

# 70 Skid-Steer Loader



## TECHNICAL MANUAL

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### 70 Skid-Steer Loader

TM1072 (01JAN74) English

**John Deere**  
**Lawn & Grounds Care Division**  
**TM1072 (01JAN74)**

LITHO IN U.S.A.  
ENGLISH



# 70 SKID-STEER LOADER

Technical Manual  
TM-1072 (Jan-74)

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## FOR YOUR CONVENIENCE

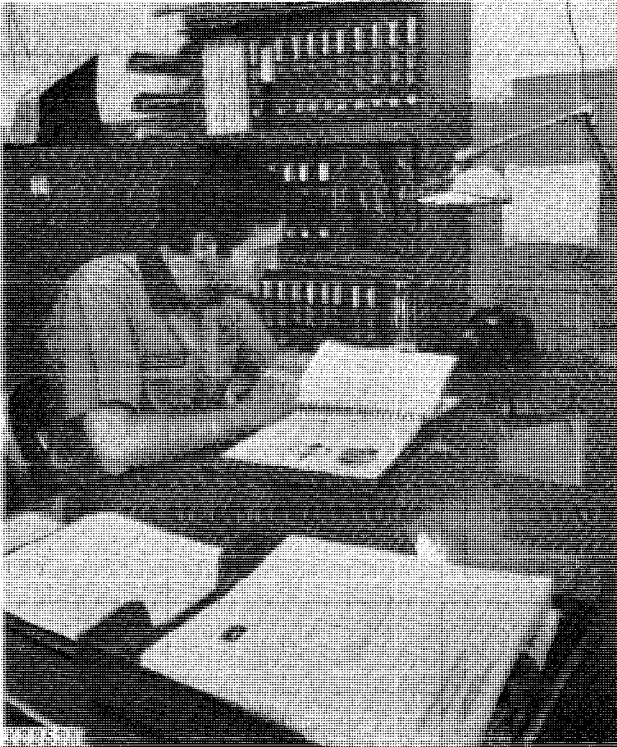
Vertical lines appear in the margins of many of the pages. These lines identify new material and revised information that affects specifications, procedures, and other important instructions.

*"All information, illustrations and specifications contained in this technical 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."*

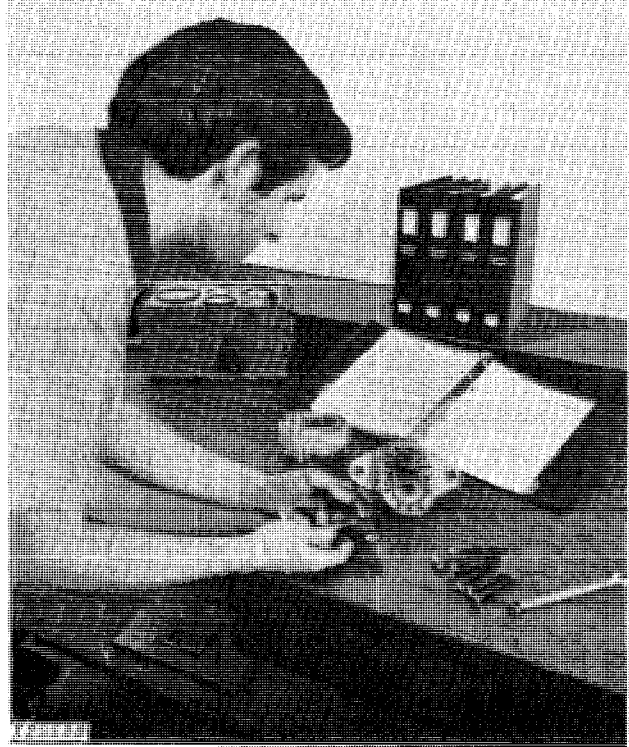
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## INTRODUCTION



Use FOS Manuals for Reference



Use Technical Manuals for Actual Service

This technical manual is part of a twin concept of service:

- **FOS Manuals—for reference**
- **Technical Manuals—for actual service**

The two kinds of manuals work as a team to give you both the general background and technical details of shop service.

