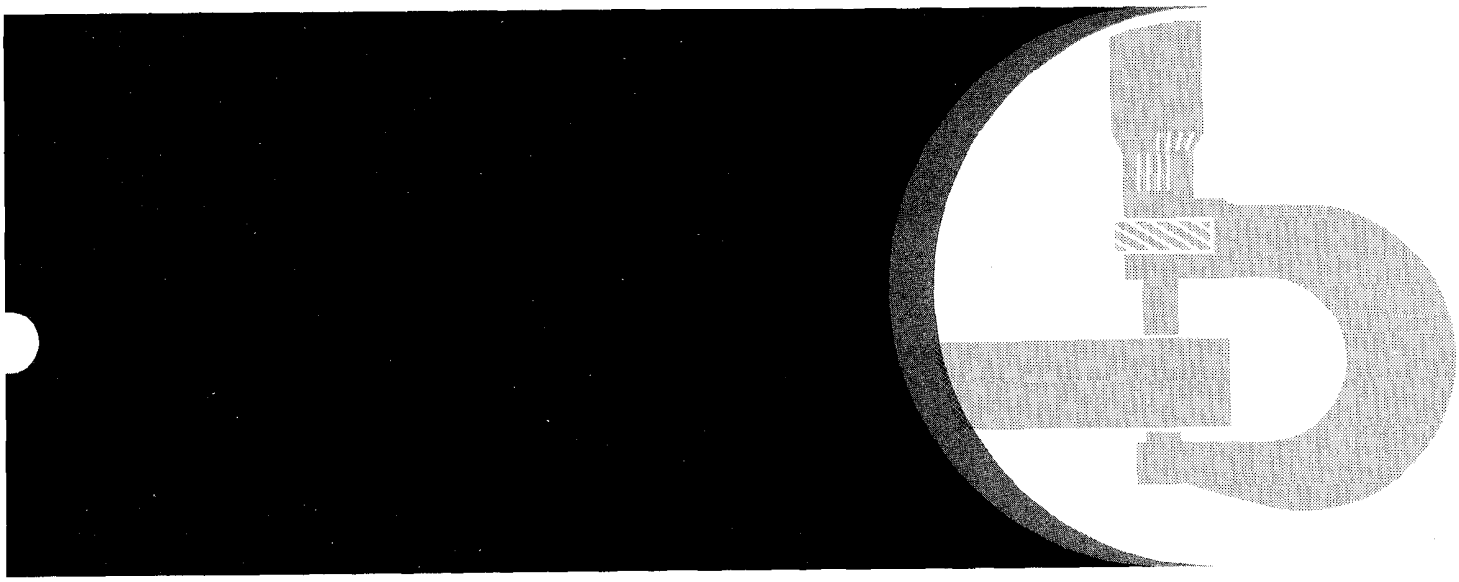
John Deere JD544 and JD544-A Loaders



Technical Manual

John Deere Dubuque Works
TM-1002 (May-80)

LITHO IN U.S.A.

JD544 AND JD544-A LOADERS

TECHNICAL MANUAL

TM-1002 (Apr-74)

CONTENTS

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.

Litho in U.S.A.

Section 10

GENERAL

CONTENTS OF THIS SECTION

Group 5
SPECIFICATIONS

ENGINE	JD544	JD544-A
Flywheel horsepower at 2500 rpm	94	94
Number of cylinders	6	6
Bore and stroke	3.86x4.33 in.	4.02x4.33 in.
Displacement	303 cu. in.	329 cu. in.
Compression ratio	16.3 to 1	16.2 to 1
Firing order	1-5-3-6-2-4	1-5-3-6-2-4
Intake valve clearance	0.014 in.	0.014 in.
Exhaust valve clearance	0.018 in.	0.018 in.
Slow idle	700 rpm	700 rpm
Fast idle	2650 rpm	2650 rpm
Governed speed range	700 to 2650 rpm	700 to 2650 rpm

ELECTRICAL SYSTEM	
Battery voltage (nominal)	12 volts
Battery specific gravity at full charge (corrected to 80° F.)	1.260 ±0.010
Battery terminal grounded	Negative
Alternator regulation	Voltage Regulator

TRANSMISSION	
Make	Allison
Type	Torque converter and planetary gear
Converter oil pump	Input driven, gear type
Transmission clutches	Multi-disk, hydraulically actuated, spring released, oil cooled, self-adjusting type

Litho in U.S.A.

