3375 Skid Steer Loader

Serial No. (130001 -)

TECHNICAL MANUAL

John Deere
Lawn & Grounds Care Division
TM1565 (Sept 94)

Litho in U.S.A

This technical manual is written for an experieced technician and contains sections that are specifically for this product. It is a part of a total product support program.

The manual is organized so that all the information on a particular system is kept together. The order of grouping is as follows:

- Table of Contents
- Specifications
- Theory of Operation
- Troubleshooting Diagram
- Diagnostics
- Tests & Adjustments
- Repair

Note: Depending on the particular section or system being covered, not all of the above groups may be used.

Each section will be identified with a symbol rather than a number. The groups and pages within a section will be consecutively numbered.

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.

We appreciate your input on this manual. To help, there are postage paid post cards included at the back. If you find any errors or want to comment on the layout of the manual please fill out one of the cards and mail it back to us.

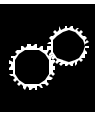
Safety

Specifications and Information

Engine (Diesel)

Electrical

Power Train



Power Train (Hydrostatic)

Steering

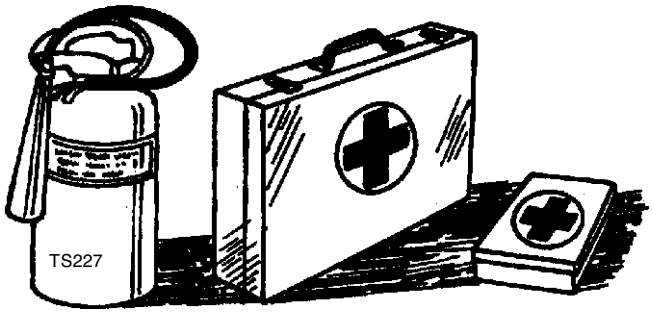
Brakes

Hydraulics

HANDLE FLUIDS SAFELY-AVOID FIRES

- **BE PREPARED FOR EMERGENCIES**


TS291


TS227

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.

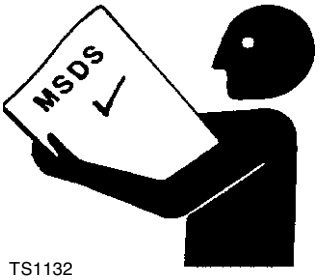
Do not store oily rags; they can ignite and burn spontaneously.

Be prepared if a fire starts.

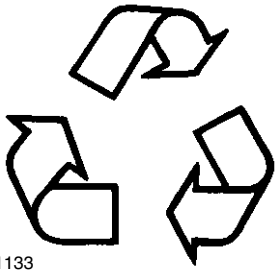
Keep a first aid kit and fire extinguisher handy.

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

HANDLE CHEMICAL PRODUCTS SAFELY



TS1132


I133

Direct exposure to hazardous chemicals can cause serious injury. Potentially hazardous chemicals used with John Deere equipment include such items as lubricants, coolants, paints, and adhesives.

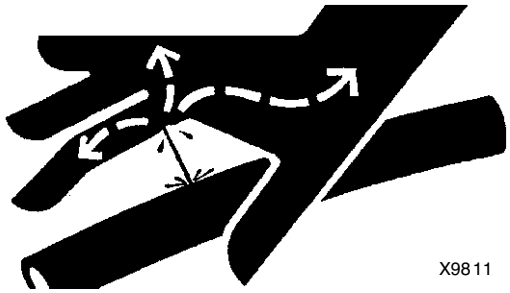
A Material Safety Data Sheet (MSDS) provides specific details on chemical products: physical and health hazards, safety procedures, and emergency response techniques. Check the MSDS before you start any job using a hazardous chemical. That way you will know exactly what the risks are and how to do the job safely. Then follow procedures and recommended equipment.

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

USE CARE AROUND HIGH-PRESSURE FLUID LINES

- **AVOID HIGH-PRESSURE FLUIDS**


X9811

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.

