

# 170 Skid-Steer Loader



JOHN DEERE

## TECHNICAL MANUAL

### 170 Skid-Steer Loader

TM1075 (01JUL74) English

John Deere  
Lawn & Grounds Care Division  
TM1075 (01JUL74)

LITHO IN U.S.A.  
ENGLISH





---

**170 SKID-STEER LOADER**  
**TECHNICAL MANUAL**  
**TM-1075 (Jul-74)**

**CONTENTS**

SECTION 10 - GENERAL	SECTION 50 - POWER TRAIN
Group 5 - Specifications	Group 5 - Diagnosing Power Train
Group 10 - Predelivery, Delivery, and After Sales Service	Group 10 - Power Train Flow
Group 15 - Loader Tune-Up	Group 15 - Gearbox
Group 20 - Lubrication	Group 20 - Hydraulic Variable Drive Sheave
	Group 25 - Variable Drive Shaft Assembly
	Group 30 - Clutch
SECTION 20 - ENGINE	Group 35 - Center Reduction Gear Assembly
Group 5 - Diagnosing Engine Malfunctions	Group 40 - Axle
Group 10 - Basic Engine	Group 45 - Drive Chains
Group 15 - Repair, Assembly, and Adjustments of Engine	Group 50 - Specifications and Special Tools
Group 20 - Specifications and Special Tools	
	SECTION 60 - STEERING AND BRAKES
SECTION 30 - FUEL SYSTEM	Group 5 - Steering
Group 5 - Diagnosing Fuel System Malfunctions	Group 10 - Brakes
Group 10 - Carburetor	Group 15 - Specifications
Group 15 - Fuel Filter, Strainer and Pump	
Group 20 - Specifications	SECTION 70 - HYDRAULIC SYSTEM
	Group 5 - Diagnosis
SECTION 40 - ELECTRICAL SYSTEM	Group 10 - Hydraulic Pump
Group 5 - Diagnosis	Group 15 - Hydraulic Control Valves
Group 10 - Battery and Wiring Diagrams	Group 20 - Variable Speed Valves
Group 15 - Charging System	Group 25 - Hydraulic Cylinders
Group 20 - Ignition System	Group 30 - Specifications and Special Tools
Group 25 - Starting Motor	
Group 30 - Specifications and Special Tools	SECTION 80 - ALPHABETICAL INDEX

*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.*

**SI (International System) Units of Measure**

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

**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.

**Copyright© 1974**  
**DEERE & COMPANY**  
**Moline, Illinois**  
**All rights reserved**

**Thanks very much for your reading,  
Want to get more information,  
Please click here, Then get the complete  
manual**

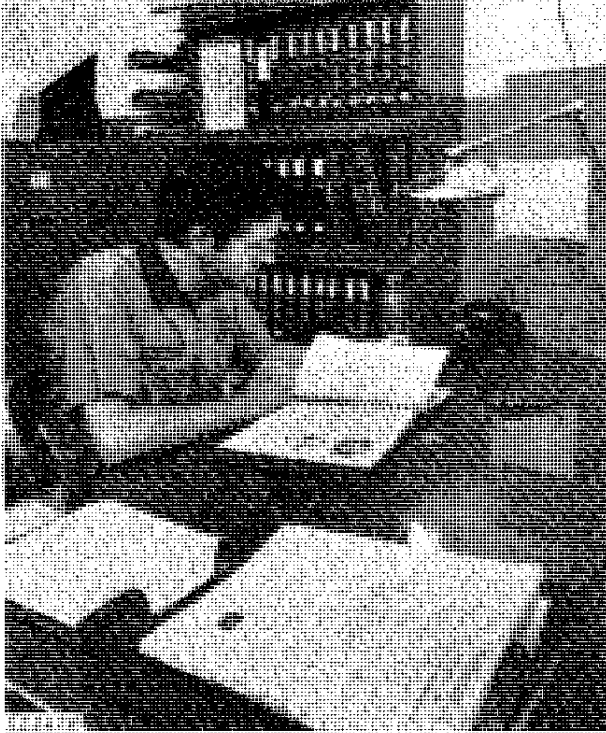
**JustClickHere** 

**NOTE:**

**If there is no response to click on the link above,  
please download the PDF document first, and then  
click on it.**