*Fundamentals of Service (FOS) Manuals* cover basic theory of operation, *fundamentals* of trouble shooting, *general* maintenance, and *basic* types of failures and their causes. FOS Manuals are for training new men and for reference by experienced men.

*Technical Manuals* are concise service guides for a specific machine. Technical Manuals are on-the-job guides containing only the vital information needed by a journeyman mechanic.



When a serviceman should refer to a FOS Manual for more information, a FOS symbol like the one at the left is used in the TM to identify the reference.

Some features of this technical manual:

- *Table of contents at front of manual*
- *Exploded views showing parts relationship*
- *Photos showing service techniques*
- *Specifications grouped for easy reference*

This technical manual was planned and written for you—a journeyman mechanic. Keep it in a permanent binder in the shop where it is handy. Refer to it whenever in doubt about correct service procedures or specifications.

Using the technical manual as a guide will reduce error and costly delay. It will also assure you the best in finished service work.




This safety alert symbol identifies important safety messages in this manual. When you see this symbol, be alert to the possibility of personal injury and carefully read the message that follows.

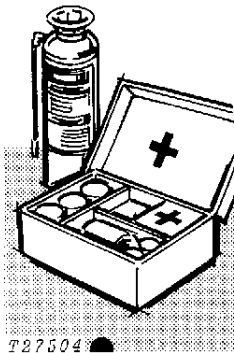
## SAFETY AND YOU



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### INTRODUCTION

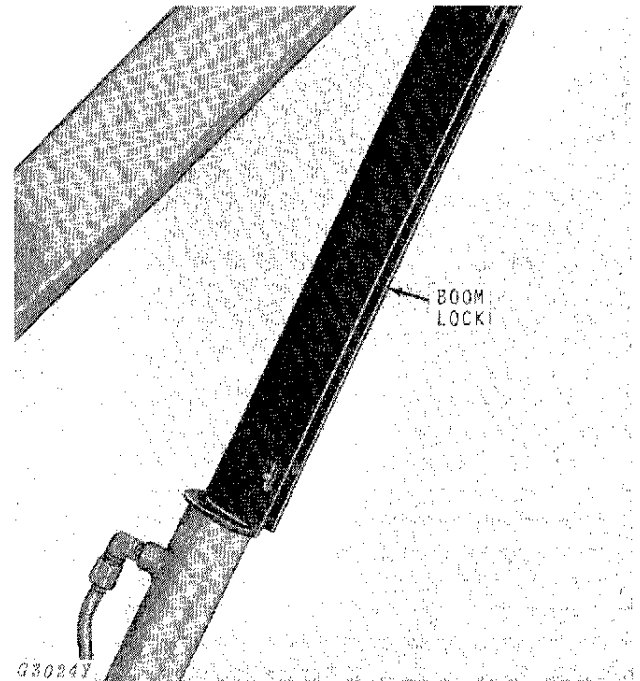
 This safety alert symbol identifies important safety messages in this manual and on the skid-steer loader. When you see this symbol, be alert to the possibility of bodily injury and carefully read the message that follows.



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Be prepared if an accident or fire should occur. Know where the first aid kit and the fire extinguishers are located—know how to use them.

### BOOM LOCKS CAUTION

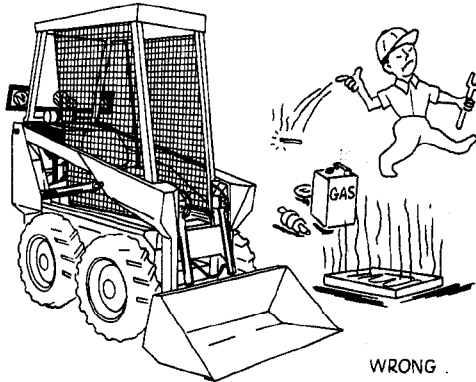


Install the boom locks on the lift cylinders as follows whenever work or repair is being done on the loader with the boom raised:

1. Start the engine and raise the boom to its greatest height. Shut off the engine.
2. Lay the boom locks on the cylinder rods and install the drilled pins and spring pins.
3. Install boom blocks on other cylinder rods in the same manner.
4. Lower the boom until it contacts the boom locks.

