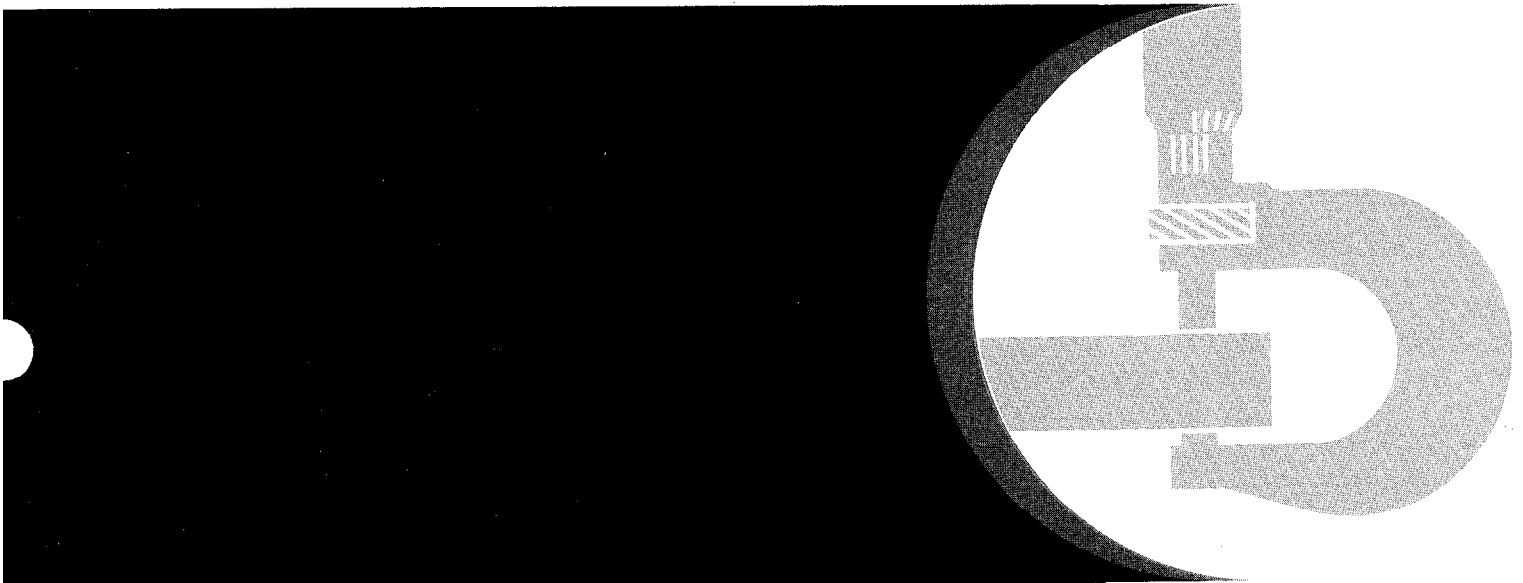


John Deere JD510 Loader Backhoe



TECHNICAL

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John Deere Dubuque Works

TM-1039

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JD510 Loader Backhoe Technical Manual TM-1039 (Oct-79)

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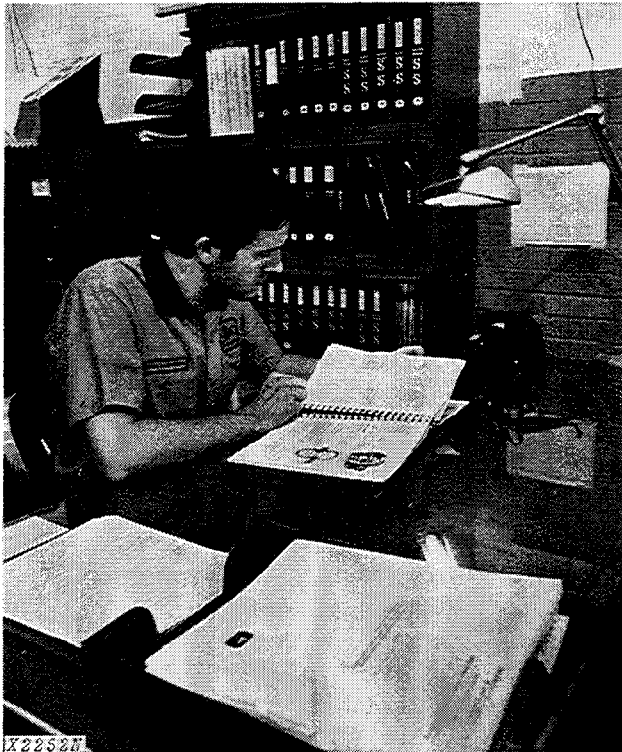
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The specifications and design information contained in this manual were correct at the time it was printed. It is John Deere's policy to continually improve and update our machines. Therefore, the specifications and design information are subject to change without notice. Wherever applicable, specifications and design information are in accordance with SAE and IEMC standards.

