O53,POISON -19-26JAN90

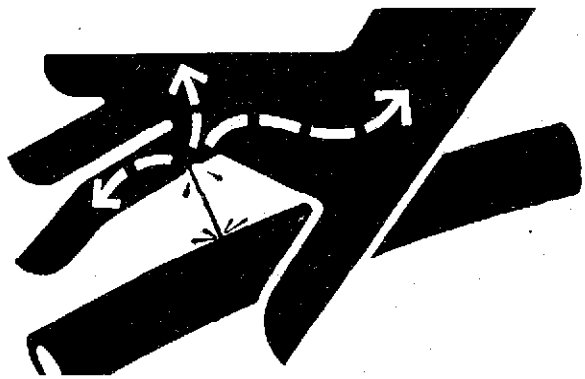
AVOID HIGH-PRESSURE FLUIDS

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.

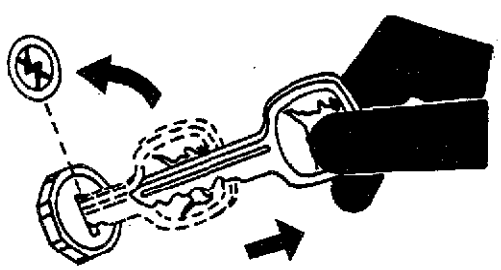


X9811 -JN-23AUG88

O53,FLUID -19-26JAN90

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.



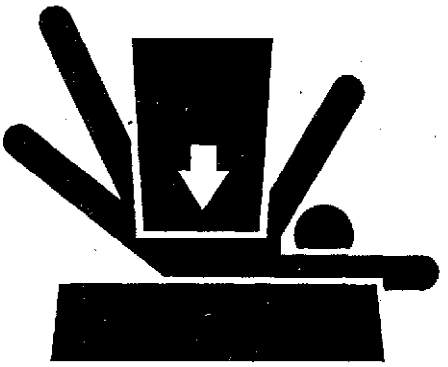
TS230 -UN-24MAY89

O53,PARK -19-26JAN90

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

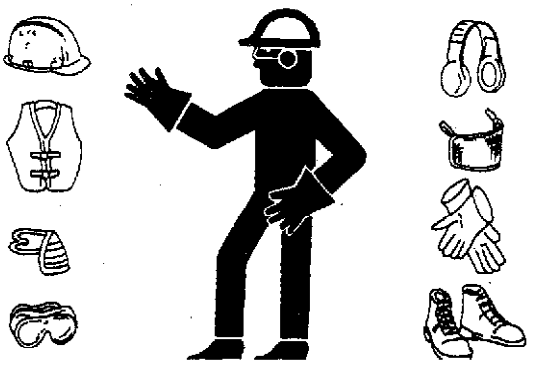
O53,LOWER -19-26JAN90

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.



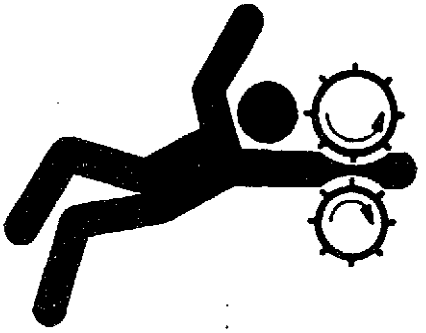
TS206 -UN-23AUG88

O53,WEAR -19-26JAN90

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.



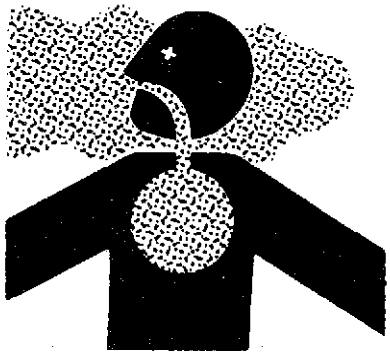
TS228 -UN-23AUG88

O53,LOOSE -19-26JAN90

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

O53,AIR -19-26JAN90

UNDERSTAND CORRECT SERVICE

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.

