

John Deere JD24 Skid-Steer Loader



JOHNDEERE

TECHNICAL MANUAL

John Deere JD24
Skid-Steer Loader

TM1042 (01DEC74) English

John Deere
Lawn & Grounds Care Division
TM1042(01DEC74)

LITHO IN U.S.A.
ENGLISH



JD24 SKID-STEER LOADER

TECHNICAL MANUAL

TM-1042 (Dec-74)

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SI (International System) UNITS OF MEASURE

Metric equivalents have been included, where applicable, throughout this technical manual.

"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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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.

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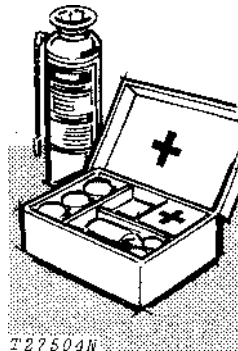
SAFETY AND YOU

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.



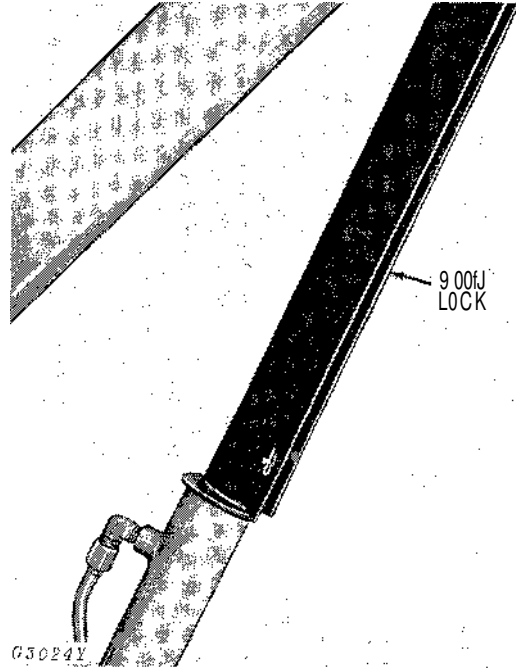
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T27504N

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.

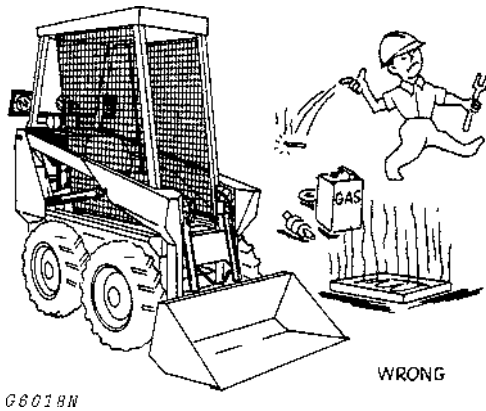
BOOM LOCKS CAUTION



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 locks 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

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.

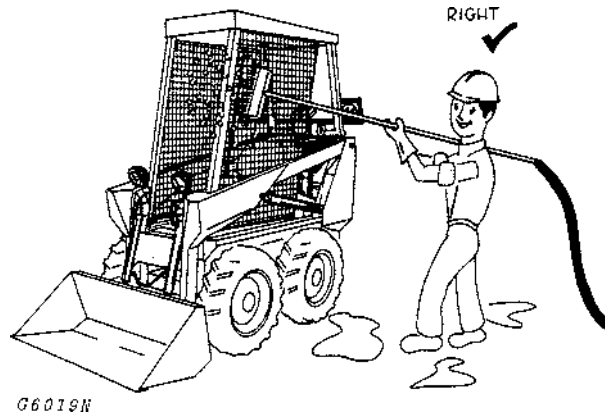
Don't smoke near battery.

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

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

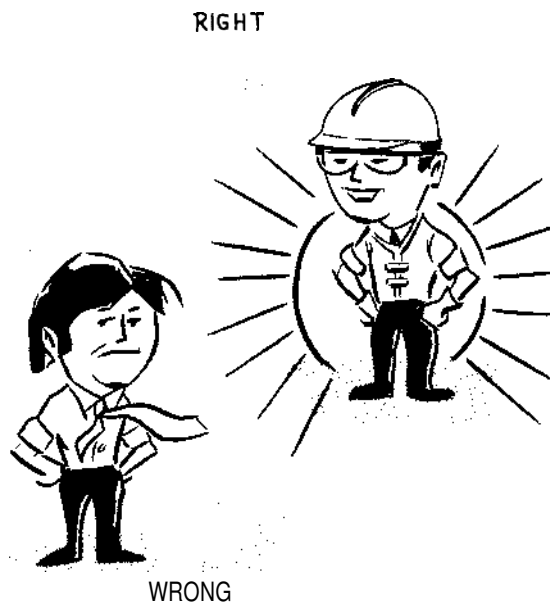
Escaping fluid under pressure can have sufficient force to penetrate the skin, causing serious bodily injury. Before disconnecting lines, be sure to relieve all pressure. Before applying pressure to the system, be sure all connections are tight and that lines, pipes and hoses are not damaged. Fluid escaping 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