**IMPORTANT:** After servicing the loader, raise the boom and remove the boom locks.

## AVOID FIRE HAZARDS



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Don't smoke while refueling or handling highly flammable material.

Engine should be shut off when refueling.

Use care in refueling if the engine is hot.

Don't use open pans of gasoline or diesel fuel for cleaning parts. Good commercial, nonflammable solvents are preferred.

Provide adequate ventilation when charging batteries.

Don't check battery charge by placing metal objects across the posts.

Don't allow sparks or open flame near batteries.

Don't smoke near battery.

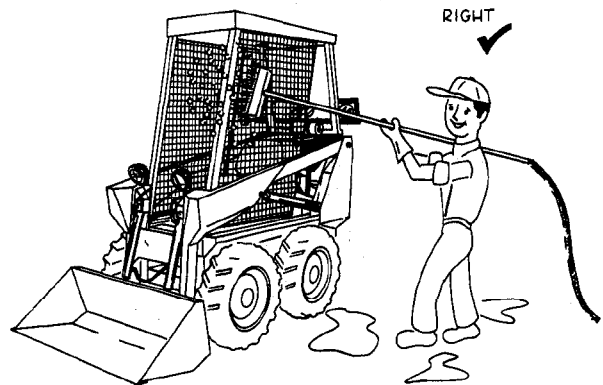
Never check fuel, battery electrolyte, or coolant levels with an open flame.

Never use an open flame to look for leaks anywhere on the equipment.

Never use an open flame as a light anywhere on or around the equipment.

When preparing engine for storage, remember that internal corrosion inhibitor is volatile and therefore dangerous. Seal and tape openings after adding the inhibitor. Keep container tightly closed when not in use.

## CLEANING THE LOADER



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Always stop the engine before cleaning the loader.

Keep the operator's platform clean. Do not use it as a storage area.

Keep the engine closure screens free of foreign matter. Avoid a possible fire hazard.

Keep all equipment free of dirt and oil. In freezing weather, beware of snow and ice on operator's platform.

## SERVICE AREA

Keep the service area clean and dry. Wet or oily floors are slippery. Wet spots can be dangerous when working with electrical equipment.

Make sure the service area is adequately vented.

Periodically check the shop exhaust system for leakage. Engine exhaust gas is dangerous.

Be sure all electrical outlets and tools are properly grounded.

Use adequate light for the job at hand.

## FLUIDS UNDER PRESSURE

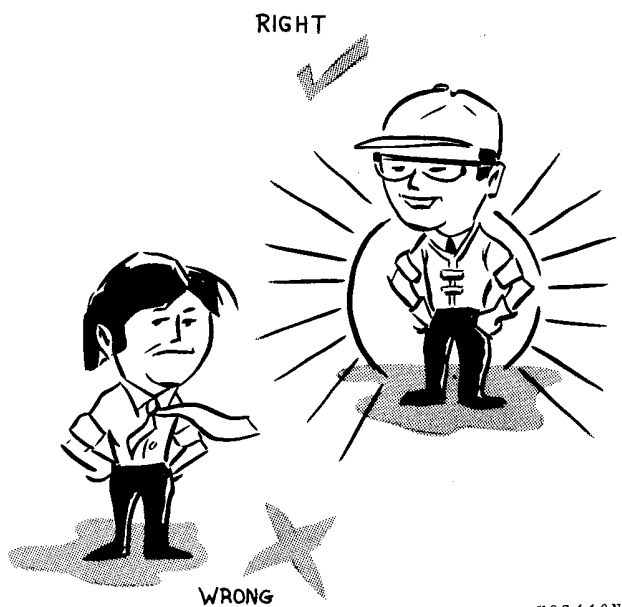
Escaping fluid under pressure can have sufficient force to penetrate the skin, causing serious bodily injury. Before disconnecting lines, be sure to relieve all pressure. Before applying pressure to the system, be sure all connections are tight and that lines, pipes and hoses are not damaged. Fluid escaping from a very small hole can be almost invisible. Use a piece of cardboard or wood, rather than hands, to search for suspected leaks.