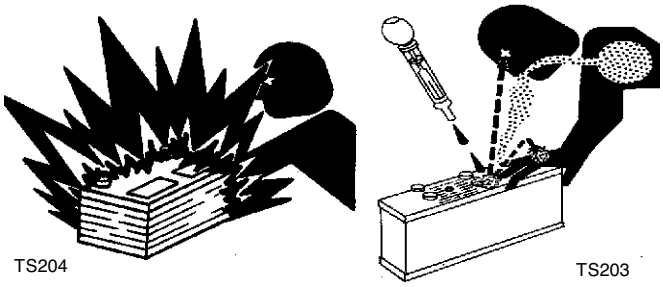
If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical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

- **AVOID HEATING NEAR PRESSURIZED FLUID LINES**


TS953

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.

USE CARE IN HANDLING AND SERVICING BATTERIES


TS204 TS203

- **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).

- **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 acid burns 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.
4. 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.

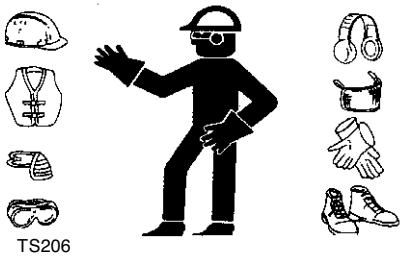
USE SAFE SERVICE PROCEDURES

• WEAR PROTECTIVE CLOTHING

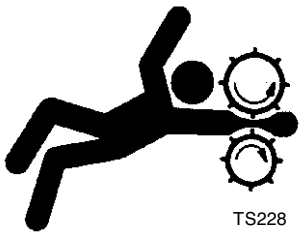
Wear close fitting clothing and safety equipment appropriate to the job.

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



TS228

• SERVICE MACHINES SAFELY

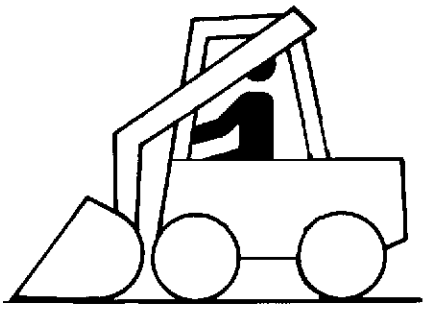
Tie long hair behind your head. Do not wear a necktie, scarf, loose clothing, or necklace when you work near machine tools or moving parts. If these items were to get caught, severe injury could result.

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

• 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.

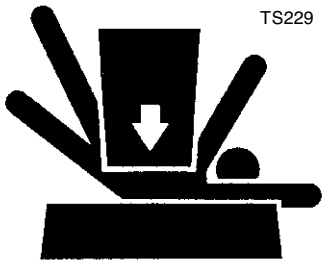
• PARK MACHINE SAFELY



• Before working on the machine:

1. Lower all equipment to the ground.
2. Stop the engine and remove the key.
3. Disconnect the battery ground strap.
4. Hang a “DO NOT OPERATE” tag in operator station.

• SUPPORT MACHINE PROPERLY AND USE PROPER LIFTING EQUIPMENT



TS229

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.

Lifting heavy components incorrectly can cause severe injury or machine damage. Follow recommended procedure for removal and installation of components in the manual.

• WORK IN CLEAN AREA

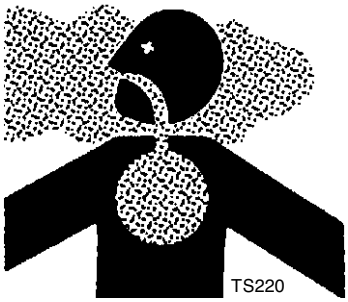
• Before starting a job

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

• 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.

• WORK IN VENTILATED AREA


TS220

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.

• REMOVE PAINT BEFORE WELDING OR HEATING

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

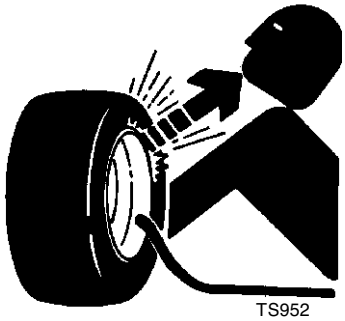
• AVOID HARMFUL ASBESTOS DUST

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.