TRAVEL SPEEDS (with 17.5-25 Tires)

Shift Lever Position	Speed
Low (L)	0 to 7 mph
High (H)	0 to 23 mph
Reverse (R)	0 to 9 mph

DIFFERENTIALS

Front . . . . . Standard or optional "No Spin"
Rear. . . . . Standard

DRIVE AXLES

Four-wheel drive with inboard mounted planetary gears on both axles.

Front . . . . . Fixed
Rear. . . . . Oscillating (11° from horizontal)

LOADER HYDRAULIC SYSTEM

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

TIRE OPTIONS

13.00 - 24, 10 PLY RATING (Grader Tread)
14.00 - 24, 12 PLY RATING (Grader Tread)
15.5 - 25, 10 PLY RATING (Loader Tread)
15.5 - 25, 12 PLY RATING (Loader Tread) (Early Models)
17.5 - 25, 12 PLY RATING (Loader Tread)
14.00 - 24, 12 PLY RATING (Rock Grader) (Early Models)
17.5 - 25, 16 PLY RATING (Rock Tread)

POWER STEERING AND BRAKES HYDRAULIC SYSTEM

Type . . . . . Closed center, constant pressure system. Includes power steering, power brakes, and transmission cooling.
Pump. . . . . Engine-driven eight-piston pump.

STEERING

Full power steering.
Frame steered by two hydraulic cylinders.
Frame pivot from center. . . . . 40°
Clearance circle . . . . . 32 ft.
Turning radius . . . . . 13 ft. 10 in.

BRAKES

Hydraulic power-operated, inboard-mounted disk type brake for each wheel. Brake pedal control of transmission clutches.

Mechanical 10 x 1-1/2-inch expanding shoe parking brake on transmission output shaft.

CAPACITIES (U.S. Standard Measures)

Fuel tank . . . . . 40 gal.
Cooling system . . . . . 7-1/2 gal.
Engine crankcase . . . . . 12 qt.
Transmission (includes steering and brakes hydraulic system). . . . . 10 gal. (approx.)
Transmission case and filters (after initial fill) . . . . . 9-3/4 gal. (approx.)
Front differential
"No Spin" option . . . . . 4-1/4 gal.
Regular . . . . . 4-3/4 gal.
Rear differential. . . . . 4-3/4 gal.
Loader hydraulic sump. . . . . 12 gal.
Loader hydraulic system (sump, lines, and cylinders). . . . . 21 gal.

Litho in U.S.A.