If injured by escaping fluid, see a doctor at once. Serious infection or reaction can develop if proper medical treatment is not administered immediately.

Don't forget the hydraulic system may be pressurized! To relieve pressure, follow the technical manual.

When checking hydraulic pressure, be sure to use the correct test gauge for the pressure in the particular system.

## PERSONAL SAFETY



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Always avoid loose clothing—flopping cuffs, dangling neckties and scarves—that can catch in moving parts and put you out of work.

Always wear your safety glasses while on the job.

Keep transmission and brake control units properly adjusted at all times. Before making adjustments, stop engine.

Before removing any housing covers, stop engine. Take all objects from your pockets which could fall into the opened housings. Don't let adjusting wrenches fall into opened housings.

Don't attempt to check chain belt tension while the engine is running.

Don't adjust the fuel system while the machine is in motion.

Before repairing the electrical system, or performing a major overhaul, make sure the batteries are disconnected.

Avoid working on equipment with the engine running. If it is necessary to make checks with the engine running, ALWAYS USE TWO MEN—one, the operator, at the controls, the other checking where the operator can see him. Also, put the transmission in neutral, set the brake, and apply any safety locks provided. KEEP HANDS AWAY FROM MOVING PARTS.

Use extreme caution in removing drain plugs, grease fittings, or hydraulic pressure caps.



# Section 10 GENERAL

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## Group 5 SPECIFICATIONS

### LOADER DESIGN

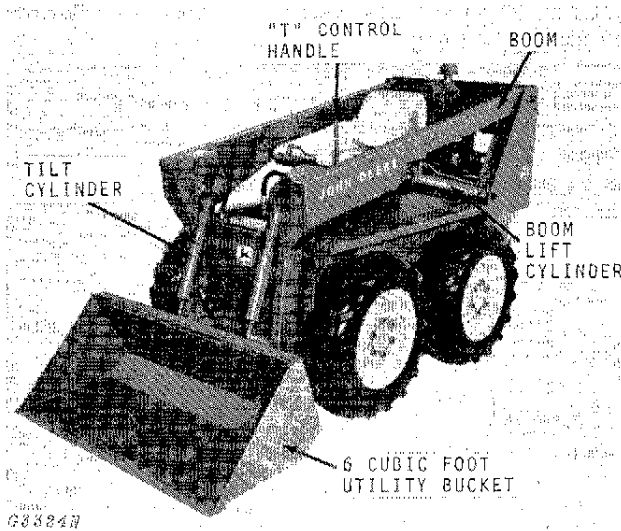


Fig. 1-70 Skid-Steer Loader

The John Deere 70 Skid Steer Loader is a 700-pound capacity, self-propelled, four-wheel drive machine used for miscellaneous material handling operations. It has the ability to maneuver in small, tight areas.

All references in this manual to "front", "rear", "left-hand", and "right-hand" are in relation to the position of operator seated in the operator's station.

### SERIAL NUMBER

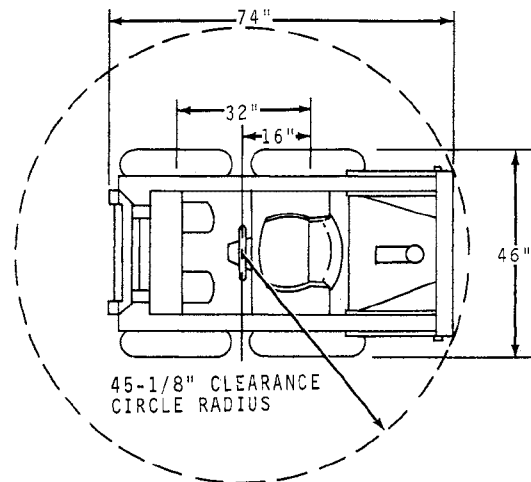
The serial number plate is located on the right side—inside the frame under the boom pivot.