• SERVICE TIRES SAFELY


TS952

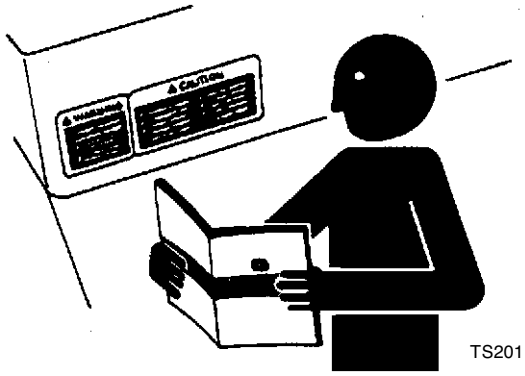
Explosive separation of a tire and rim parts can cause serious injury or death.

Do not attempt to mount a tire unless you have the proper equipment and experience to perform the job. Always maintain the correct tire pressure. Do not inflate the tires above the recommended pressure. Never weld or heat a wheel and tire assembly. The heat can cause an increase in air pressure resulting in a tire explosion. Welding can structurally weaken or deform the wheel.

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

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

REPLACE SAFETY SIGNS



TS201

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

LIVE WITH SAFETY

TS231

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

CONTENTS

GENERAL VEHICLE SPECIFICATIONS

ENGINE

Make and model	John Deere/Yanmar 3TN66
Cooling system	Water Cooled
Fuel	Diesel
Cylinders	3
Horsepower at governed rpm	17 hp @ 3400 rpm (12.7 kW)
Bore	2.6 in. (66 mm)
Stroke	2.53 in. (64.2 mm)
Displacement	41.8 cu in (.658 L)
Fast idle	3600-3670 rpm
Slow idle	1400-1500 rpm
Intake valve clearance (cold)	0.2 mm (0.008 in.)
Exhaust valve clearance (cold)	0.2 mm (0.008 in.)
Gradability (maximum angle for engine operation on intermittent basis	45° all directions
Fuel tank capacity	6 U.S. gal. (22.7 L)
Crankcase capacity	2.5 qt. (2.4 L)
Cooling capacity	4.6 qt. (4.4 L)

ELECTRICAL SYSTEM

Alternator	20 amp
Battery cold capacity amps at 0°F (-18°C)	390 amps
Battery	BCI-71, 12 V
Regulator	Solid state

TRANSMISSION

Type	Hydrostatic
Manufacturer	
—Pumps	Sundstrand
—Motors	Nichols 130 Series
Pump type	Axial piston, variable swash plate
Motor type	Geroller motor
Filter	10 micron (no by-pass)
Capacity	9 U.S. gal (34 L)

TRAVEL SPEED

(Forward/Backward)	0 to 5.8 m.p.h. (0 to 9.3 km/h)

HYDRAULIC SYSTEM

Pump type	Gear
Pump manufacturer	Parker
Output (at governed rpm	8 gpm (30.2 L/min)
Displacement	13 cm^3 (.512 cu in)
Main system relief pressure	1600 psi (11,032 kPa)
Suction screen	100 mesh
Filter (return side no by-pass	10 micron
Hydraulic fluid	JD HY-GARD™ or equivalent SAE J20C oil
Hydraulic system	34 L (9 gal)

PERFORMANCE RATING

Operating load, SAE (per SAE J818)	675 lb (306 kg)
Tipping load, SAE	1365 lb (619 kg)
Breakout force, (bucket) SAE IEMC	1409 lb (619 kg)
Operating weight, SAE	2200 lb (998 kg)

SHIPPING WEIGHT

Without attachments . . . . . 1750 lb (794 kg)

CYCLE TIMES (SECONDS)