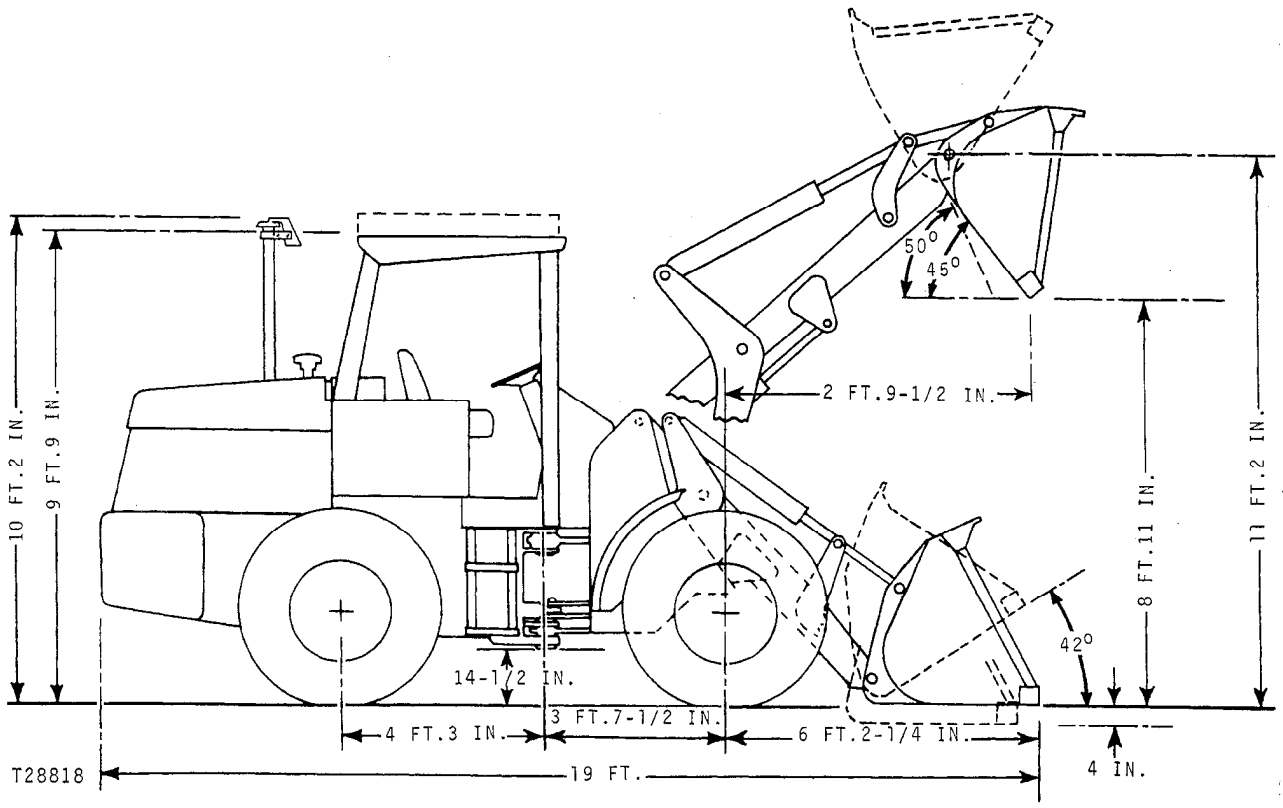


Fig. 1–Loader Dimensions

LOADER DIMENSIONS (with 17.5-25 tires and 1-1/2 yd. Bucket)

Overall height (to top of Cab)	10 ft. 2 in.
Height to top of canopy	9 ft. 9 in.
Overall width	7 ft. 4 in.
Overall length (bucket level, no bucket teeth)	19 ft.
Ground clearance	14-1/2 in.
Wheel base	7 ft. 10-1/2 in.
Maximum bucket dump angle (full height)	50°
Dumping reach (full height) (bucket at 45° angle)	2 ft. 9-1/2 in.
Dumping clearance (full height) (bucket at 45° angle)	8 ft. 11 in.
Maximum lift (bucket at full height) (at pivot pin)	11 ft. 2 in.
Digging depth below ground (bucket level)	4 in.

Bucket breakout force (SAE)

1-1/2 yd.	16,105 lbs.
1-3/4 yd.	14,875 lbs.
2 yd.	14,260 lbs.
3 yd.	10,650 lbs.
Bucket width (1-1/2 yd.)	7 ft. 4 in.
(1-3/4 yd.)	7 ft. 8 in.
(2 yd.)	8 ft.
(3 yd.)	8 ft.
Drott-4-in-1	8 ft.
Bucket roll-back (ground level)	42°
Bucket reach (bucket on ground)	6 ft. 2-3/4 in.
Operating weight (with cab)	20,430 lbs.

LOADER OPERATING INFORMATION

Bucket capacities 1-1/2, 1-3/4, 2 or 3 cu. yd.

Lift (full height)	8374 lbs.
Raising Time	5.7 sec.
Lower Time (power down)	4.5 sec.
Dumping Time	1.6 sec.