### MACHINE SPECIFICATIONS

#### ENGINE

Make ..... Onan  
 Flywheel horsepower at 3200 rpm..... 23.5 hp  
 Maximum torque (ft-lbs) at 2400 rpm..... 40 ft-lbs  
 Number of cylinders ..... 2  
 Bore and stroke..... 3.56 x 3 in.  
 Piston displacement..... 60.0 cu. in.  
 Compression ratio..... 7.0 to 1  
 Intake valve clearance..... .003 in.  
 Exhaust valve clearance ..... .010 in.  
 Slow idle (serial no. 01072 and below) .. 500 rpm  
 Fast idle (serial no. 01072 and below) . 2400 rpm  
 Slow idle (serial no. 01073 and up)..... 900 rpm  
 Fast idle (serial no. 01073 and up)..... 3200 rpm  
 Starting..... Electric  
 Fuel..... Gasoline (regular grade)  
 Governor..... Cam gear driven, mechanical fly ball



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Fig. 2-Turning Radius

#### ELECTRICAL SYSTEM

Battery voltage ..... 12 volts  
 Battery terminal grounded ..... Negative  
 Alternator regulation ..... Regulator-rectifier  
 Ignition system type ..... Battery-breaker box  
 Breaker point gap ..... .020 in.  
 Spark plugs  
     Size ..... 14 MM  
     Gap ..... .025 in.

#### TRANSMISSION

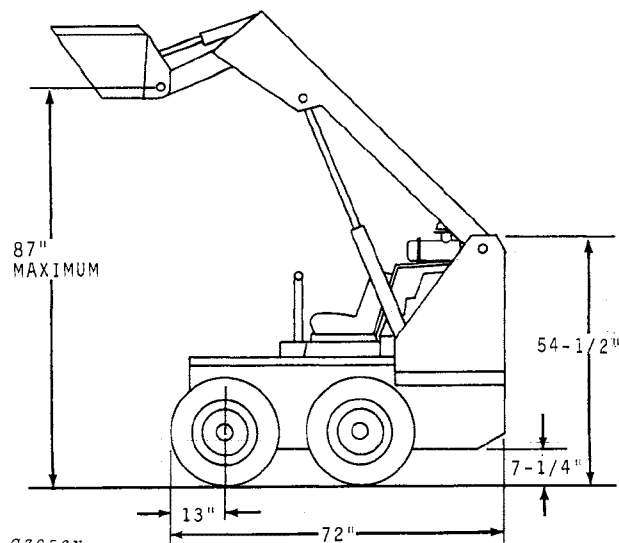
Make ..... Cessna  
 Type ..... Hydrostatic piston pumps with two rotor-type charge pumps

#### TRAVEL SPEEDS

Forward or reverse ..... 0 to 5 mph

#### HYDRAULIC SYSTEM

Type ..... Open center, constant volume system to operate loader boom and bucket  
 Pump ..... Transmission-mounted, gear type



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Fig. 3-Loader Dimensions

#### CAPACITIES (U.S. STANDARD MEASURES)

Fuel tank ..... 11 gal.  
 Engine crankcase (with filter) ..... 4 qts.  
 Hydraulic and hydrostatic system Approx. 15 gal.  
 Oil filter ..... 1/2 qt.; spin-on

#### TIRES

Type ..... 4-ply-rated, tubeless  
 Size ..... 27-8.50—15

## Group 10

# PREDELIVERY, DELIVERY AND AFTER-SALES SERVICES

### PREDELIVERY SERVICE

Service	Specification	Reference
Check battery for electrolyte level and specific gravity . . . . .	1.260 specific gravity when fully charged	See operator's manual.
Check battery terminal connections . . . . .		See operator's manual.
Adjust pressure of tires . . . . .	30 to 32 psi	See operator's manual.
Check wheel nuts for tightness . . . . .	90 ft-lbs torque	.....
Check crankcase oil level . . . . .	Fill to top mark on oil level indicator	See operator's manual.
Lubricate grease fittings . . . . .		See operator's manual.
Check hydraulic reservoir level . . . . .	Fill to top mark on bayonet gauge	See operator's manual.