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, for 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

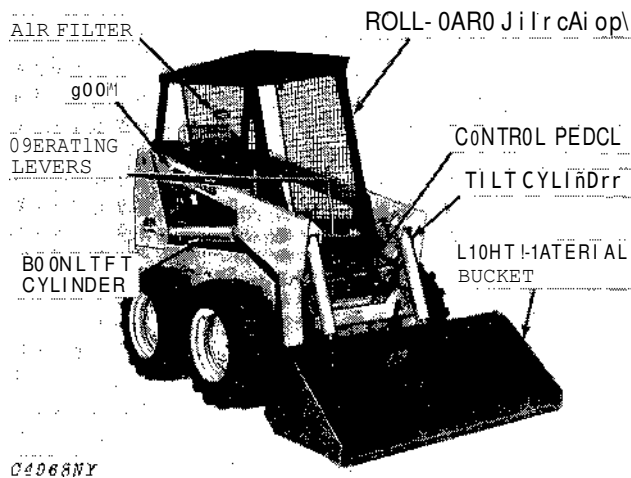


Fig. 1-JD24 Skid-Steer Loader

The JD24 Skid-Steer Loader is a 1700-pound capacity, self-propelled, four-wheel drive loader used for various material handling operations. It also 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 the operator seated in the operator's station.

SERIAL NUMBERS

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

LOADER SPECIFICATIONS

ENGINE (Gasoline)

Flywheel Horsepower at 2400 RPM 37 hp
(27.59 Kw)
Number of Cylinders 4
Bore and Stroke 3.50 x 4 in.
(8.89 cm x 10.16 cm)
Piston Displacement 154 cu. in.
(252.41 cm³)
Compression Ratio 5.05 to 1
Intake Valve Clearance008 in.
(0.2032 mm)
Exhaust Valve Clearance 0.016 in.
(0.4064 mm)
Slow idle 900 RPM
Fast idle... 2550 RPM
Starting Electric
Fuel Gasoline (Regular Grade)
Governor Cam Gear Driven

ENGINE: (Diesel)

John Deere (3152D 3-cylinder, 4 stroke, diesel)

Horsepower 37 (Flywheel)
(27.59 Kw)
(at 2500 engine rpm)
Displacement 152.0 cu. in.
(249.08 cm³)
Compression ratio 16.3:1
Bore and stroke, inches 3.86 x 4.33
Torque (ft-lbs) max. at 1300 rpm (9.80 x 10.99 cm)
(observed) (nominal) 92.0
N.A.CC or A.M.A. horsepower (120.73 Nm)
rating for tax purposes 17.88
(13.33 Kw)
Intake valve clearance 0.014"
(0.357 mm)
Exhaust valve clearance 0.018"
(0.457 mm)
Slow idle (rpm) 1200
Fast idle (rpm) 2650
Working speed range (rpm) 1500-2500

COOLING SYSTEM: (Diesel)

Capacity 14 U.S. quarts
(13.25 l)
Thermostat 180°F (82°C)
Operating pressure 14 psi
(96.52 kPa)

ELECTRICAL SYSTEM

Fuse AGC 30
Battery Voltage 12-Volt
Battery Terminal Grounded Negative Ground
Alternator Regulation Regulator-Rectifier
Alternator Belt driven, Motorola
Breaker Point Gap (Gasoline) 0.020 in.
(0.508 mm)

Spark Plugs (Gasoline)
Size 18 mm
Gap 0.030 in.
(0.762 mm)

CAPACITIES (U.S. STANDARD MEASURES)

Fuel Tank 25 gal.
(94.63 l)
Engine Crankcase (Gasoline) 4-1/2 qts.
(4.26 l)
(Diesel) 6 qts.
(5.68 l)

DRIVE SYSTEM

Gearbox Transmits engine power to clutch packs. It drives hydraulic pump and variable drive pulley.

Clutch Packs Multi-disk type, roller cam actuated with 11 wear surfaces and heavy-duty separator springs.