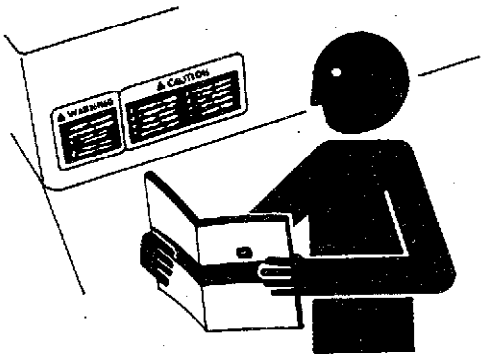
Catch draining fuel, oil, or other fluids in suitable containers. Do not use food or beverage containers that may mislead someone into drinking from them. Wipe up spills at once.

TS223 -UN-23AUG88

O53,LIGHT -19-26JAN90

REPLACE SAFETY SIGNS

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



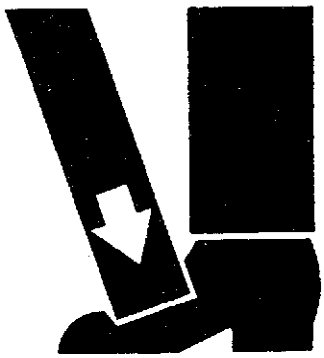
TS201 -UN-23AUG88

O53,SIGNS1 -19-26JAN90

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.



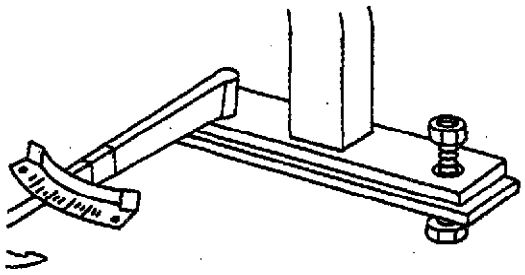
TS226 -UN-23AUG88

O53,LIFT -19-26JAN90

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.



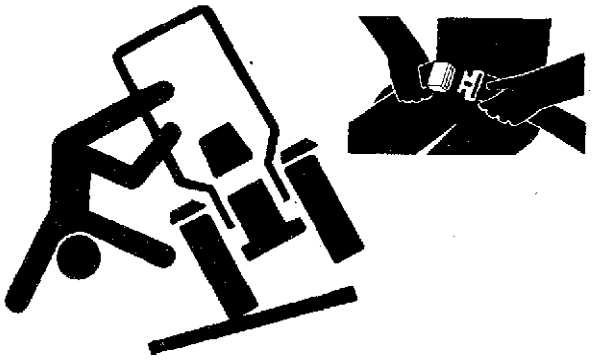
TS212 -UN-23AUG88

O53,ROPS3 -19-26JAN90

USE SEAT BELT PROPERLY

Use a seat belt when you operate with a roll-over protective structure (ROPS) to minimize chance of injury from an accident such as an overturn.

Do not use a seat belt if operating without a ROPS.



TS205 -UN-23AUG88

O53,ROPS1 -19-26JAN90

SERVICE TIRES SAFELY

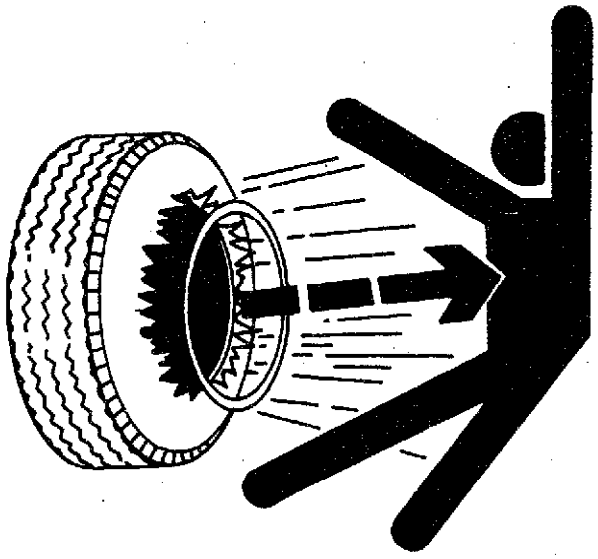
Explosive separation of a tire and rim parts can cause serious injury or death.

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.