Boom raised . . . . . 5.5 seconds
Boom lowered . . . . . 3.4 seconds
Bucket rollback . . . . . 1.9 seconds
Bucket dumping. . . . . 0.9 seconds

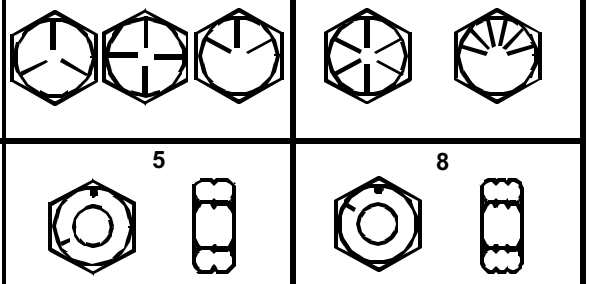
TIRE PRESSURE

5.70 x 12 . . . . . 50 psi (345 kPa)
23 x 8.50-12 . . . . . 35 psi (240 kPa)

*Performance ratings taken with
—Full fuel tank, 175 lb operator
—42-in. (106.7 cm) utility bucket
—8.50x12-in. Tires
(Specifications and design subject to change without notice.)

UNIFIED INCH TORQUE VALUES

SAE Grade and Head Markings	No Marks 1 or 2[b]	5 5.1 5.2	8 8.2
SAE Grade and Nut Markings	No Marks 2	5	8



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

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

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

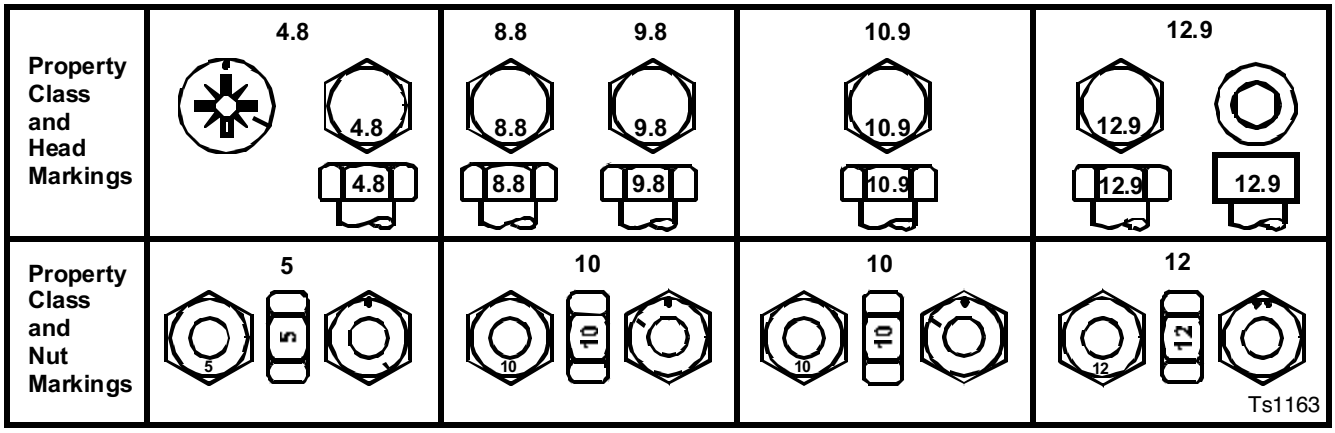
Fasteners should be replaced with the same or higher grade. If higher grade fasteners are used, these should only be tightened to the strength of the original. Make sure fasteners threads are clean and that you properly start thread engagement. This will prevent them from failing when tightening.Tighten plastic insert or crimped steel-type lock nuts to approximately 50 percent of the dry torque shown in the chart, applied to the nut, not to the bolt head.

Tighten toothed or serrated-type lock nuts to the full torque value.

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

[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.

METRIC TORQUE VALUES



	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]	
SIZE	Nm	lb-ft	Nm	lb-ft	Nm	lb-ft	Nm	lb-ft	Nm	lb-ft	Nm	lb-ft	Nm	lb-ft	Nm	lb-ft
M6	48	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	109
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

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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.*

DIESEL FUEL SPECIFICATIONS

Use only clean, high quality fuel.

