PRODUCTIVITY UPTIME LOW DAILY OPERATING COSTS

DEERE

CONSTRUCTION AND FORESTRY DIVISION

SP458

TEST & SERVICE SPECIFICATIONS

2006 EDITION

VOLUME 1 AND 2

JOHN DEERE

INTRODUCTION

The SP458 Construction Products Test and Service Specifications Manual is printed in two volumes. Volume 1 lists machines that are out of production. Volume 2 lists machines that are current production and one model previous to current production.

This manual is designed for the experienced service technician. The technician should be familiar with the diagnostic and repair procedures for the machine being repaired.

Specifications for system testing are emphasized.

Refer to the machine technical manual for detailed information about test or service procedures.

This manual covers selected John Deere construction, forestry, and utility machines. The machines are arranged in numerical order, as given by their model number designation. The name of each machine is included with general machine specifications. The manual also contains definitions, general notes, a key [ ] for lubricants, abbreviations, metric conversions, and torque charts.

All specifications listed are with system at normal operating temperature.

TRANSPORT INFORMATION

At the beginning of each model is shown a weight, height, length, and width. The information represents a base machine, excluding options and attachments. If two machines are shown, we have listed the base weight of the heavier machine.

TRADEMARKS

The following Deere & Company trademarks are used in this publication:

- HY-GARD®
- SOUND-GARD®
- TORQ-GARD SUPREME®
- PLUS-50™
- PowerTECH®
- PLUS-4™

The following company trademarks are also used in this publication:

- Geroler® is a registered trademark of Eaton Corp.
- TransSynd® is a registered trademark of Castrol Limited.
- DEXRON® is a registered trademark of General Motors Corporation

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LUBRICANT REFERENCES

John Deere Moly High Temperature/EP Grease or equivalent is used for grease fittings and wheel bearings.

On under 100 HP crawler track rollers, front idlers and carrier rollers use John Deere TORQ-GARD SUPREME® SAE 30W oil or equivalent.

On over 100 HP crawlers and excavators, the track rollers and idlers use GL-5, SAE 80W90 gear oil.

[A] *John Deere SAE80 SCL Gear Lube**

[B] *John Deere SAE90 SCL Gear Lube**

[C] *John Deere HY-GARD® Transmission and Hydraulic Oil (Type J20C)**

[D] *John Deere Low Viscosity HY-GARD Transmission and Hydraulic Oil (Type J20D)**

[E] *John Deere PLUS-50™ Engine Oil (Refer to Operator's Manual for specific grade of oil.)*

[F] *DEXRON®-III Type G*

[G] *John Deere Power Steering Oil**

[H] *SAE 10W Oil*

[J] *GL-5, SAE 80W90 Gear Oil*

[K] *GL-4, SAE EP 90 Gear Oil*

[L] *John Deere All-Weather Hydrostatic Fluid or ATF Type F Fluid (Spec. M2C33)*

[M] *John Deere TORQ-GARD SUPREME® SAE 30W Oil*

[N] *John Deere Prediluted Antifreeze/Summer Coolant*
or John Deere Antifreeze/Summer Coolant Concentrate

[P] *Allison TranSynd® Synthetic Transmission Fluid*

[R] *Hitachi EX46HN Hydraulic Fluid from John Deere*

[S] *Premimum AW46 Hydraulic Oil with anti-wear additives and ISO viscosity grade 46*

[T] *Summer Environments—AW68 Hydraulic Oil with anti-wear additives and ISO viscosity grade 68*
Winter Environments—AW32 Hydraulic Oil with anti-wear additives and ISO viscosity grade 32

[U] *John Deere TORQ-GARD SUPREME® SAE 10W30 Oil**

[V] *GL-5 SAE 80W90 Gear Oil with LS additive**

[W] *John Deere PLUS-4™ SAE 10W40 Oil*

* or an equivalent

Note: When operating in extreme conditions, refer to the equipment operator's manual.

Mixing of fluids is not recommended.

Recommended Service Fill must support operating and ambient temperatures.

Fluid Analysis is recommended as part of regular service and maintenance. Check with your dealer for current sample kit and interval recommendations.