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

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



TS211 -UN-23AUG88

O53,RIM -19-26JAN90

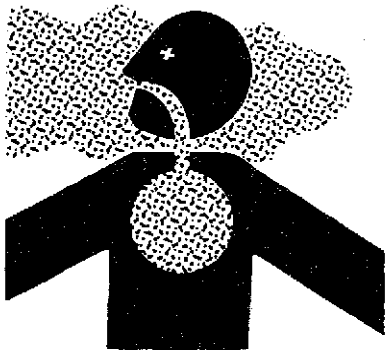
AVOID HARMFUL ASBESTOS DUST

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

Components in John Deere 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 of asbestos containing materials. When servicing, wear an approved respirator. A special vacuum cleaner is recommended to clean asbestos. If not available, wet the asbestos containing materials with a mist of oil or water.

Keep bystanders away from the area.

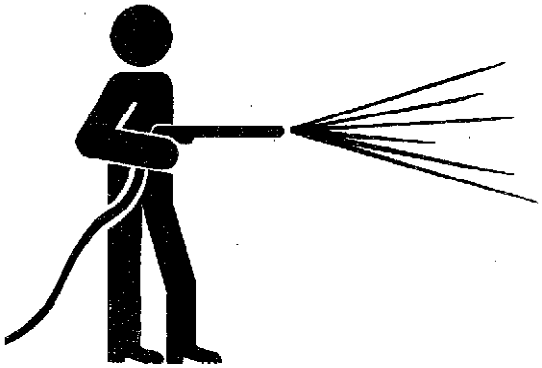


TS220 -UN-23AUG88

O53,DUST -19-26JAN90

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-16OCT88

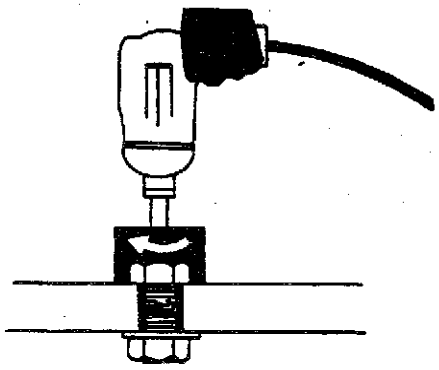
O53,CLEAN -19-26JAN90

USE TOOLS PROPERLY

Use tools appropriate to the work. Makeshift tools, parts, and procedures will not make good repairs.

Use pneumatic and electric tools only to loosen threaded parts and fasteners. Never use such tools to tighten fasteners, especially on light alloy parts.

Use only replacement parts meeting John Deere specifications.



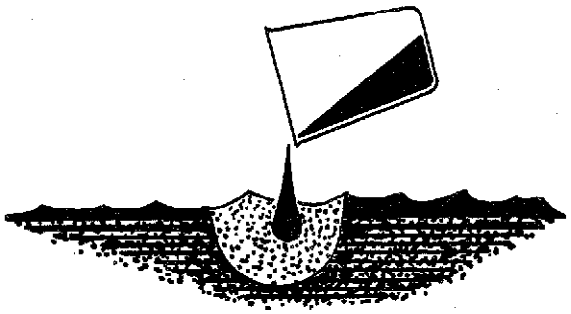
TS221 -UN-23AUG88

O53,REPAIR -19-26JAN90

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.

Avoid pouring 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.