### DELIVERY SERVICE

A thorough discussion of the operation and service of a new loader at the time of delivery helps to assure complete customer satisfaction.

Complaints may arise if the owner is not shown how to operate and service his new loader correctly. Devote enough time, at your customer's convenience, to introduce him to his new loader.

The following procedure is recommended before the service man delivers the loader to the owner.

Using the operator's manual as a guide be sure the owner thoroughly understands the following points:

1. Operation and use of controls.
2. Operation of the engine.
3. Operation and functions of the hydraulic and hydrostatic systems.
4. Importance of lubrication and periodic services.
5. Importance of safety.
6. Terms and conditions of warranty.

After explaining and demonstrating the above points, have the owner sign the delivery receipt and give him his operator's manual.

### AFTER-SALES SERVICE

The purpose of this inspection is to ensure that the customer is receiving satisfactory performance from his loader.

During the inspection service, the dealer has the opportunity of promoting the sale of additional new equipment and accessories.

At the same time, the inspection should reveal whether or not the machine is being operated, lubricated, and serviced properly.

The following inspection program is recommended within the first 100 hours of operation.

Service	Specification	Reference
Check battery specific gravity and electrolyte level . . . . .	1.260 specific gravity when fully charged	See operator's manual.
Check engine crankcase oil level . . . . .	Fill to top mark on oil level indicator	See operator's manual.
Check oil level in hydraulic reservoir . . . . .	Top mark on gauge	See operator's manual.
Check wheel nuts and studs . . . . .	90 ft-lbs torque	.....
Tighten all accessible cap screws and nuts . . . . .	.....	.....
Check air cleaner . . . . .	.....	See operator's manual.
Fill fuel tank and start engine . . . . .	11 U.S. gallons	See operator's manual.
Check operation of starter and gauges . . . . .	.....	See operator's manual.
Check operation of hydrostatic control . . . . .	.....	See operator's manual.
Check hydraulic system operation . . . . .	.....	See operator's manual.
Check hydrostatic system for leaks . . . . .	.....	See operator's manual.
Check seat operation . . . . .	.....	See operator's manual.

## Group 15

# TUNE-UP AND ADJUSTMENT

Perform all the tune-up steps to put the loader in top operating condition if major assembly and repair is not required.

Operation	Specification	Reference
<b>Air intake system</b>		
Check air filter .....		See operator's manual
Backflush engine .....		See operator's manual
<b>Ignition system</b>		
Clean, test, or replace spark plugs .....	.025-inch gap	See page 40-20-2
Check, adjust, or replace points .....	.020-inch gap	See page 40-20-1
Check breaker box and wiring .....		See pages 40-20-1 and 40-10-2
Time breaker box to engine .....	22° BTC (Serial No. 01072 and below)	See page 40-20-2
	25° BTC (Serial No. 01073 and up)	See page 40-20-4
<b>Battery</b>		
Check electrolyte level .....	1.260 specific gravity when fully charged	See operator's manual
Clean cables, terminals, and holder .....		See page 40-10-1
Tighten cable clamps .....		See page 40-10-1
<b>Fuel system</b>		
Check fuel tank and lines for leakage .....		
Check fuel filter .....		See operator's manual
Check carburetor .....		See page 30-10-1
<b>Tires and wheels</b>		
Check tire inflation .....	30 to 32 psi	See operator's manual
Check for proper torque value on wheel lug bolt nuts .....	90 ft-lbs torque	See operator's manual
<b>Electrical system</b>		
Check ammeter gauge .....		
Check fuses .....		See operator's manual
Check alternator-regulator (Flywheel type) .....		See page 40-15-1
<b>Hydraulic system</b>		
Check hydraulic oil filter .....		See page 70-25-1
Check hydraulic oil level .....	15 U.S. gallons	See operator's manual
Check control valve for leaks .....		Section 70, Group 15
Check system for leaks .....		Section 70, Groups 10, 15, and 20