**Have any questions please write to me:  
[admin@servicemanualperfect.com](mailto:admin@servicemanualperfect.com)**

## 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.

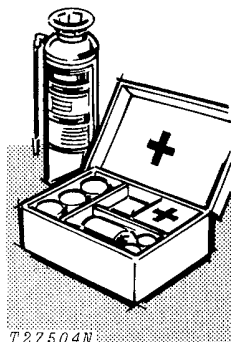
## SAFETY AND YOU



T27999N

### INTRODUCTION

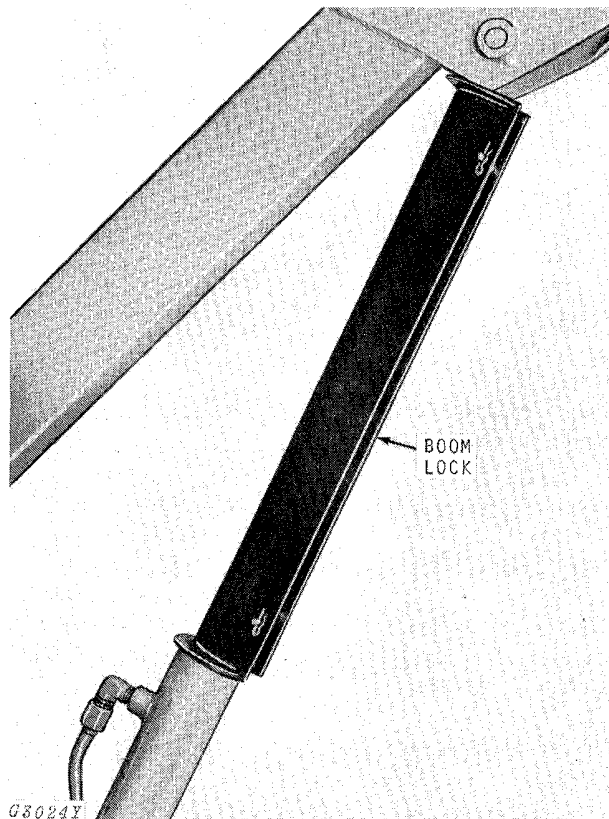
 This safety alert symbol identifies important safety messages in this manual and on the skid-steer loader. When you see this symbol, be alert to the possibility of bodily injury and carefully read the message that follows.



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.

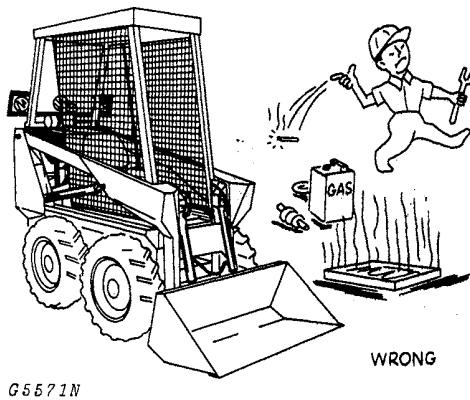
### BOOM LOCKS CAUTION



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 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**

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.

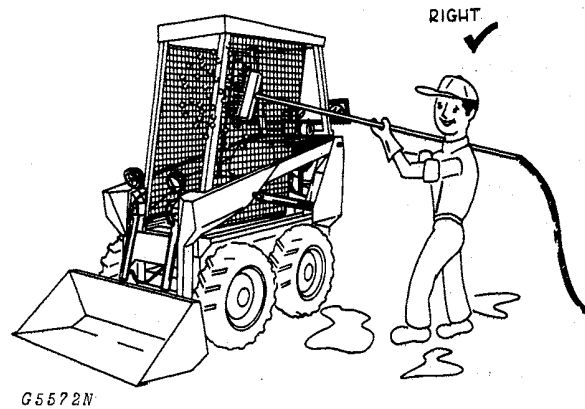
Don't smoke near battery.