TS222 -UN-23AUG88

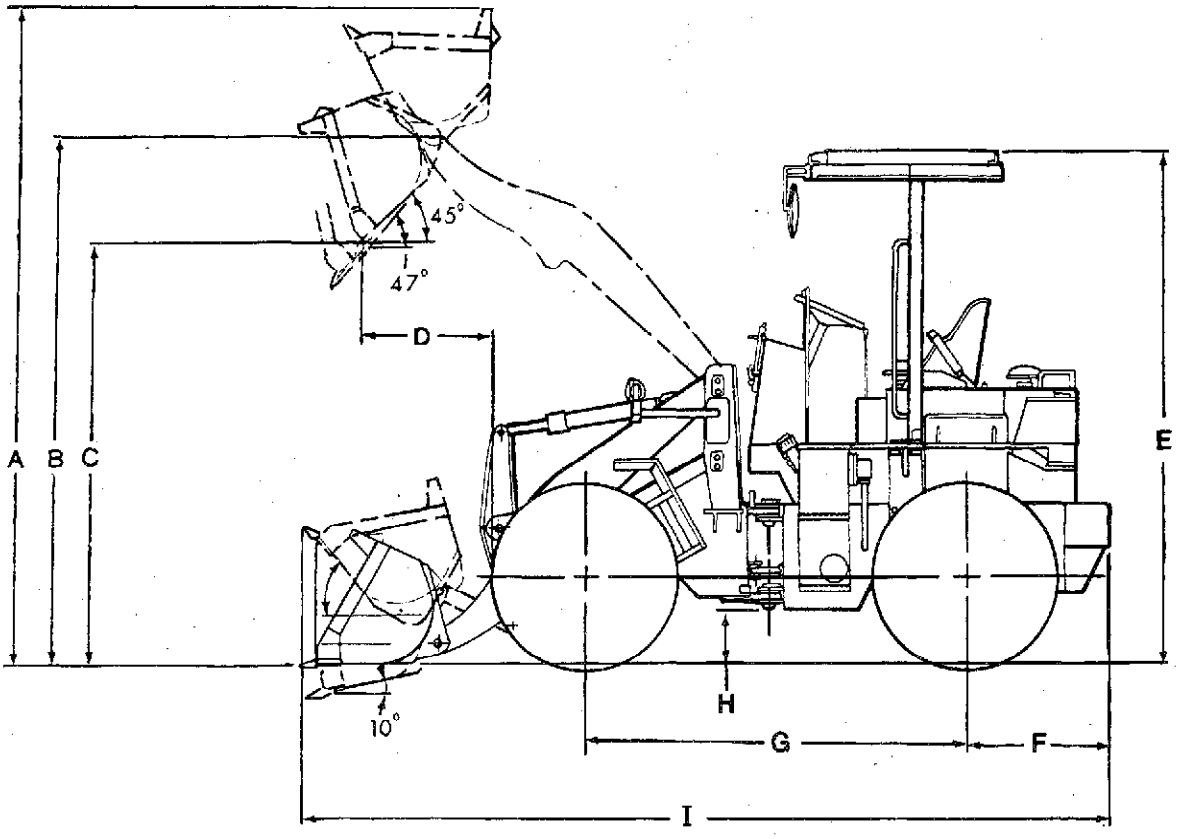
O53,DRAIN -19-26JAN90

LIVE WITH SAFETY

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

TS251 -19-07OCT88

O53,LIVE -19-26JAN90



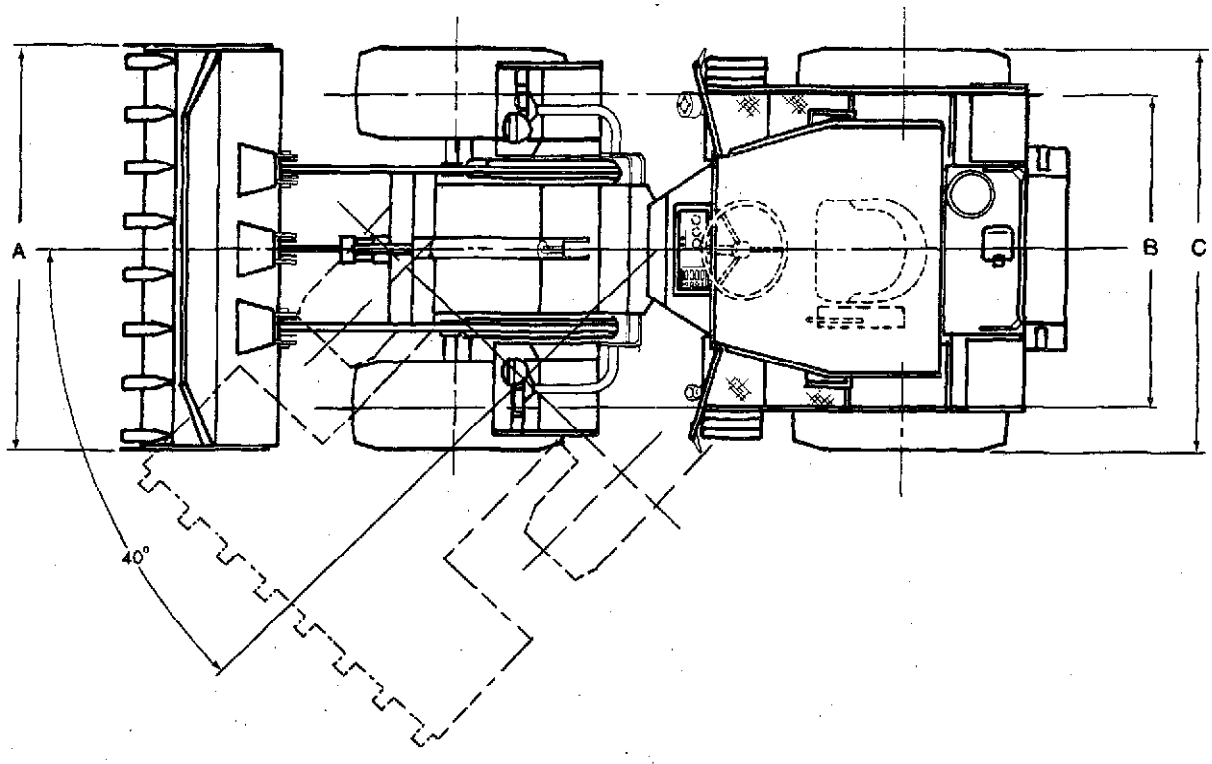
T6451BR -UN-24MAY89

A—Overall operating height (boom full raise) . . . . . 3.8 m (12 ft 6 in.)
B—Bucket hinge height . . . . . 3.0 m (9 ft 11 in.)
C—Dump height . . . . . 2.4 m (7 ft 10 in.)
D—Dump reach . . . . . 795 mm (2 ft 7 in.)
E—Overall height . . . . . 2.9 m (9 ft 6 in.)
F—Overhang . . . . . 820 mm (2 ft 8 in.)
G—Wheelbase . . . . . 2.2 m (7 ft 3 in.)
H—Ground clearance . . . . . 310 mm (1 ft.)
I—Overall length . . . . . 4.6 m (15 ft 3 in.)

NOTE: All dimensions are less cutting edge and teeth.

Standard operating weight (with ROPS canopy) . . . . . 4 900 kg (10,800 lb)

05T,115,K26 -19-02APR90



T6451BS1 -UN-17MAY89

A—Overall width bucket ..... 2.1 m (6 ft 10 in.)
B—Tread (center of tire to center of tire) ..... 1.5 m (5 ft 1 in.)
C—Overall width (outside of tire to outside) ..... 2.0 m (6 ft. 7 in.)

05T,115,K23 -19-02APR90

(Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with PCSA and SAE standards. Except where otherwise noted, these specifications are based on a unit with full fuel tank, 80 kg (175 lb) operator, and standard equipment).

Engine:

Yanmar 4 cylinder, water cooled, direct fuel injection diesel	38.8 kW (52 hp) (SAE net) at 1800 rpm
Bore and stroke	100 x 110 mm (3.9 x 4.3 in.)
No. of cylinders	4
Piston displacement	3.5 L (211 cu. in.)
Lubrication	Pressure system with full-flow filter
Cooling fan	Blower fan
Electrical system	24-volt with 25 amp alternator
Transmission	Countershaft, full power soft shift
Torque converter	Three elements, single stage and single phase

Travel speeds:

F1	0—9 km/h (0—5.6 mph)
F2	0—15.5 km/h (0—9.6 mph)
F3	0—28.5 km/h (0—17.7 mph)
R	0—11.5 km/h (0—7.1 mph)

Brakes:

Service

Manual hydraulic, 4-wheel, inboard mounted, wet disk
Foot-operated by either pedal
Left pedal also disconnects transmission

Park:

Mechanical, disk fitted on transmission output shaft, lever operated
Warning light on instrument panel.