(Specifications and design subject to change without notice. Whenever applicable, specifications are in accordance with IEMC and SAE Standards)

Litho in U.S.A.

LOG AND LUMBER FORK

Lift capacity (full height stability limited) (with two sets side counterweights)
- Fork with single clamp . . . . . 10,040 lbs.
- Fork with double clamp . . . . . 9,792 lbs.
- Basic lumber fork . . . . . 11,410 lbs.

Maximum clamp diameter . . . . 9 ft. 1/2 in.
Minimum clamp diameter . . . . . 28 in.
Length of tines (heel-to-toe) . . . . . 4 ft.
Maximum tine width (center-to-center) . . . . . 5 ft. 11 in.
Minimum tine width (center-to-center) . . . . . 15 in.
Raising time . . . . . 5.7 sec.
Lowering time (power down) . . . . . 4.5 sec.
Dumping time . . . . . 1.6 sec.
Maximum unloading (dump) angle.. .40 degrees

9305 BACKHOE

Bucket retract . . . . . 2.0 sec.
Bucket extend . . . . . 3.0 sec.
Digging depth (IEMC) . . . . . 13 ft. 5 in.
Digging force . . . . . 10,500 lbs.
Reach from center of swing mast.. 17 ft. 1 in.
Transport height . . . . . 12 ft. 1 in.
Stabilizer width
- Transport . . . . . 7 ft. 3 in.
- Operating position (IEMC) . . . . . 8 ft. 7 in.

LOG LOADER

Fork capacity (8-foot wood) . . . . . 0.9 cord
Lift capacity (with two sets side counterweights) (full height stability limited) . . . . . 9290 lbs.
Maximum clamp diameter . . . . . 6 ft. 2 in.
Minimum clamp diameter . . . . . 15-3/8 in.
Length of tines (heel-to-toe) . . . . . 4 ft. 2 in.
Tines width (center-to-center) . . . . . 5 ft.
Raising time . . . . . 5.5 sec.
Lowering time (power down) . . . . . 4.5 sec.
Dumping time . . . . . 1.2 sec.
Maximum unloading (dump) angle . . 40 degrees

Litho in U.S.A.

Group 15
TUNE-UP AND ADJUSTMENT

GENERAL INFORMATION

Before tuning up an engine, determine if it is in condition so that performance can be restored by tune-up. Perform the following tests:

PRELIMINARY ENGINE TESTING

Operation	Specification	Reference
Vacuum test (at air cleaner)	8-25 inches of water at fast idle	. . . . .
Intake manifold pressure (diesel engine with altitude compensating turbocharger)	6 to 8 psi at 2500 rpm, full load	Section 30, Group 15
Check radiator for air bubbles and indication of oil	. . . . .	Section 20, Group 25
Cylinder compression	300 psi*	Section 20, Group 10
Engine power output (at flywheel) (use dynamometer)	Note hp. output and compare with output after tune-up	. . . . .

ENGINE TUNE-UP

AIR INTAKE SYSTEM		
Air cleaner - clean primary element and dust cup	. . . . .	Section 30, Group 15
Check breather pipe for restrictions	. . . . .	. . . . .
Retighten cylinder head cap screws	110 ft-lbs	Section 20, Group 10
Check valve clearance	0.018 in. -Exhaust 0.014 in. -Intake	Section 20, Group 10
BATTERY		
Check electrolyte level	. . . . .	. . . . .
Clean cables, terminals and box	. . . . .	. . . . .
Tighten cable clamps	. . . . .	. . . . .

*The most important factor in compression readings is the difference between cylinders. This difference should be no more than 50 psi.

Litho in U. S. A.