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

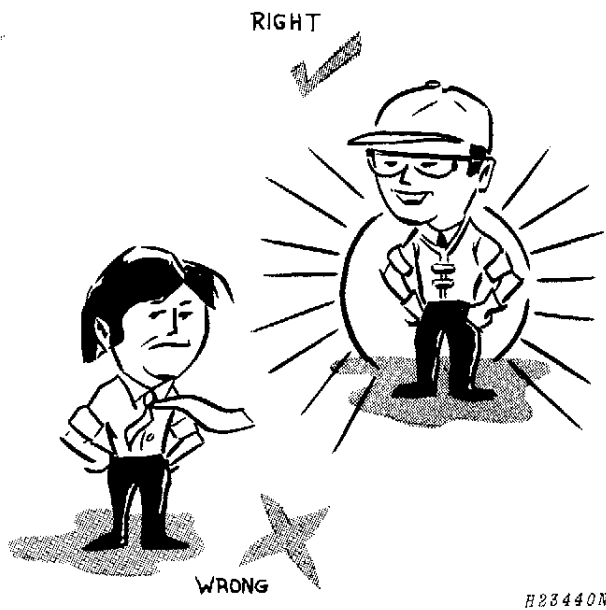
Escaping fluid under pressure can have sufficient force to penetrate the skin, causing serious bodily injury. Before disconnecting lines, be sure to relieve all pressure. Before applying pressure to the system, be sure all connections are tight and that lines, pipes and hoses are not damaged. Fluid escaping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

### CONTENTS OF THIS SECTION

	Page		Page
GROUP 5 SPECIFICATIONS		GROUP 15 LOADERTUNE UP	
Loader Specifications .....	5-2	Loader Tune Up .....	15-1
GROUP 10 PREDELIVERY, DELIVERY, AND AFTER SALES SERVICES		GROUP 20 LUBRICATION	
Predelivery Service .....	10-1	Lubrication Chart .....	20-1
Delivery Service .....	10-1	Engine Lubricating Oil .....	20-1
After-Sales Service .....	10-2	Hydraulic Oil .....	20-2

## Group 5 SPECIFICATIONS

### LOADER DESIGN

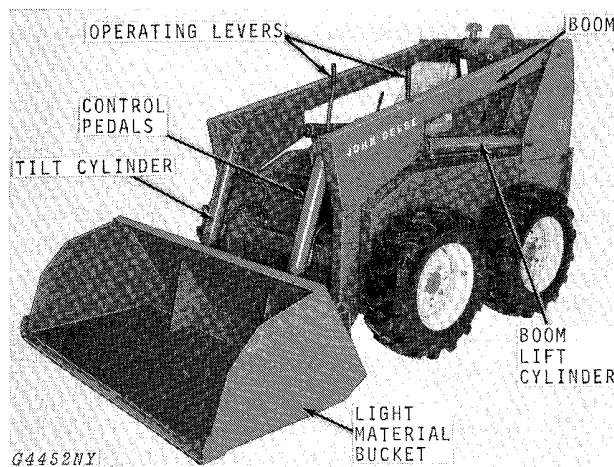


Fig. 1-170 Skid-Steer Loader

The John Deere 170 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

### HORSEPOWER (@ 2,400 engine rpm):

Brake(SAE)\* ..... 37 (49.617 Kw)

\* Brake horsepower is for an engine equipped with fan, air cleaner and muffler; and is maximum under SAE standard conditions at sea level and 60°F (16°C).

ENGINE: Wisconsin VG4D, 4-cylinder, 4-stroke cycle, gasoline

Maximum torque @ 1,600 rpm ..... 93.8 ft-lb  
(127.18 Nm)

Number of Cylinders ..... 4

Bore and Stroke .3.50 x 4 in. (8.89 x 10.16 cm)

Piston Displacement .... 154 cu. in. (252.41 cm<sup>3</sup>)

Compression Ratio ..... 5.05 to 1

Intake Valve Clearance ..... .008 in. (0.2032 mm)

Exhaust Valve Clearance ... .016 in. (0.4064 mm)