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110TLB TRACTOR LOADER BACKHOE
Without LOADER BUCKET — 5,165 lb (11 389 kg)

Transport Height ..... 8 ft 5 in. (2.6 m)
Transport Length ..... 24 ft 8 in. (7.5 m)
Machine Width ..... 7 ft 2 in. (2.2 m)

ENGINE ..... Yanmar 4TNE84-EJTLB
Machine (S.N. —3110232)

Number of Cylinders and Displacement	4 cylinders, 122 cu in. (2.0 L)
Air Intake System	Normally aspirated
Bore and Stroke	3.31 x 3.54 in. (84 x 90 mm)
Compression Ratio	18:1
Gross hp at 2600 rpm	43 SAE hp (32.1 kW)
Maximum Torque at:	
1700 rpm	94.8 lb-ft (128.5 N•m)
2600 rpm	81.7 lb-ft (110.7 N•m)
Nozzle Opening Pressure (New)	2843—2990 psi (19 600—20 600 kPa)
Valve Clearance (Cold):	
Intake	0.006—0.010 in. (0.15—0.25 mm)
Exhaust	0.006—0.010 in. (0.15—0.25 mm)
Minimum Oil Pressure at:	
2600 rpm	42—57 psi (290—390 kPa)
Slow Idle	8.7 psi (60 kPa)
Engine Speed:	
Slow Idle	1050 ± 50 rpm
Fast Idle (No Load)	2800 ± 50 rpm
Compression Pressure:	
Standard	455—485 psi (3135—3330 kPa)
Minimum	355—385 psi (2455—2650 kPa)
Maximum Difference Between Cylinders	29—44 psi (200—300 kPa)
Electrical System	12 volt
Alternator:	
Standard	40 amp
Optional	55 amp

Continued on next page

ENGINE.....Yanmar 4TNV88-MJTLB
Machine (S.N. 3110233—)

Number of Cylinders and Displacement	4 cylinders, 133.6 cu in. (2.19 L)
Air Intake System	Normally aspirated
Bore and Stroke	3.465 x 3.543 in. (88 x 90 mm)
Compression Ratio	19:1
Gross hp at 2600 rpm	43 hp (32.1 kW)
Maximum Torque at:	
1700 rpm	94.4 lb-ft (128.0 N•m)
2600 rpm	78.7 lb-ft (106.7 N•m)
Nozzle Opening Pressure:	
Used	3133—3278 psi (21 600—22 600 kPa)
New	3633—3778 psi (25 047—26 047 kPa)
Valve Clearance (Cold):	
Intake	0.006—0.010 in. (0.15—0.25 mm)
Exhaust	0.006—0.010 in. (0.15—0.25 mm)
Minimum Oil Pressure at:	
2600 rpm	42—57 psi (290—390 kPa)
Slow Idle (Min)	8.7 psi (60 kPa)
Engine Speed:	
Slow Idle	1050 ± 25 rpm
Fast Idle (No Load)	2810 ± 25 rpm
Compression Pressure at 250 rpm (Min):	
Standard	483—512 psi (3330—3530 kPa)
Minimum	384—413 psi (2650—2850 kPa)
Maximum Difference Between Cylinders	29—44 psi (200—300 kPa)
Electrical System	12 volt
Alternator:	
Standard	40 amp
Optional	55 amp

TRANSMISSION

Type and Speeds	Hydrostatic: infinite forward, infinite reverse
Number of Ranges	3
Closed Loop Pressure	5580 psi (38 470 kPa)
Transmission Charge Pressure	200 psi (1380 kPa)
Hydrostatic Pump:	
Type	Axial piston pump (variable)
Displacement (Variable) (Maximum/Rev)	3.11 cu in./rev (51 cm^3/rev)
Pressure Relief Valve Setting	5585 psi (38500 kPa)
Charge Pressure	200 psi (1380 kPa)
Hydrostatic Motor:	
Type	Axial piston motor (fixed)
Displacement (Fixed)	2.65 cu in./rev (43.5 cm^3/rev)

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HYDRAULIC SYSTEM—Open-Center

Auxiliary Pump:
- System Pressure ..... 3000—3100 psi (20 684—21 374 kPa)
- Pump Flow:
  - New ..... 5.46 gpm (20.67 L/min)
  - Used ..... 4.80 gpm (18.16 L/min)
  - Minimum ..... 4.10 gpm (15.52 L/min)
  - Available to Backhoe or Rockshaft ..... 4.1 gpm (15.5 L/min)

Main Implement Pump:
- System Pressure ..... 3000—3100 psi (20 684—21 374 kPa)
- Pump Flow:
  - New ..... 12.5 gpm (47.31 L/min)
  - Used ..... 11.0 gpm (41.63 L/min)
  - Minimum ..... 9.38 gpm (35.50 L/min)