Use Grade No. 2-D fuel at temperatures above 4¤C (40¤F).

Use Grade No. 1-D fuel at temperatures below 4¤C (40¤F).

Use Grade No. 1-D fuel for all air temperatures at altitudes above 1500 m (5000 ft).

IMPORTANT: Use fuel with less than 1.0 per cent sulfur. If possible, use fuel with less than 0.5 per cent sulfur. If fuel sulfur is more than 0.5 per cent, change engine oil and filter every 100 hours.

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 tractor 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 10°F (6°C) below lowest normal air temperature.

Fuel Tank Capacity. . . . . .22.7 L (6 gal)

DIESEL FUEL STORAGE

NOTE: Diesel fuels stored for a long time may form gum and plug filters.

Keep fuel in a clean container in a protected area. Water and sediment must be removed before fuel gets to the engine. Do not use de-icers to remove water from fuel. Do not depend on fuel filters to remove water. If possible, install a water separator at the storage tank outlet. (See your John Deere dealer for this part.)

IMPORTANT: Keep all dirt, scale, water or other foreign material out of fuel.

Store fuel drum on its side with plug up.

DO NOT STORE DIESEL FUEL IN GALVANIZED CONTAINERS

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

Store diesel 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.

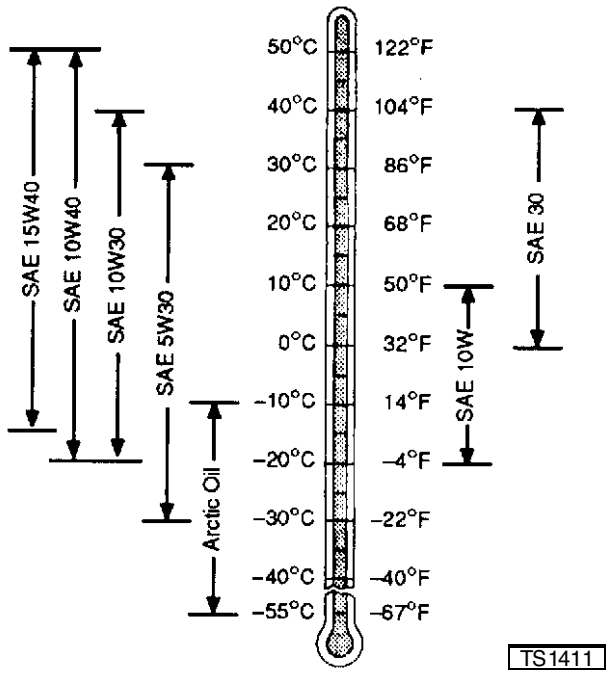
LUBRICANT SPECIFICATIONS

ENGINE OIL

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

The following oil is preferred:

• John Deere TORQ-GARD SUPREME PLUS-50™



The following oils are also recommended:

• John Deere TORQ-GARD SUPREME®

• John Deere UNI-GARD™

Other oils may be used if they meet one of the following:

• API Service Classification CE

• API Service Classification CD

• CCMC Specification D5

• CCMC Specification D4

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

If John Deere TORQ-GARD SUPREME PLUS-50 engine oil and a John Deere oil filter are used, the oil and filter service interval may be extended by 50 hours.

If diesel fuel exceeding 0.5% sulphur content is used, reduce the service interval for engine oil and filter by 50%.