Slow Idle ..... 900 RPM

Fast Idle ..... 2550 RPM

Starting ..... Electric

Fuel ..... Gasoline (Regular Grade)

Governor ..... Cam Gear Driven

Lubrication ..... Pressure system w/full-flow filter

Cooling fan ..... Suction

Air cleaner w/restriction indicator ..... Dry

Electrical System ..... 12 volt w/alternator

### ELECTRICAL SYSTEM

Battery Voltage ..... 12-volt

Battery Terminal Grounded ..... Negative Ground

Alternator Regulation ..... Regulator-Rectifier

Alternator ..... Belt Driven, Motorola

Breaker Point Gap ..... .020 in. (0.508 mm)

Spark Plugs

Size ..... 18 mm

Gap ..... .030 in. (0.762 mm)

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

Fuel Tank ..... 25 gal. (94.63 l)

Engine Crankcase ..... 4-1/2 qts. (4.26 l)

Hydraulic System ..... 20 gal. (5.68 l)

Oil Filter ..... 1/2 qt., Spin-On (13.24 l)

### TIRES

Type ..... Flotation, grip-type

Size .... 10-16.5, 6-ply-rated (25.40 x 41.91 cm)

### 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: ..... mph

Forward or reverse ..... 0-7  
(11.3 km/hr)

Turning Radius: ..... 360 degrees in its own length

### FINAL DRIVES:

Axle is specially-treated, forged 2.56 in. (6.50 cm) dia. steel. Chain and sprocket primary, secondary, and final drives.

STEERING ..... Multiple-disk clutch. Control levers for left and right drive wheels. Front or reverse.

### HYDRAULIC SYSTEM:

Pressure ..... 1,750 psi (12.06 MPa)

Control ..... Dual-pedal, double hydraulic system

Pump ..... Gear, 18 gpm (68.13 l/min)  
@ 2,400 engine rpm

Oil lines ..... Welded JIC steel tubing;  
single-wire-braid hose

Filter ... 33-micron paper cartridge in suction line

### HYDRAULIC CYLINDERS

Bore Stroke

Boom (2) .. 3 in. (7.62 cm) .. 27.5 in. (69.85 cm)

Bucket (2) . 3 in. (7.62 cm) . 16.5 in. (41.91 cm)

Grapple (2) 2.5 in. (6.32 cm) 8 in. (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 1,700 lbs.  
(771.11 kg) Bucket capacities vary according to application

SHIPPING WEIGHT ..... 4,400 lbs.  
Distribution ..... Rear-82%, Front-18%

### OPERATING WEIGHT

Distribution ..... Rear-70%, Front-30%  
(With dirt bucket)

### BUCKET SPECIFICATIONS

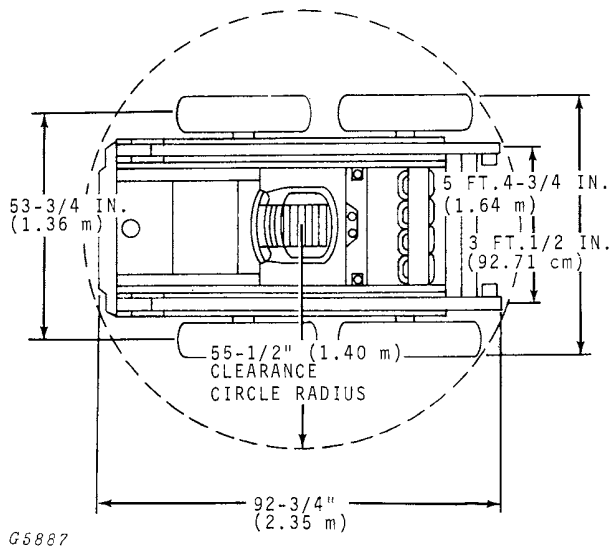
REGULAR BUCKETS	Width	Height	Capacity Cu. Ft.	Wt. Lbs.
Dirt	65" (1.65m)	18-5/8" (47.31cm)	10.0 (0.28m <sup>3</sup> )	335 (14.99kg)
Produce	72" (1.83m)	28" (71.12cm)	15.0 (0.425m <sup>3</sup> )	405 (18.37kg)
Light Materials	67" (1.70m)	22-7/8" (58.10cm)	20.2 (3/4 yd.) (0.57m <sup>3</sup> )	455 (20.65kg)
Fertilizer	65" (1.65m)	21-3/8" (54.29cm)	15.3 (0.43m <sup>3</sup> )	400 (18.14kg)
Utility	65" (1.65m)	20-1/8" (51.12cm)	12.5 (0.35m <sup>3</sup> )	380 (17.24kg)
Manure Bucket	65" (1.65m)	18-7/8" (47.94cm)		375 (17.01kg)