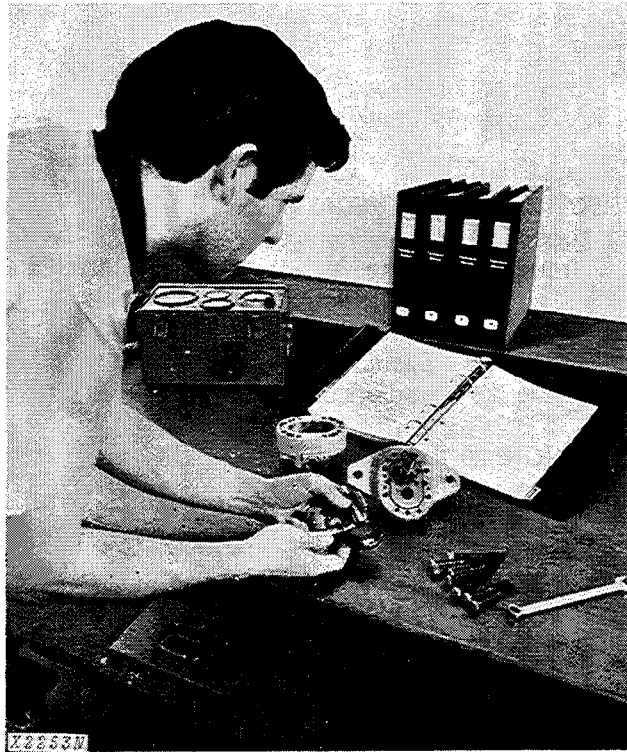
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INTRODUCTION



Use FOS Manuals for Reference



Use Technical Manuals for Actual Service

 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:

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

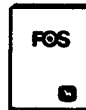
- **FOS Manuals—for reference**
- **Technical Manuals—for actual service**

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 service technicians and for reference by experienced service technicians.

Technical Manuals are concise service guides for specific machines. Technical Manuals are on-the-job guides containing only the vital information needed by a service technician.

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When a service technician should refer to a FOS Manual for more information, a FOS symbol like the one at the left is used in the technical manual 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—an experienced service technician. Keep it in a permanent binder in the shop where it is handy. Read it when you need to know correct service procedures or specifications.

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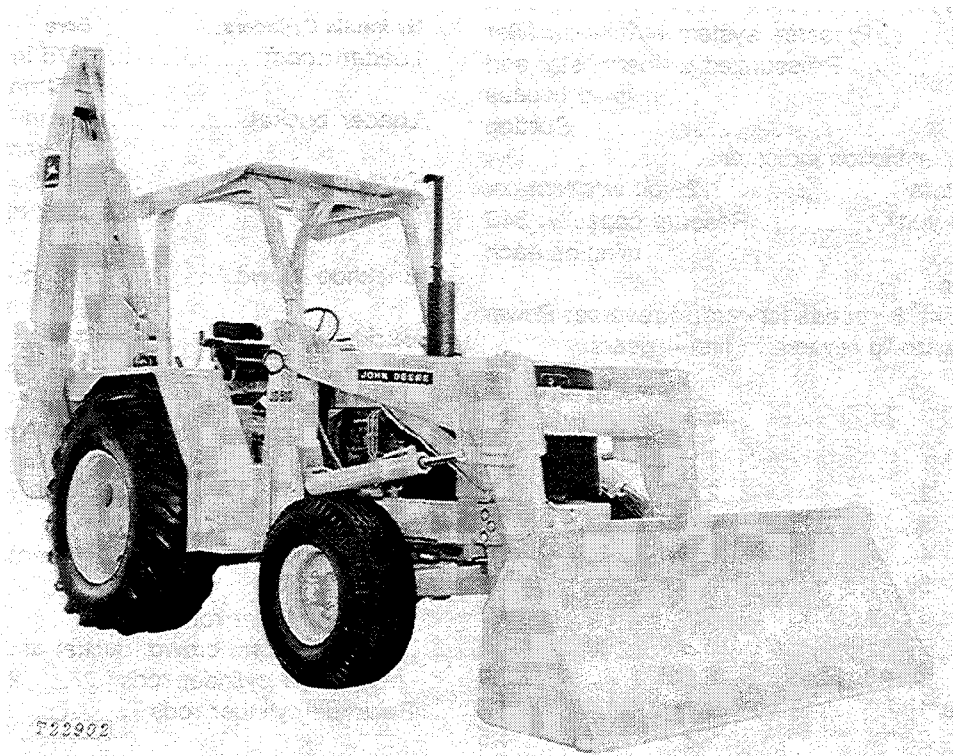
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JD510 Backhoe Loader