Drive Axles:

Front axle fixed to frame
Rear axle center pivot oscillating
Rear axle oscillates ± 8°

Steering:

Articulated frame
Steering angle (each side) 40°

	kPa	(bar)	(psi)
Main Hydraulic and Steering System:			
Hydraulic system relief	17 160	(172)	(2500)
Bucket rollback circuit relief	18 630	(186)	(2700)
Bucket dump circuit relief	20 600	(206)	(3000)
Clam open circuit relief	20 600	(206)	(3000)
Clam close circuit relief	20 600	(206)	(3000)
Steering system relief pressure	12 750	(127)	(1850)
Steering crossover relief valve pressure	16 670	(167)	(2400)

05T,115,K24 -19-02APR90

Maximum lift capacity with standard equipment
- Maximum weight . . . . . 2200 kg (4850 lb)
- Ground level . . . . . 3100 kg (6835 lb)

Tires:
17.5/65—20 L2 10

Wheel Treads:
- Front and rear . . . . . 1.5 m (5 ft 1 in.)

05T,115,M5 -19-02APR90

DRAIN AND REFILL CAPACITIES

	Metric	U.S.
Cooling system	20 L	5.3 gal
Fuel tank	58 L	15.3 gal
Engine crankcase and filter	12.7 L	13.4 qt
Transmission case and filter	23 L	6.1 gal
Differential, front	9.5 L	2.5 gal
Differential, rear	9.5 L	2.5 gal
Hydraulic system	70 L	18.5 gal
Brake system (both sides)	1.0 L	0.95 qt

05T,115,M6 -19-02APR90

HARDWARE TORQUE SPECIFICATIONS

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

T82,CRMA,EC -19-02APR90

Bolt Tightening Torque
Bolts are classified into three kinds according to their materials.

T-BOLT

H-BOLT

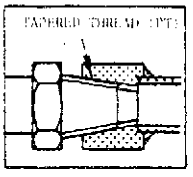
M-BOLT

Unit: Nm (lb-ft)

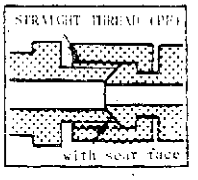
Nominal dia(mm) / Kind	8	10	12	14	16	18	20	22	24	27	30	33	36
T-BOLT	29 (21)	63 (46)	108 (80)	176 (130)	265 (195)	392 (289)	539 (398)	735 (542)	931 (687)	1372 (1012)	1911 (1410)	2548 (1880)	3136 (2314)
H-BOLT	20 (15)	45 (33)	88 (65)	137 (101)	206 (152)	294 (217)	392 (289)	539 (398)	686 (506)	1029 (759)	1421 (1048)	1911 (1410)	2401 (1772)
M-BOLT	10 (7)	20 (15)	34 (25)	54 (40)	78 (58)	118 (87)	167 (123)	216 (159)	274 (202)	392 (289)	539 (398)	735 (542)	931 (687)

(Tolerance: ±10%)

Flared Type Joint Tightening Torque



TAPERED THREAD



STRAIGHT THREAD
(with seat face)

Unit: Nm (lb-ft)

THREAD (inch) / KIND OF THREAD	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2
TAPERED THREAD	15 (11)	20 (15)	29 (21)	49 (36)	69 (51)	108 (80)	157 (116)	196 (145)	255 (188)
STRAIGHT THREAD	—	45 (33)	69 (51)	93 (69)	176 (130)	206 (152)	343 (253)	539 (398)	588 (434)

(Tolerance: ±10%)

Note: If female thread is of cast iron (in case of control valves, brake valve motors etc.), the torque must be reduced by about 10%.

T95773 -19-19DEC88

04T,90,K63 -19-02APR90

110590

INCH CAP SCREW TORQUE VALUES

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

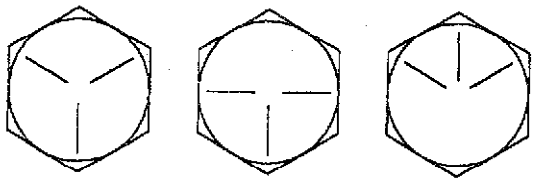
DO NOT use these values if a different torque value or tightening procedure is listed for a specific application. Torque values listed are for general use only. Check tightness of cap screws periodically.

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.

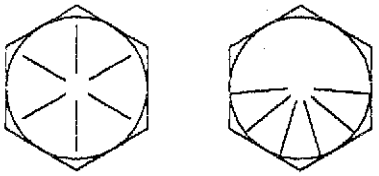
Tighten plastic insert or crimped steel-type lock nuts to approximately 50 percent of amount shown in chart. Tighten toothed or serrated-type lock nuts to full torque value.