QUIK-TATCH BUCKETS	Width	Height	Capacity Cu. Ft.	Wt. Lbs.
Dirt	65" (1.65m)	20" (50.80cm)	10.5 (0.297m <sup>3</sup> )	415 (18.82kg)
Light Materials	73" (1.85m)	27-3/4" (70.49cm)	25.5 (1 yd.) (0.722m <sup>3</sup> )	465 (21.09kg)
Light Materials	67" (1.70m)	25-3/4" (65.41cm)	20.2 (3/4 yd.) (0.57m <sup>3</sup> )	415 (18.82kg)
Fertilizer	65" (1.65m)	23-3/16" (58.90cm)	15.3 (0.43m <sup>3</sup> )	420 (19.05kg)
Utility	65" (1.65m)	20" (50.80cm)	12.5 (0.35m <sup>3</sup> )	402 (18.23kg)
Quik-Tatch Bar				100 (4.536kg)

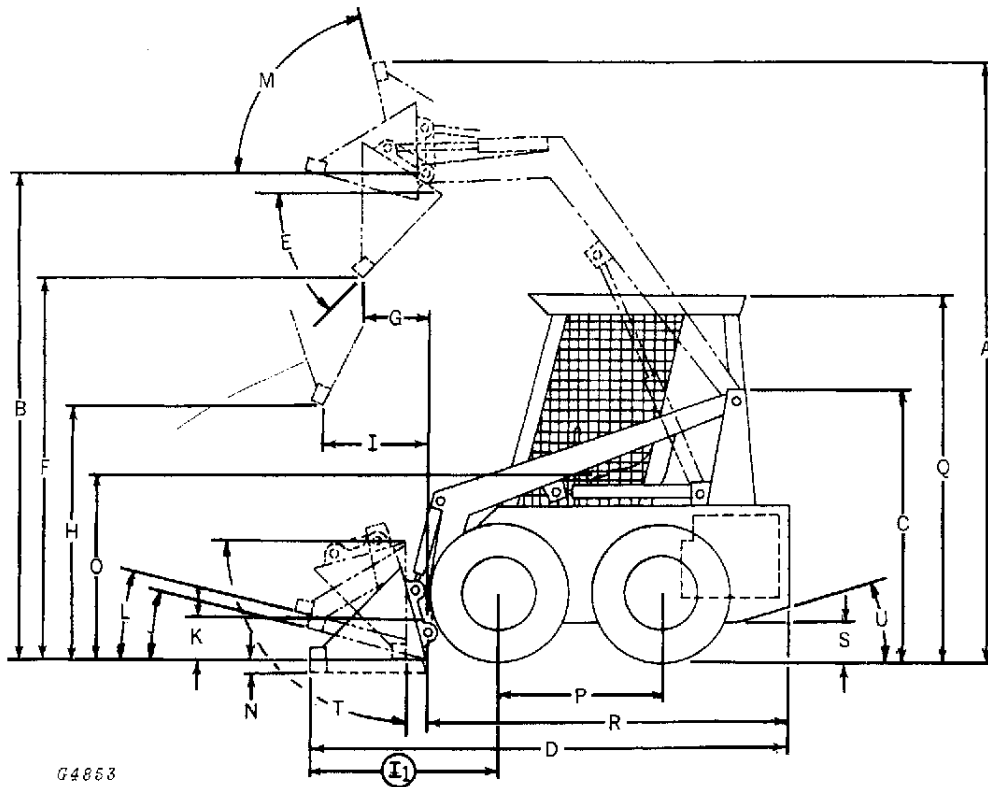
### PALLET FORKS

- Width ..... 43" (1.092m)
- Weight
  - Quik-Tatch Mounting Frame ... 290 lbs. (13.54kg)
  - Standard Mounting Frame ..... 115 lbs. (5.23kg)
  - Forks (two) 36" (91.44cm) ..... 150 lbs. (6.80kg)
  - Forks (two) 46" (122.84cm) ..... 170 lbs. (7.71kg)