TRAVEL SPEEDS

Forward or Reverse 0 to 7 mph
(11.3 km/hr.)
(Gasoline)
0 to 6 mph
(9.7 km/hr.)
(Diesel)

Turning Radius 360 degrees in its own length

TIRES

Type Flotation, grip-type
Size 10-16.5 6-ply rated
Type Solid Rubber (Optional Diesel)
Size 6.50-16

HYDRAULIC SYSTEM:

Pressure.1750 psi
 (12.06 MPa)

ControlDual pedal, double hydraulic system

PumpGear, 18 gpm (68.13 l/min.) at 2,400 engine rpm

Oil linesWelded JIC steel tubing; single-wire braid hose

Filter33 micron paper cartridge in suction line

HYDRAULIC CYLINDERS:

| | Bore | Stroke |
|-------------------|-----------------------|-------------------------|
| Boom (2) | 3-inch (7.62 cm) | 27.5-inch (69.85 cm) |
| Bucket (2) | 3-inch (7.62 cm) | 16.5-inch (41.91 cm) |
| Grapple (2) | 2.5-inch (6.32 cm) | 8-inch (20.32 cm) |

Cylinder Rods..... Ground, heat-treated, chrome plated, polished

Boom cylinder rods 1.5-in. dia.
 (3.81 cm)

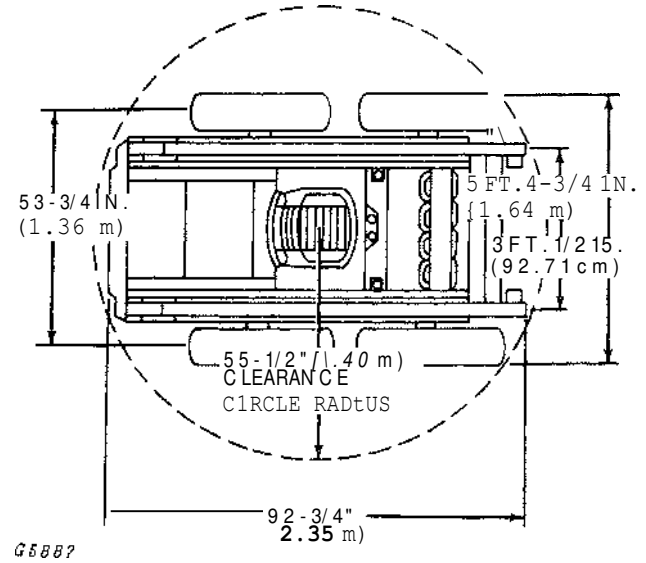
Bucket cylinder rods 1.25-in. dia.
 (3.18 cm)

Grapple cylinder rods 1.125-in. dia.
 (2.88 cm)

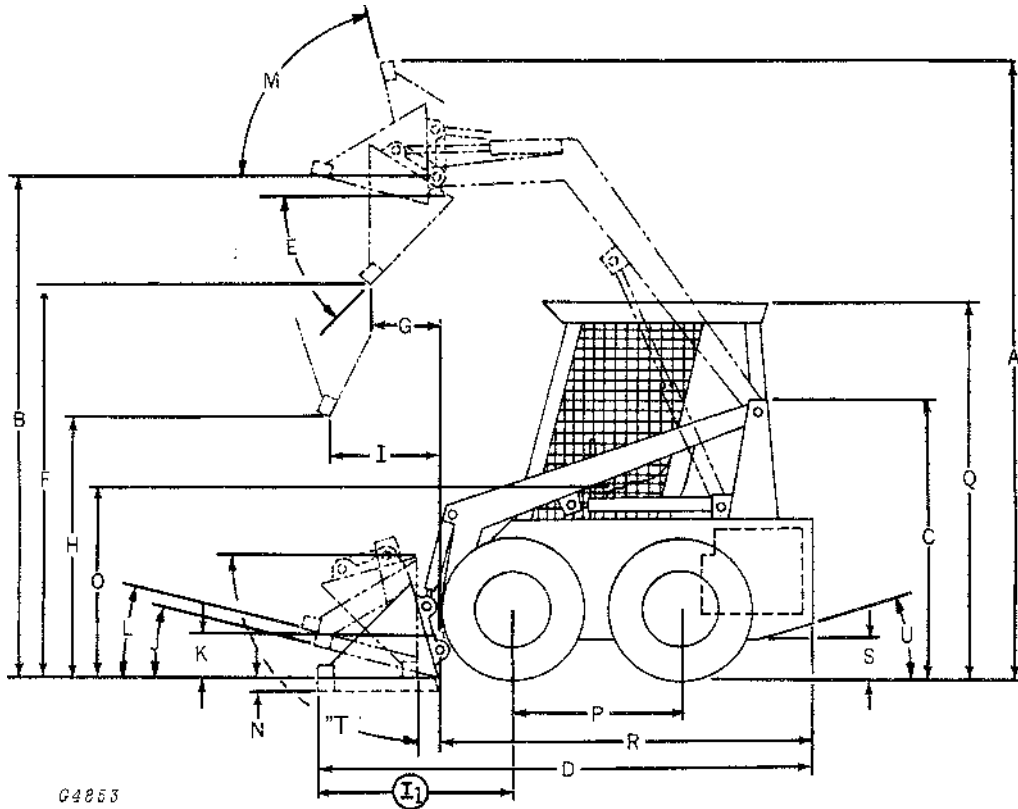
LOAD CAPACITY .. Load capacity is 1700 lbs.
 (771.11 kg) Bucket capacities vary according to application

