

500C LOADER BACKHOE

14,180 lb (6431 kg)

Transport Height.....	11 ft 8 in. (3.56 m)
Transport Length.....	24 ft 7 in. (7.49 m)
Machine Width	6 ft 11.9 in. (2.13 m)

ENGINE.....John Deere 300 Series

Number of Cylinders and Displacement	4 cylinders, 270 cu in. (4.4 L)
Air Intake System.....	Naturally aspirated
Bore and Stroke	4.25 x 4.75 in. (108 x 121 mm)
Net hp at 2500 rpm	80 SAE hp (60 kW) DIN 63 kW
Maximum Torque at 1300 rpm.....	202 lb-ft (274 N•m)
Nozzle Opening Pressure:	
New	3200 ± 50 psi (22 065 ± 345 kPa)
Used	3000 ± 50 psi (20 685 ± 345 kPa)
Valve Clearance (Cold):	
Intake	0.018 in. (0.46 mm)
Exhaust	0.028 in. (0.71 mm)
Oil Pressure at 1900 rpm.....	25—40 psi (170—275 kPa)
Static Injection Pump Timing	Timing lines aligned w/flywheel located at TDC
Speeds:	
Slow Idle	800 ± 20 rpm
Fast Idle.....	2675—2700 rpm
Fast Idle.....	2450 ± 10 rpm (for 80 dB units)
Rated Full Load	2500 rpm
Cylinder Pressure Hot (Min)	400 psi (2760 kPa) cranking with injectors removed
Flywheel Teeth.....	129

TRANSMISSION

Model and Speeds.....	Powershift: 8 forward, 4 reverse
Transmission Pressure	175 ± 10 psi (1210 ± 69 kPa) 1900 rpm
Pump Flow at 175 psi (1210 kPa) and 2500 rpm (Used).....	14.5 gpm (0.91 L/s)
Lube Pressure	25—30 psi (170—207 kPa)
Filter Relief Pressure	50 psi (345 kPa) differential
Surge Relief Pressure	80—100 psi (550—690 kPa)

HYDRAULIC SYSTEM—Close-Center

Pump Size	4.01 cu in. (65.7 cm ³)
Standby Pressure at 2500 rpm	2300—2400 psi (15 860—16 550 kPa)
Charge Pressure	35—130 psi (240—895 kPa)
Accumulator Charge Pressure.....	500 psi (3450 kPa)
Pump Flow (Min) at 1800 rpm and 2000 psi (13 790 kPa):	
New	28.5 gpm (2.02 L/s)
Used	25 gpm (1.58 L/s)
Priority Valve Setting:	
(S.N. —209476) at 800 rpm	1850—1950 psi (12 755—13 445 kPa)
(S.N. 209477—) at 1000 rpm	1350—1450 psi (9310—10 000 kPa)
Differential Lock Valve Pressure:	
(S.N. —161707)	420—480 psi (2895—3310 kPa)
(S.N. 161708—)	510—560 psi (3515—3860 kPa)
Filter Relief Pressure	50 psi (345 kPa) differential
Surge Relief Pressure	150 psi (1030 kPa)
Cooler Relief Pressure.....	135—145 psi (930—1000 kPa)

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RELIEF VALVE SETTINGS

Loader Circuit Relief Valve:

Bucket Rollback.....	2750 psi (18 960 kPa)
Bucket Dump.....	1500 psi (10 345 kPa)
Auxiliary.....	2500 psi (17 240 kPa)

9705 Backhoe Circuit Relief Valve:

Crowd.....	2375 psi (16 375 kPa)
Swing Right and Swing Left.....	2375 psi (16 375 kPa)
Boom Raise.....	3500 psi (24 135 kPa)
Boom Lower.....	2375 psi (16 375 kPa)
Locking Valve.....	N/A

9500 Backhoe Circuit Relief Valve:

Crowd.....	2375 psi (16 375 kPa)
Swing Right and Swing Left.....	1625 psi (11 205 kPa)
Boom Raise.....	3000 psi (20 685 kPa)
Boom Lower.....	2375 psi (16 375 kPa)
Locking Valve.....	4000 psi (27 580 kPa)

CYCLE TIMES (at Fast Idle and Hot Oil)

Backhoe Functions:

Bucket Curl.....	3.5 sec
Bucket Dump.....	2.5 sec
Swing (180°).....	3.0—5.0 sec

Loader Functions:

Boom Raise.....	4.8 sec
Boom Lower (Power).....	4.0 sec
Boom Lower (Float).....	5.5 sec
Bucket Dump (Boom at Full Height).....	2.3 sec

LUBRICANTS

See front of this book for the codes [].