Operation	Specification	Reference
<b>Hydrostatic system</b>		
Check strainer .....		See page 50-15-12
Check piston pump tie bolts .....	25 to 28 ft-lbs torque	See page 50-15-10
Check for proper torque value on hydrostatic motors .....	80 ft-lbs torque	See page 50-20-6
Check system for leaks .....		Section 50, Groups 15 and 20
Check for proper control .....		See page 50-15-11
<b>Lubrication</b>		
Replace engine oil filter .....	Throw-away type filter	See operator's manual
Lubricate loader .....	John Deere Multi-purpose type grease or equivalent	See operator's manual
Drain and replace crankcase oil .....	4 U.S. quarts	See operator's manual
<b>Engine</b>		
Check engine compression		
Adjust tappets		
(Serial No. 01072 and below).....	Intake-.003 in. Exhaust .010 in.	See page 20-15-8
(Serial No. 01073 and up).....	Intake-.003 in. Exhaust .012 in.	See page 20-15-8
<b>Drive chains</b>		
Check tension of all chains.....	1/2-inch deflection	See operator's manual

# Group 20 LUBRICATION

## GENERAL INFORMATION

Carefully written and illustrated lubrication instructions are included in the operator's manual. Remind the operator to follow these instructions.

The following chart shows capacities and types of lubricants for loader components and systems. Specifications for lubricants follow the chart.

Component	Capacity	Type of Lubricant	Interval of Service
Engine crankcase	4 U.S. quarts	See below and page 10-20-2	10 Hours - Check 100 Hours - Drain oil, refill and change filter
Hydraulic system	15 U.S. quarts	John Deere All-weather hydrostatic fluid (or equivalent)	10 Hours - Check 50 Hours - Clean strainer and breather 500 Hours - Drain and refill As Required - Filter
Grease fittings		John Deere Multi-Purpose Lubricant or equivalent	10 Hours - Loader boom and bucket cylinders, pivot pins 50 Hours - Foot pedals and steering lever
Parking brake		SAE J1703d, or DOT-3 brake fluid	As Required - Fill reservoir 1000 Hours - Drain and refill

## ENGINE LUBRICATING OILS

If oil other than Torq-Gard Supreme is used, it must conform to one of the following specifications:



We recommend John Deere Torq-Gard Supreme engine oil for use in the engine crankcase. Torq-Gard Supreme provides superior lubrication under all conditions. **NEVER PUT ADDITIVES IN THE CRANKCASE.** Torq-Gard Supreme oil was formulated to provide all the protection the engine needs. Additives could reduce this protection rather than help it.

### SINGLE VISCOSITY OILS

API Service CD/SE, CD/SD,  
 CC/SD or SD  
 MIL-L-46152  
 MIL-L-2104C\*

### MULTI-VISCOSITY OILS

API Service CC/SE, CC/SD or SD  
 MIL-L-46152

\* As further assurance of quality, the oil should be identified as suitable for API Service Designation SD.

Depending on the expected prevailing temperature for the fill period, use oil of viscosity as shown in the following chart.

Air Temperature	John Deere Torq-Gard Supreme Oil	Other Oils	
		Single Viscosity Oil	Multi-Viscosity Oil
Above 32°F.	SAE 30	SAE 30	Not recommended
-10°F. to 32°F.* *	SAE 10W-20	SAE 10W	SAE 10W-30
Below -10°F.	SAE 5W-20	SAE 5W	SAE 5W-20

\* \* SAE 5W-20 oil may also be used to insure optimum lubrication at starting, particularly when engine is subjected to -10°F. or lower temperatures for several hours.