SHIPPING WEIGHT4619 lbs.
 (2095.143 kg)

DistributionRear - 73-1/2%, Front - 26-1/2%



F-ig. 2-Turning Radius and Dimensions



Specifications are in accordance with IEMC standards. Dimensions are with the Quik-Tatch Dirt and Foundry bucket.

| | |
|---|-------------------|
| A. Overall height - lift arms raised | 149-1/4" (3.79 m) |
| B. Height to hinge pin (Maximum) | 116" (2.94 m) |
| C. Overall height | 61-1/2" (1.56 m) |
| D. Overall length - with bucket | 122-3/4" (3.11 m) |
| E. Dump angle | 37° |
| F. Dump height | 91" (2.31 m) |
| G. Reach of maximum height | 19-1/4" (48.9 cm) |
| Reach at "H" (25-1/4" [64.14 cml at 74° dump) | 20" (50.8 cm) |
| (28" [71.12 cml at 45° dump) | 35-3/4" (90.8 cm) |
| I. Maximum | 21 1/4" (1.32 m) |
| J. Cut | |
| K. Carry position | 9-3/4" (24.77 cm) |
| L. | |
| M. Maximum rollback | 3 4° |
| N. Digging depth | 3/4" (1.91 cm) |
| O. Wheel base at | 32a. (889) |
| P. | |
| Q Overall height with rollguard | 85-1/4" (2.16 m) |
| R. Overall length - less bucket | 91" (2.31 cm) |
| S. Ground clearance | 7-3/4" (19.69 cm) |
| T. Maximum grading angle | 94° |
| U. Angle of departure | 20° |

(Specifications and design subject to change without notice)

Group 10

PREDELIVERY, DELIVERY, AND AFTER-SALES SERVICES

PREDELIVERY SERVICE

| Service | Specifications | Reference |
|--|--|-----------------------|
| Check battery for electrolyte level and specific gravity | Use battery hydrometer | See operator's manual |
| Check battery terminal connections | | See operator's manual |
| Check variable speed drive belt for alignment | 2-3/4-inch (6.98 cm) | See operator's manual |
| Adjust pressure of tires | 45 to 50 PSI (310.26 to 344.74 kPa) | See operator's manual |
| Check nuts for tightness | 90 ft-lbs (122.02 Nm) torque | |
| Check crankcase oil | Fill to top mark on oil level indicator | See operator's manual |
| Check gearbox oil level | 1/4 pt (0.12 l) use SAE 80 gear oil. | See operator's manual |
| Lubricate grease fittings | John Deere Multi-Purpose Lubricant or an equivalent SAE Multipurpose-Type Grease | 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 the owner thoroughly understands the following points:

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 serviceman delivers the loader to the owner.

Using the operator's manual as a guide, be sure the following points are explained:

1. Operation and use of controls.
2. Operation of the engine.
3. Operation and functions of the hydraulic system.
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.