GREASE

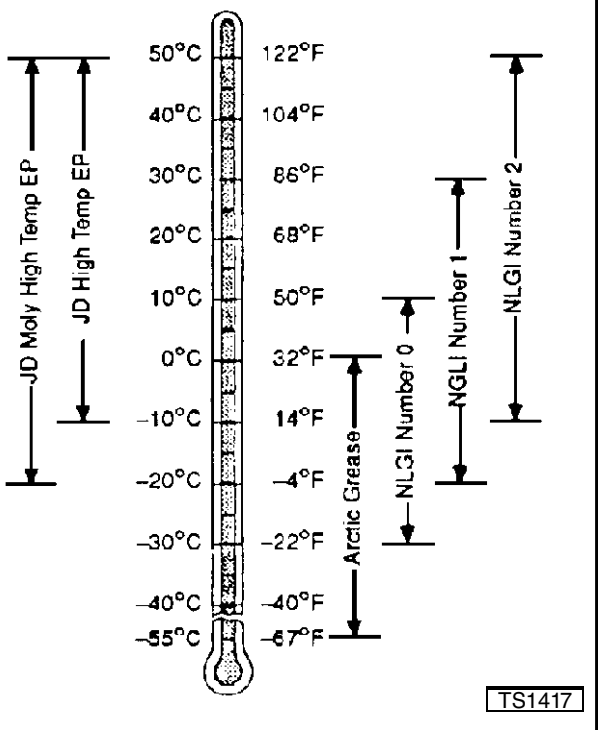
Use grease based on the expected air temperature range during the service interval.

The following greases are preferred:

• John Deere MOLY HIGH TEMPERATURE EP GREASE

• John Deere HIGH TEMPERATURE EP GREASE

• John Deere GREASE-GARD™



Other greases may be used if they meet one of the following:

• SAE Multipurpose EP Grease with a maximum of 5% molybdenum disulfide.

• SAE Multipurpose EP Grease

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

TRANSMISSION AND HYDRAULIC OIL

Use John Deere Hy-Gard™ (J20C) Transmission and Hydraulic oil or an equivalent oil meeting John Deere J20C specifications. DO NOT mix oils.

DO NOT use type "F" automatic transmission fluid.

Use J20C Transmission/Hydraulic Oil when ambient operating temperatures are **above** -18° C. (0° F.).

Use J20D Low Viscosity HY-Gard Transmission/ Hydraulic Oil when ambient operating temperatures are **below** -18° C. (0° F.).

ALTERNATIVE LUBRICANTS

Conditions in certain geographical areas outside the United States and Canada may require different lubricant recommendations than these printed in this manual or the operator's manual. Consult with your John Deere Dealer, or Sales Branch to obtain the alternative lubricant recommendations.

SYNTHETIC LUBRICANTS

Synthetic lubricants may be used in John Deere equipment if they meet the applicable performance requirements (industry classification and/or military specification) as shown in this group.

The recommended temperature limits and service or oil change intervals should be maintained as shown in the operator's manual.

Avoid mixing different brands, grades, or types of oil. Oil manufacturers blend additive in their oils to meet certain specifications and performance requirements. Mixing different oils can interfere with the proper functioning of these additives and degrade lubricant performance.

OIL FILTERS

Filtration of oils is critical to proper lubrication. Always change filters regularly.

Use filters meeting John Deere performance specification.

LUBRICANT STORAGE

This machine can operate at top efficiency only if clean lubricants are used.

Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture, and other contamination. Store drums on their sides.

ENGINE COOLANT

IMPORTANT: DO NOT use methyl alcohol or methoxy propanol base concentrate. This concentrate is not compatible with additives used in supplemental coolant additives. Damage can occur to rubber seals on cylinder liners which are in contact with coolant.

DO NOT use ethylene glycol concentrate sealer or stop-leak additives.

DO NOT use concentrate containing less than 10% ethylene glycol.

DO NOT use concentrate containing more than 0.1% anhydrous metasilicate. This type of concentrate, which is intended for use in aluminum engines, may cause a gel-like deposit to form that reduces heat transfer and coolant flow. Check container label or consult with supplier before using.

John Deere Low Silicate Antifreeze is the ethylene glycol concentrate recommended for all John Deere Diesel Engines. This product is concentrated and should be mixed 50/50 with quality water. Add to the mixture 3% (by volume) supplemental coolant additives (SCA's).