CAPACITIES

	U.S.	Imp.	Metric
Engine:			
Cooling System [N].....	4.75 gal	4.0 gal	18.0 L
Engine Crankcase w/ Filter [E].....	8 qt	6.7 qt	7.6 L
Fuel Tank.....	34 gal	28.3 gal	128.7 L
Transmission (Refill) [C].....	8.5 gal	7.1 gal	32.0 L
Transmission and Hydraulic System [C].....	21.5 gal	18.0 gal	81.4 L

TIRE PRESSURE (Cold Inflation)

Tire Size	Type	Rating	Normal Pressure
Front:			
14.5/75-16.1	F3	10 ply	40 psi (275 kPa)
Rear:			
18.4-28	R4	12 ply	32 psi (220 kPa)
18.4-28	R4	8 ply	20 psi (140 kPa)

510 BACKHOE LOADER

19,165 lb (8693 kg)

Transport Height.....13 ft 3 in. (4.04 m)
Transport Length.....24 ft 7 in. (7.49 m)
Machine Width6 ft 11.9 in. (2.13 m)

ENGINE.....John Deere 300 Series

Number of Cylinders and Displacement4 cylinders, 270 cu in. (4.4 L)
Air Intake System.....Naturally aspirated
Bore and Stroke4.25 x 4.75 in. (108 x 121 mm)
Net hp at 2500 rpm80 SAE hp (60 kW) DIN 63 kW
Maximum Torque at 1300 rpm202 lb-ft (274 N•m)
Nozzle Opening Pressure:
 New3200 ± 50 psi (22 065 ± 345 kPa)
 Used3000 ± 50 psi (20 685 ± 345 kPa)
Valve Clearance (Cold):
 Intake0.018 in. (0.46 mm)
 Exhaust0.028 in. (0.71 mm)
Oil Pressure at 1900 rpm25—40 psi (170—275 kPa)
Static Injection Pump TimingTiming lines aligned w/flywheel located at TDC
Speeds:
 Slow Idle800 ± 20 rpm
 Fast Idle2675—2700 rpm
 Rated Full Load2500 rpm
Cylinder Pressure Hot (Min)400 psi (2760 kPa) cranking with injectors removed
Flywheel Teeth.....129

TRANSMISSION

Model and Speeds.....Powershift: 8 forward, 4 reverse
Transmission Pressure at 1900 rpm175 ± 10 psi (1200 ± 69 kPa)
Pump Flow at 175 psi
 (1210 kPa) and 2500 rpm (Used).....14.5 gpm (0.91 L/s)
Lube Pressure25—30 psi (170—207 kPa)
Filter Relief Pressure50 psi (345 kPa) differential
Surge Relief Pressure80—100 psi (550—690 kPa)

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HYDRAULIC SYSTEM—Close-Center

Main Hydraulic Pump (3.0 cu in.):

Standby Pressure 2300—2400 psi (15 860—16 550 kPa)

Minimum Flow 19 gpm at 2000 psi (13 790 kPa) at 1800 rpm

Mid-Mounted Hydraulic Pump Standby Pressure 100 psi (690 kPa) below main pump standby pressure

Main and Mid-Mounted Hydraulic

Pump (Minimum Flow):

At 2000 psi (13790 kPa) and 1800 rpm..... 33 gpm

At 1500 psi (10 345 kPa) and 1800 rpm..... 36 gpm

Main Hydraulic Pump (6 cu in.):

Standby Pressure 2300—2400 psi (15 860—16 550 kPa)

Minimum Flow 37.5 gpm at 2000 psi (13 790 kPa) and 1800 rpm

40 gpm at 1500 psi (13 790 kPa) and 1800 rpm

Main Hydraulic Pump Inlet Pressure

(3.00 or 6.00 cu in.) At least 5 psi (35 kPa)*

Accumulator Charge Pressure..... 500 psi (3450 kPa)

Filter Relief Pressure 50 psi (345 kPa) differential

Surge Relief Pressure 1150 psi (1030 kPa)

Priority Valve Setting:

(S.N. —209476) 1850—1950 psi (12 755—13 445 kPa)

(S.N. 209477—) 1350—1450 psi (9310—10 000 kPa)

Differential Lock Valve Pressure:

(S.N. —161707) 420—480 psi (2895—3310 kPa)

(S.N. 161708—) 510—560 psi (3515—3860 kPa)

Cooler Relief Pressure..... 135—145 psi (930—1000 kPa)

Note: *Except during backhoe bucket or crowd cylinder operation

RELIEF VALVE SETTINGS

Loader Circuit Relief Valves:

Bucket Rollback..... 2750 psi (18 960 kPa)

Bucket Dump 1500 psi (10 345 kPa)

Auxiliary 2500 psi (17 240 kPa)

Backhoe Circuit Relief Valves:

Crowd and Boom Lower 2500 psi (17 240 kPa)

Swing Right and Swing Left..... 2375 psi (16 375 kPa)

Boom Raise 3500 psi (24 135 kPa)

CYCLE TIMES (At Fast Idle and Hot Oil)

Loader Functions:

Bucket:

Retract (Maximum) 2.5 sec

Extend (Maximum) 3.5 sec

Swing (180°) (Minimum) 3.5—6 sec

Backhoe Functions:

Boom:

Raise 5.7 sec

Lower (Power) 5.3 sec

Lower (Float) 7.5 sec

Bucket Dump 4.2 sec

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LUBRICANTS

See front of this book for the codes [].

CAPACITIES

	U.S.	Imp.	Metric
Engine:			
Cooling System [N]	4.75 gal	4.0 gal	18.0 L
Crankcase w/ Filter [E]	8 qt	6.7 qt	7.6 L
Fuel Tank	34 gal	28.3 gal	128.7 L
Transmission (Refill) [C]	10.5 gal	8.75 gal	39.7 L
Transmission and Hydraulic System [C]	29.9 gal	25.0 gal	113.2 L

TIRE PRESSURE (Cold Inflation)

Tire Size	Type	Rating	Normal Pressure
Front:			
14.5/75-16.1	F3	10 ply	40 psi (280 kPa)
Rear:			
18.4-28	R4	12 ply	32 psi (207 kPa)