T7109AA (CV)

T7109AA -UN-25JUL89

Grade 5 Cap Screw Head Markings



T7109AB (CV)

T7109AB -UN-25JUL89

Grade 8 Cap Screw Head Markings

TORQUE VALUES*

	Grade 5				Grade 8			
	Dry		Lubricated		Dry		Lubricated	
Size	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft
1/4	12.1	9	9.7	7.2	17	12.6	13.7	10.1
5/16	25	18.4	20	14.7	35	26	28	21
3/8	44	33	35	26	63	46	50	37
7/16	71	52	57	42	100	74	80	60
1/2	108	80	87	64	153	113	122	90
9/16	156	115	125	92	220	165	175	130
5/8	215	160	172	127	305	225	245	180
3/4	380	280	305	225	540	400	430	320
7/8	615	455	500	365	870	645	700	515
1	925	680	740	545	1300	965	1050	770
1-1/8	1150	850	925	680	1850	1365	1480	1090
1-1/4	1630	1200	1300	960	2610	1925	2090	1540

**Torque tolerance is ±10%.*

TX,90,FF608 -19-04MAY90

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.

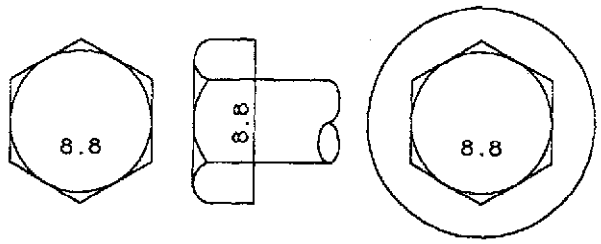
DO NOT use these values if a different torque value or tightening procedure is listed for a specific application. Torque values listed are for general use only. Check tightness of cap screws periodically.

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

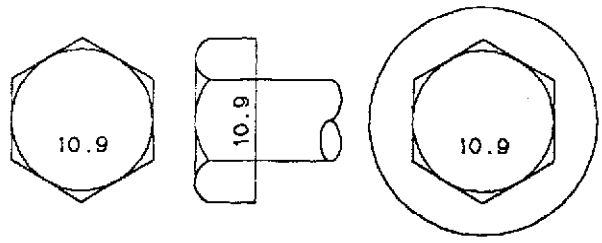
Fasteners should be replaced with the same or higher grade. If higher grade fasteners are used, these should only be tightened to the strength of the original.

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.



Class 8.8 Cap Screw Head Markings



Class 10.9 Cap Screw Head Markings

TORQUE VALUES*

	Class 8.8				Class 10.9			
	Dry		Lubricated		Dry		Lubricated	
Size	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft
3	1.4	1	1.1	0.9	2.1	1.5	1.7	1.2
4	3.3	2.4	2.6	1.9	4.8	3.6	3.9	2.9
5	6.7	4.9	5.3	3.9	9.8	7.2	7.8	5.8
6	11.3	8.4	9.1	6.7	16.6	12.3	13.3	9.8
8	28	20	22	16	40	30	32	24
10	55	40	44	32	80	59	64	47
12	95	70	76	56	140	103	112	82
14	150	110	120	90	220	165	180	130
16	235	175	190	140	350	255	275	205
20	475	350	380	280	675	500	540	400
24	825	605	650	480	1170	860	935	690
30	1630	1200	1300	960	2320	1710	1850	1370
36	2850	2100	2280	1680	4060	3000	3250	2400

**Torque tolerance is ±10%.*

TX,90,FF607 -19-04MAY90

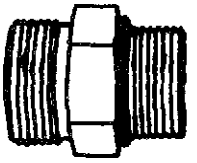
SERVICE RECOMMENDATIONS FOR O-RING BOSS FITTINGS

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 torque valve shown on chart.



T6243AE -UN-18OCT88

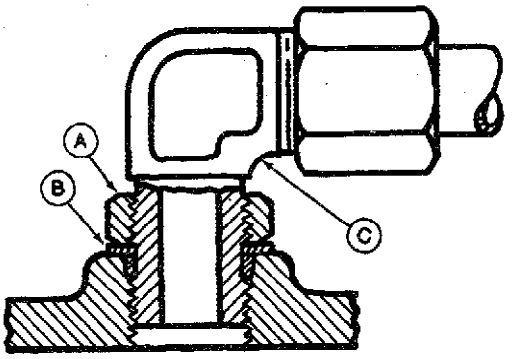
ANGLE FITTING

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 (B) contacts face of boss.