John Deere Low Silicate Antifreeze is available in the following sizes:

- TY6377 - 208 L (55 U.S. Gal) container
- TY15886 - 3.8 L (1 U.S. Gal) container

Contact your John Deere Parts Network for local availability.

If John Deere Low Silicate Antifreeze is not available, use an ethylene glycol concentrate meeting ASTM D 4985, SAEJ1941, General Motors Performance Specification GM1899M, or formulated to GM6038M.

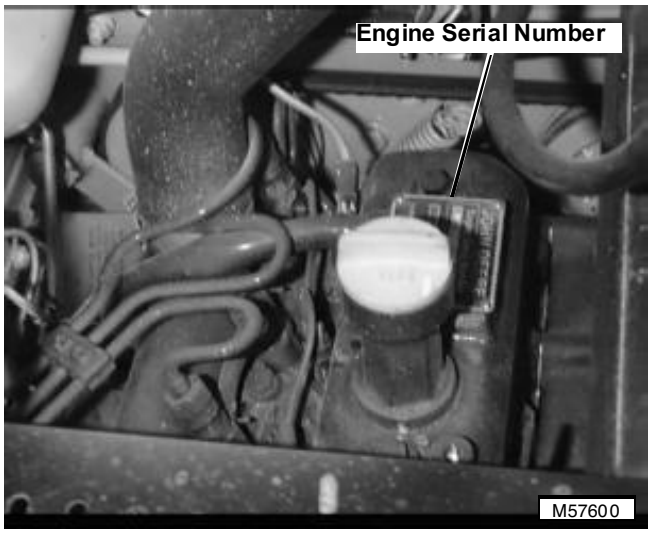
SERIAL NUMBER LOCATION

When ordering parts or submitting a warranty claim, it is IMPORTANT that you include the skid steer loader product identification number and the component serial numbers.

The location of skid steer loader product identification number and component serial numbers are shown.

SKID STEER LOADER PRODUCT IDENTIFICATION NUMBER

ENGINE SERIAL NUMBER



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SPECIFICATIONS

GENERAL SPECIFICATIONS

Make	Yanmar
Model	3TNE66
Type	Vertical, 4-cycle Diesel
Output Power	10.4-12.7 kW (14-17 HP)
Cylinders	3
Bore	66 mm (2.6 in.)
Stroke	64.2 mm (2.53 in.)
Displacement	0.658 L (41.8 cu. in.)
Firing Order	1—3—2
Direction of Rotation	Counterclockwise (viewed from flywheel)
Combustion System	Indirect Injection Type
Compression Ratio	23 to 1
Cooling	Liquid
Governor	Centrifugal
RPM at Idle	1450 ±50
RPM at High Idle (no-load)	3625 ±25
Rated RPM	3000

REPAIR SPECIFICATIONS

Rocker Arm Cover:

Special Nut Torque	18 N•m (160 lb-in.)

Rocker Arm Assembly:

Mounting Cap Screw and Nut Torque	26 N•m (226 lb-in.)
Rocker Arm Shaft O.D.	
Standard	9.97 - 9.99 mm (0.3925 - 0.3933 in.)
Wear Limit	9.95 mm (0.3920 in.)
Rocker Arm and Shaft Support I.D.'s	
Clearance	0.14 mm (0.005 in.)
Standard	10.00 - 10.02 mm (0.3937 - 0.3945 in.)
Wear Limit	10.09 mm (0.3972 in.)
Push Rod Length	
Standard	114 - 115 mm (4.488 - 4.528 in.)
Push Rod Bend	
Wear Limit	0.08 mm (0.003 in.)

Cylinder Head and Valves:

Mounting Cap Screw Torque	
First	11 N•m (97 lb-in.)
Second	22 N•m (195 lb-in.)
Final	34 N•m (25 lb-ft)
Piston-to-Cylinder Head Clearance	0.59 - 0.74 mm (0.023 - 0.029 in.)

Cylinder Head Distortion

Standard. . . . . 0.05 mm (0.002 in.) or less
Wear Limit . . . . . 0.15 mm (0.006 in.)
Maximum Amount of Metal to be Removed . . . . . 0.20 mm (0.008 in.)