Some increase in oil consumption may be expected when SAE 5W-20 or SAE 5W oils are used. Check oil level more frequently.

Crankcase capacity is 4 U.S. quarts.

## BRAKE FLUID

Fill master cylinder with SAE J1703d, or DOT-3 brake fluid.

## HYDRAULIC AND HYDROSTATIC OILS

Fill hydraulic reservoir with John Deere all-weather hydrostatic oil or an automotive automatic transmission hydraulic oil "TYPE F" or equivalent. The reservoir capacity is approximately 15 U.S. gallons.

## GREASES

John Deere Multi-Purpose Lubricant is recommended for all grease fittings. Application of grease as instructed in the lubrication section will provide proper lubrication and will keep contamination out of bearings.

## Section 20 ENGINE

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Engine Installation .....	15-10		



## Group 5

### DIAGNOSING ENGINE MALFUNCTIONS

Problem	Possible Cause	Possible Remedy	Reference
Failure to start or slow starting	Faulty ignition	Clean plugs and adjust points	See page 40-20-2
	Out of fuel	Fill fuel tank	See operator's manual
	Engine flooded	Wait a few minutes and restart	
	Poor quality fuel	Drain and refill fuel tank	See operator's manual
	Low compression	Replace valves and piston rings	See page 20-15-4, 20-15-7
	Clogged carburetor	Remove and clean	See page 30-10-1, 30-10-2
	Leaking valves or valve seats	Replace valves and reseat	See page 20-15-7
	Ignition timing off	Reset timing	See page 40-20-2
	Fuel mixture too rich	Adjust choke	See page 30-10-2
	Dirty air cleaner	Replace filter	See operator's manual
Engine cranks slowly	Blown or leaking head gasket	Replace head gasket	See page 20-15-9
	Battery discharged	Recharge or replace	See page 40-10-1 and operator's manual
	Oil too heavy	Drain and refill with proper viscosity oil	See operator's manual
	Worn bearings	Replace engine bearings	See page 20-15-2
Backfires at carburetor	Loose or corroded battery connections	Clean and tighten connections	See page 40-10-1
	Fuel mixture too rich	Adjust throttle	See page 30-10-2
	Engine flooded	Wait a few minutes and restart	
	Poor quality fuel	Drain and refill fuel tank	See operator's manual
	Spark too far advanced	Retard timing	See page 40-20-2

Problem	Possible Cause	Possible Remedy	Reference
Engine misfires under light load	Faulty ignition	Clean plugs and adjust points	See pages 40-20-1 and 40-20-2
	Fuel mixture too rich	Adjust throttle	See page 30-10-2
	Air intake leak	Tighten hose clamps or replace hose	
	Leaking valves or valve seats	Replace valves and reseal	See page 20-15-7
Engine misfires under heavy load	Faulty ignition	Clean plugs and adjust points	See page 40-20-2
	Poor quality fuel	Drain and refill fuel tank	See operator's manual
	Clogged carburetor	Remove and clean	See page 30-10-2
	Clogged fuel filter	Replace filter	See page 30-15-1
	Dirty air cleaner	Clean or replace element	See operator's manual
Low oil pressure	Light or diluted oil	Drain and refill with proper viscosity oil	See operator's manual
	Oil level too low	Check and fill	See operator's manual
	Sludge on oil pump screen	Remove and clean	See page 20-15-7
	Oil pump worn	Replace pump	See page 20-15-7
	Defective gauge	Replace	
	Oil relief valve stuck	Remove and clean	See page 20-15-9
	Worn bearings	Replace engine bearings	See page 20-15-2
High oil pressure	Oil too heavy	Drain and refill with proper viscosity oil	See operator's manual
	Sludge on oil pump screen	Remove and clean	See page 20-15-7
	Oil pump worn	Replace pump	See page 20-15-7
	Defective gauge	Replace	
	Oil relief valve stuck	Remove and clean	See page 20-15-9
	Worn bearings	Replace engine bearings	See page 20-15-2

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