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

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



T6520AB -UN-18OCT88

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

TORQUE VALUE CHART

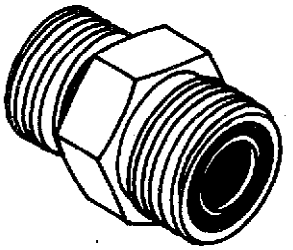
Thread Size	Torque N·m	(lb-ft)
3/8-24 UNF	8	(6)
7/16-20 UNF	12	(9)
1/2-20 UNF	16	(12)
9/16-18 UNF	24	(18)
3/4-16 UNF	46	(34)
7/8-14 UNF	62	(46)
1-1/16-12 UN	102	(75)
1-3/16-12 UN	122	(90)
1-5/16-12 UN	142	(105)
1-5/8-12 UN	190	(140)
1-7/8-12 UN	217	(160)

NOTE: Torque tolerance is ± 10%.

04T,90,K66 -19-02APR90

110580

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	(in.)	Dash Size	Thread Size in.	Swivel Nut Torque Nm	(lb-ft)	Bulkhead Nut Torque Nm	(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 -19-02APR90

SAE FOUR BOLT FLANGE FITTING SERVICE RECOMMENDATIONS

1. Inspect the sealing surfaces for nicks or scratches, roughness or out-of-flat condition. Scratches cause leaks. Roughness causes seal wear. Out-of-flat causes seal extrusion. If these defects cannot be polished out, replace the component.

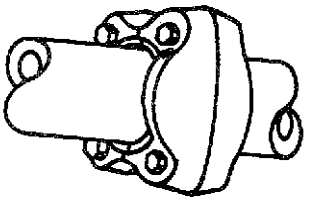
2. Install the correct O-ring (and backup washer if required) into the groove using petroleum jelly to hold it in place.

3. For split flange; loosely assemble split flange halves, being sure that the split is centrally located and perpendicular to the port. Hand tighten cap screws to hold parts in place. Do not pinch O-ring.

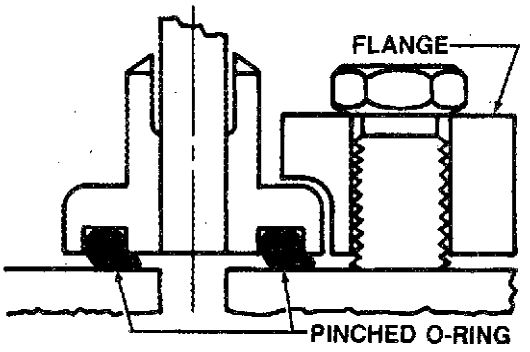
4. For single piece flange; put hydraulic line in the center of the flange and install four cap screws. With the flange centrally located on the port, hand tighten cap screws to hold it in place. Do not pinch O-ring.

5. For both single piece flange and split flange, be sure the components are properly positioned and cap screws are hand tight. Tighten one cap screw, then tighten the diagonally opposite cap screw. Tighten the two remaining cap screws. Tighten all cap screws within the specified limits shown in the chart.

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



T6575AG -UN-18OCT88



T6561AG -19-19DEC88

04T,90,K68 -19-02APR90

SAE FOUR BOLT FLANGE FITTING TORQUE[2]

Nominal Flange Size	Cap Screw Size[1]	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)
	M10 10.9	58	88	(43)	(65)
1	3/8 - 16 UNC	37	54	(27)	(40)
	M12 10.9	104	156	(77)	(115)
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)

1. SAE Grade 5 or better cap screws with plated hardware.

2. 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,K68,A -19-02APR90

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 percent, change the engine oil at 1/2 the normal interval.

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

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

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 (10°F) below lowest normal air temperature.

TX,DH,54 -19-02APR90

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.

O53,FUEL -19-26JAN90

FUEL TANK

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. Shut off engine before filling.

FUEL TANK

CAPACITY. . . . . 58 L (15.3 gal

TX,45,DH517 -19-02APR90

1:0590