Group 5 SPECIFICATIONS

JD510 BACKHOE LOADER SPECIFICATIONS

(Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with ICED and SAE Standards. Except where otherwise noted, these specifications are based on a unit equipped with 1-1/8 cu. yd. (0.86 m³) loader bucket, 24 in. (610 mm) backhoe bucket and standard equipment.)

Power (@ 2500 engine rpm): **SAE** **DIN**

Gross 83 hp (61.9 kW*)
Net 80 hp (59.7 kW) 85.0 PS

Net engine flywheel power is for an engine equipped with fan, air cleaner, water pump, lubricating oil pump, fuel pump, alternator and muffler. Gross engine power is without fan. Flywheel power ratings are under SAE standard conditions of 500 ft. altitude and 85°F. temperature and DIN 70 020 standard conditions of 760 mm Hg barometer (sea level) and 20°C temperature.

*In the International System of Units (SI), power is expressed in kilowatts (kW).

Engine: John Deere diesel, 4-cylinder, 4-stroke cycle
Bore and stroke 4.25x4.75 in. (108x121 mm)
Piston displacement 270 cu. in. (4425 cm³)
Compression ratio 17.3 to 1
Maximum torque

 @ 1300 rpm 202 lb-ft (274 Nm) (27.9 kg-m)
NACC or AMA (U.S. Tax) horsepower 28.9
Main bearings 5
Lubrication Pressure system w/full-flow filter
Cooling Pressurized w/thermostat and fixed bypass

Fan Suction
Air cleaner w/restriction indicator Dry
Electrical system 12 volt w/alternator
Batteries (two volt) Reserve capacity: 340 minutes each

Transmission

Full Power Shift. 8 speeds forward, 4 reverse: Power shift from forward to reverse in first 4 gears.

Gear:	Travel Speeds:	
	mph	km/h
Forward 1	1.7	2.7
2	2.4	3.9
3	3.8	6.1
4	4.9	7.9
5	6.3	10.1
6	8.1	13.0
7	10.8	17.4
8	18.0	29.0
Reverse 1	2.0	3.2
2	2.8	4.5
3	4.4	7.1
4	5.7	9.2

Final Drives Inboard, planetary

Brakes ... Hydraulically power actuated, fully enclosed wet-disk. Self-equalizing. Foot-operated individually or simultaneously.

Steering: Power

Turning radius (brake applied) .. 11 ft. 2 in. (3.40 m)
Loader clearance (brake applied).... 31 ft. (9.45 m)
Number of turns, far left to far right 3.3

Hydraulic System: Closed-center

Max. Pressure 2350 psi 16 203 kPa (162 bar)
Load control Single-lever
Backhoe control Two-lever
Pump... Piston, constant pressure, variable-displacement, 60 gpm (227 L/min) @ 2500 engine rpm
Filter 25 micron steel-enclosed paper cartridge in return

Hydraulic Cylinders:	Bore	Stroke
Loader boom	3.75 in. (95 mm)	28.7 in. (729 mm)
Loader bucket	3.5 in. (89 mm)	27.3 in. (693 mm)
Backhoe boom	3.5 in. (140 mm)	41.75 in. (1060 mm)
Backhoe crowd	5.5 in. (140 mm)	37.5 in. (953 mm)
Backhoe bucket	4 in. (102 mm)	37.5 in. (953 mm)
Backhoe swing	4.5 in. (114 mm)	9.9 in. (251 mm)
Stabilizer	4.5 in. (114 mm)	21.5 in. (546 mm)

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

Loader cylinder rods 2 in. (51 mm) dia.
Backhoe boom, crowd, bucket and stabilizer cylinder rods 2.5 in. (64 mm) dia.
Backhoe cylinder rods 2 in. (51 mm) dia.



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