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

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

| Service | Specifications | Reference |
|--|---|-----------------------|
| Check battery specific gravity and electrolyte level | Use battery hydrometer | See operator's manual |
| Check engine crankcase oil | Fill to top mark on oil level indicator | See operator's manual |
| Check level of hydraulic oil | Top mark on gauge | See operator's manual |
| Check air cleaner for leaks | | See operator's manual |
| Fill fuel tank and start engine | 25 U.S. gal. (94.63 liters) | See operator's manual |
| Check operation of starter and gauges | | See operator's manual |
| Check steering operation | | See operator's manual |
| Check seat operation | | See operator's manual |
| Check variable speed drive belt alignment | 2-3/4 inches (6.98 cm) | See operator's manual |

Group 15 LOADER TUNE-UP

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

| Operation | Specification | Reference |
|---|--|---------------------------------------|
| Air Intake System | | Operator's Manual |
| Check air restriction indicator for air filter. | | |
| Backflush engine (Gasoline) | | |
| Ignition System (Gasoline) | | |
| Clean, test, or replace spark plugs | .030 in. gap (0.762 mm) | page 40-20-5 |
| Check, adjust, or replace points | .020 in. gap (0.508 mm) | page 40-20-4 |
| Check distributor and wiring | | pages 40-10-3, 40-10-4 and 40-20-3 |
| Time distributor to engine | 23° at 2000 RPM | page 40-20-3 |
| Battery | | |
| Check electrolyte level | 1.260 specific gravity at 80°F (27°C) | Operator's Manual page 40-10-2 |
| Clean cables, terminals, and holder | | |
| Tighten cable clamps | | |
| Fuel System | | |
| Check fuel tank, lines, and filter for leakage (Gasoline) | | page 30-15-1 |
| Check fuel tank, lines, and filter for leakage (Diesel) | | page 30-30-1 |
| Check sediment bowl (Gasoline) | | page 30-15-1 |
| Check sediment bowl (Diesel) | | page 30-30-1 |
| Check carburetor (Gasoline) | | page 30-10-6 |
| Tires and Wheels | | |
| Check tire inflation | 45 to 50 psi (310.26 to 344.74 kPa) | Operator's manual |
| Check wheel lug bolts nuts for tightness | 90 ft-lbs (122.02 Nm) torque | |
| Electrical System | | |
| Check for faulty ammeter gauge | | |
| Hydraulic System | | |
| Check hydraulic filter | | Operator's Manual |
| Check hydraulic oil level | | |
| Check control valves for leaks | | |
| Check system for leaks | | |

NOTE: John Deere Hy-GARD Transmission and Hydraulic oil may be added to or mixed with John Deere Type 303 Special-Purpose Oil.

| Operation | Specification | Reference |
|---------------------------------|---|--|
| Lubrication | | |
| Replace engine oil filter | Throw-away-type filter | Operator's Manual |
| Lubricate loader | John Deere Multi-Purpose lubricant or an equivalent SAE Multipurpose-type grease | Operator's Manual |
| Drain and replace crankcase oil | 5 U.S. quarts (4.73 l) (Gasoline) 6 U.S. quarts (5.68 l) (Diesel) | Operator's Manual Operator's Manual |
| Engine | | |
| Adjust tappets (Gasoline) | Intake .008 in. (0.203 mm) Exhaust .016 in. (0.406 mm) | page 20-15-7 |
| Adjusting tappets (Diesel) | Intake .014 in. (0.355 mm) Exhaust .018. (0.457 mm) | page 20-30-18 |
| Drive Chains | | |
| Check tension of all chains | 1/2-inch deflection (1.27 cm) | page 50-45-1 |

Group 20 LUBRICATION

GENERAL INFORMATION

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

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

| Component | Capacity | Type of Lubricant | Interval of Service |
|------------------|---|---|---|
| Crankcase | Gasoline) 5 U.S. qts. (4.73 l) (Diesel) 6 U.S. qts. (5.68 l) | See below | 10 hours - check 100 hours - Drain oil , refill, and change filter |
| Hydraulic System | 20 U.S. gal. (75.7 l) | Use only John Deere Hy-GARD Transmission and Hydraulic Oil or its equivalent in the transmission-hydraulic system. Other types of oil will not give satisfactory service, and may result in eventual damage. This special oil, available from your John Deere dealer, may be used in all weather conditions. <i>NOTE: John Deere Hy-GARD Transmission and Hydraulic Oil may be added to or mixed with John Deere Type 303 Special-Purpose Oil.</i> | 10 hours - check 50 hours - clean breather cap 1200 hours - change hydraulic fluid |
| Gearbox | 1-1/4 pts. (0.59 l) | SAE 80 gear oil | 50 hours - check 2500 hours - drain and refill |
| Grease fittings | | John Deere Multi-Purpose Lubricant or an equivalent SAE multi-purpose grease | 10 hours - loader, boom and bucket cylinders , pivot pins. 20 hours - control pedals and variable sheave |
| Brake | | SAE J 1703d or DOT-3 brake fluid | As required-fill reservoir 300 hours - refill reservoir |

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