### TURNING RADIUS



G5887



G4853

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" (2.95 m)
C.	Overall height .....	61-1/2" (1.56 m)
D.	Overall length - with bucket .....	122-3/4" (3.12 m)
E.	Dump angle .....	37°
F.	Dump height .....	91" (2.31 m)
G.	Reach of maximum height .....	19-1/4" (48.90 cm)
I.	Reach at "H" (25-1/4" [64.14 cm] at 74° dump) .....	20" (50.80 cm)
	(28" [71.12 cm] at 45° dump) .....	35-3/4" (90.81 cm)
I <sub>1</sub> .	Reach bucket on ground .....	52-1/4" (1.32 m)
J.	Maximum rollback at ground .....	32°
K.	Carry position .....	9-3/4" (24.77 cm)
L.	Maximum rollback at carry position .....	34°
M.	Maximum rollback - fully raised .....	104°
N.	Digging depth .....	3/4" (1.91 cm)
O.	Height to seat .....	42" (1.07 m)
P.	Wheel base .....	35" (88.90 cm)
Q.	Overall height with rollgard .....	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 to 344 kPa)	See operator's manual
Check nuts for tightness	90 ft-lbs torque (122.02 Nm)	
Check crankcase oil	Fill to top mark on oil level indicator	See operator's manual
Check gearbox oil level	1/4 pt (0.118 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 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 serviceman 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 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 tank and start engine	25 U.S. gal. (94.63 l)	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 inch (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		
Ignition System		
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° @ 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		page 30-15-1
Check sediment bowl		page 30-15-1
Check carburetor		page 30-10-6
Tires and Wheels		
Check tire inflation	45 to 50 PSI (310 to 344 kPa)	Operator's Manual
Check wheel lug bolt nuts for tightness	90 ft-lbs torque (122.02 Nm)	
Electrical System		
Check for faulty ammeter gauge		
Check alternator (serial No. 000212 or above)		page 40-15-2
Check rectifier module (serial No.'s to 000212)		page 40-15-18
Check regulator module (serial No.'s to 000212)		page 40-15-18
Hydraulic System		
Check hydraulic filter	Use John Deere all-weather hydrostatic fluid or an automotive automatic	Operator's Manual
Check hydraulic oil level	transmission oil (type F)	
Check control valves for leaks		
Check system for leaks		
Lubrication		
Replace engine oil filter	Throwaway-type filter	Operator's Manual
Lubricate Loader	John Deere Multi-Purpose lubricant or an equi- valent SAE Multi- purpose-type grease	Operator's Manual
Drain and replace crankcase oil	5 U.S. quarts (4.73 l)	Operator's Manual



---

Operation	Specification	Reference
Engine		
Check engine compression		
Adjust tappets	Intake .008 in. (0.203 mm) Exhaust .016 in. (0.406 mm)	page 20-15-7
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
Engine Crankcase	5 U.S. qts. (4.73 l)	See below	10 hours - check 100 hours - Drain oil, refill, and change filter
Hydraulic System	20 U.S. gal. (75.70 l)	Use John Deere all-weather hydrostatic fluid or an Automotive automatic transmission oil (type F)	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-type grease	10 hours - loader, boom and bucket cylinders, pivot pins. 20 hours - control pedals and variable sheave
Brake		SAEJ1703d, or DOT-3 brake fluid	As required-fill reservoir 300 hours - refill reservoir

### 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 is compounded specifically for use in John Deere engines and provides superior lubrication under all conditions. NEVER PUT ADDITIVES IN THE CRANKCASE. Torq-Gard Supreme oil was formulated to provide all the protection your 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.