Valve Seat Width

Intake Valve

Standard . . . . . 1.15 mm (0.045 in.)
Wear Limit . . . . . 1.65 mm (0.065 in.)

Exhaust Valve

Standard . . . . . 41 mm (0.056 in.)
Wear Limit . . . . . 1.91 mm (0.075 in.)

Intake and Exhaust Valves:

Valve Faces

Minimum Margin. . . . . 0.51 mm (0.020 in.)
Exhaust Angle . . . . . 45°
Intake Angle. . . . . 30°

Valve Stem O.D.

Distance A . . . . . 20 mm (0.787 in.)
Distance B . . . . . 40 mm (1.575 in.)

Intake Valve

Standard. . . . . 5.46 - 5.48 mm (0.2149 - 0.2157 in.)
Wear Limit . . . . . 5.40 mm (0.2126 in.)

Exhaust Valve

Standard. . . . . 5.44 - 5.46 mm (0.2142 - 0.2149 in.)
Wear Limit . . . . . 5.40 mm (0.2126 in.)

Valve Recession

Intake Valve . . . . . 0.40 mm (0.016 in.)
Exhaust Valve . . . . . 0.85 mm (0.033 in.)

Valve Guides:

Valve Guide I.D.

Maximum Clearance . . . . . 0.20 mm (0.008 in.)
Standard. . . . . 5.50 - 5.52 mm (0.216 - 0.217 in.)
Wear Limit . . . . . 5.58 mm (0.220 in.)
Valve Guide Height . . . . . 7 mm (0.276 in.)

Valve Springs:

Spring Free Length

Wear Limit . . . . . 28 mm (1.102 in.)
Maximum Spring Inclination. . . . . 0.80 mm (0.032 in.)

Exhaust Manifold:

Mounting Cap Screw and Nut Torque . . . . . 11 N•m (97 lb-in.)

Intake Manifold:

Mounting Cap Screw Torque . . . . . 11 N•m (97 lb-in.)

Valve Seat Angles:

Valve Seat Surface

Exhaust Valve	45°
Intake Valve	30°
Lower Seat Surface	70°
Upper Seat Surface	15°

Connecting Rod Bearing I.D.:

Clearance	0.16 mm (0.006 in.)
Standard	36 - 36.042 mm (1.417 - 1.419 in.)
Wear Limit	37.07 mm (1.459 in.)
Piston and Connecting Rod Cap Screw Torque	23 N•m (203 lb-in.)

Piston Ring Groove Clearance:

First Compression Ring	
Standard	0.065 - 0.100 mm (0.0026 - 0.0039 in.)
Wear Limit	0.20 mm (0.0079 in.)
Second Compression Ring	
Standard	0.030 - 0.065 mm (0.0012 - 0.0026 in.)
Wear Limit	0.20 mm (0.0079 in.)
Oil Ring	
Standard	0.020 - 0.055 mm (0.0008 - 0.0022 in.)
Wear Limit	0.20 mm (0.0079 in.)

Piston End Ring Gap:

Standard

First Compression Ring and Oil Ring	0.15 - 0.35 mm (0.006 - 0.014 in.)
Second Compression Ring	0.25 - 0.40 mm (0.010 - 0.016 in.)
Wear Limit	1.50 mm (0.0591 in.)

Piston Pin:

Pin O.D.

Standard	19.991 - 20.00 mm (0.787 - 0.788 in.)
Wear Limit	19.975 mm (0.786 in.)

Bore I.D.

Clearance	0.045 mm (0.0018 in.)
Standard	20.00 - 20.008 mm (0.787 - 0.788 in.)
Wear Limit	20.02 mm (0.788 in.)

Bushing I.D.

Clearance	0.110 mm (0.0043 in.)
Standard	20.025 - 20.038 mm (0.788 - 0.789 in.)
Wear Limit	20.10 mm (0.781 in.)