ENGINE TUNE-UP—Continued

Operation	Specification	Reference
ALTERNATOR		
Check belt tension	20 lb. at 3/4 in. deflection.	. . . . .
FUEL SYSTEM		
Check fuel tank and lines for leaks or restrictions	. . . . .	. . . . .
Clean fuel transfer pump bowl and strainer	. . . . .	. . . . .
Replace fuel filter elements	. . . . .	. . . . .
Time injection pump	. . . . .	Section 30, Group 25
Check injection pump advance	. . . . .	Section 30, Group 25
Bleed fuel system	. . . . .	. . . . .
Adjust speed control linkage and check engine speeds	. . . . .	Section 20, Group 20
ENGINE LUBRICATION SYSTEM		
Check engine oil pressure	45-65 psi at 2500 rpm (180° to 220° F.)	Section 20, Group 15
COOLING SYSTEM		
Clean and flush system	. . . . .	. . . . .
Inspect hoses	. . . . .	. . . . .
Clean trash from radiator	. . . . .	. . . . .
EXHAUST SYSTEM		
Check system for leaks	. . . . .	FOS 30 - ENGINES
Check muffler and exhaust pipe for restrictions.	. . . . .	FOS 30 - ENGINES

Litho in U. S. A.

FINAL ENGINE TESTING

Use a dynamometer in final testing to determine if engine is performing at rated horsepower. Compare output of engine with horsepower delivered prior to tune-up.

LOADER ADJUSTMENTS

Make the following loader adjustments whenever the engine is tuned up.

Operation	Specification	Reference
BRAKES		
Bleed brakes	. . . . .	Section 60, Group 25
Check action of brake accumulator	. . . . .	Section 60, Group 5
Check mechanical parking brake	. . . . .	Section 60, Group 25
POWER STEERING		
Bleed steering system	. . . . .	Section 60, Group 20
Check time cycle (limit to limit) at 1000 rpm engine speed	4.0 seconds	Section 60, Group 5
Check steering system accumulator	. . . . .	Section 60, Group 15
HYDRAULIC SYSTEM		
Check boom raise cycle time	5.7 to 6.2 seconds	Section 70, Group 5
Check boom lower cycle time (power down)	4.5 to 5.0 seconds	Section 70, Group 5
Check bucket dump cycle time	1.6 to 2.0 seconds	Section 70, Group 5
Bleed bucket return-to-dig valve	. . . . .	Section 70, Group 25
TIRES		
Check tire inflation	. . . . .	See Operator's Manual
TIGHTEN ACCESSIBLE HARDWARE	See torque chart.	Section 10, Group 25

Litho in U.S.A.

Group 20
LUBRICATION

GENERAL INFORMATION

Carefully written and illustrated lubrication instructions are included in the operator's manual furnished with your customer's machine. A periodic service chart is also mounted on the loader battery box for operator convenience on later model loaders.

Remind him to follow these instructions.

For your convenience, the following chart shows capacities and type of lubricants for the loader components and systems. Specifications for lubricants follow the chart.

	Capacity	Type of Lubricant
Engine crankcase	12 U.S. quarts (including filter)	See page 20-2.
Transmission, steering and brakes system	10 U.S. gallons (after initial fill 9-3/4 gallons)	J.D. Torque Converter Fluid Type C-2
Loader hydraulic system sump	12 U.S. gallons	J.D. Type 303 Special-Purpose Oil or an equivalent.
Return-to-dig valve	To level of filler plug	J.D. Type 303 Special-Purpose Oil or an equivalent.
Differentials	4-3/4 U.S. gallons (4-1/4 for "No Spin" option)	J.D. Type 303 Special-Purpose Oil or an equivalent.
Grease fittings	. . . . .	John Deere Multi-Purpose Lubricant or an equivalent.
Axle bearings	10 to 20 shots	John Deere Multi-Purpose Lubricant or an equivalent.
Starter	Saturate wicks (3)	Engine crankcase oil (SAE10W)
	Lubricate armature shaft splines during assembly	Engine crankcase oil (SAE10W)
Loader Hydraulic system (sump, lines and cylinders)	21 U.S. gallons	J.D. Type 303 Special-Purpose Oil or an equivalent.

Litho in U.S.A.