Combined Auxiliary and Main Implement Pumps at Backhoe Valve:
- System Pressure ..... 3000—3100 psi (20 684—21 374 kPa)
- Pump Flow:
  - New ..... 16.64 gpm (62.97 L/min)
  - Used ..... 14.48 gpm (54.80 L/min)
  - Minimum ..... 12.06 gpm (45.64 L/min)

PTO Valve:
- PTO Clutch Supply Pressure ..... 216 ± 21 psi (1489 ± 149 kPa)
- PTO Lubrication Pressure ..... 6 psi (40 kPa)

Steering Pump:
- System Pressure ..... 1750 psi (12 065 kPa)
- Pump Flow:
  - New ..... 5.99 gpm (22.671 L/min)
  - Used ..... 5.27 gpm (19.94 L/min)
  - Minimum ..... 4.49 gpm (17.00 L/min)

Total Flow of Pumps ..... 23.64 gpm (89.2 L/min)

Total Flow Available to:
- Loader ..... 12.2 gpm (46.1 L/min)
- Backhoe ..... 16.3 gpm (61.5 L/min)
- Rockshaft ..... 4.1 gpm (15.5 L/min)

RELIEF VALVE SETTINGS

Auxiliary Circuit Relief (Optional) ..... 2400 psi (16 547 kPa)

Boom:
- Raise ..... 4000 psi (27 579 kPa)
- Lower ..... 3200 psi (22 063 kPa)

Bucket Curl ..... 4000 psi (27 579 kPa)

Crowd:
- In ..... 4000 psi (27 579 kPa)
- Out ..... 3200 psi (22 063 kPa)

Main and Auxiliary Relief ..... 3000—3100 psi (20 684—21 374 kPa)

Steering Relief ..... 1750 psi (12 066 kPa)

Swing:
- Left ..... 3200 psi (22 063 kPa)
- Right ..... 3200 psi (22 063 kPa)

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CYCLE TIMES

Loader:
- Raise ..... 3.44 sec
- Lower ..... 2.31 sec
- Dump:
  - Unloaded ..... 2.84 sec
  - Loaded ..... 0.93 sec
- Bucket Rollback ..... 1.92 sec

Rockshaft:
- Drop ..... 2-1/2—3 sec
- Lift ..... 2-1/2—3 sec

CYLINDER DRIFT (Maximum Allowable)

Loader:
- Maximum Function Drift ..... 0.79 in./min (20 mm/min)
- Boom Drift ..... 0.08 in./min (2 mm/min)
- Bucket Drift ..... 0.12 in./min (3 mm/min)

Backhoe:
- Maximum Function Drift ..... 3.35 in./min (85 mm/min)
- Boom Cylinder ..... 0.12 in./min (3 mm/min)
- Crowd Drift ..... 0.12 in./min (3 mm/min)
- Bucket Drift ..... 0.12 in./min (2 mm/min)
- Swing Drift ..... 3.94 in/min (100 mm/min)

Rockshaft:
- Maximum Drop in 5 Minutes ..... 2 in. (51 mm)

LUBRICANTS

See front of this book for the codes [ ].

CAPACITIES	U.S.	Metric
Engine:		
Cooling System [N]	2.3 gal	58 L
Crankcase w/ Filter [E]	5.0 qt	4.9 L
Front Axle [C]	2.4 gal	9 L
Fuel Tank	15.3 gal	37 L
Transmission and Hydraulic System [C]	9.7 gal	37 L

TIRE PRESSURE (Cold Inflation)

Tire Size	Type	Rating	Normal Pressure
Standard Front:			
10 x 16.5 MARATHONER	R4	8 PR	50 psi (345 kPa)
Optional Front:			
10 x 16.5 MIGHTY MOW	R3	8 PR	50 psi (345 kPa)
Standard Rear:			
17.5L x 24	R4	8 PR	16 psi (110 kPa) (loaded)
Optional Rear:			
17.5L x 24 MIGHTY MOW	R3	8 PR	16 psi (110 kPa) (loaded)

210C BACKHOE LOADER 10,500 lb (4723 kg)

Transport Height.....11 ft 5 in. (3.49 m)
Transport Length.....23 ft (7.01 m)
Machine Width .....6 ft 3 in. (1.9 m)

ENGINE.....John Deere 300 Series

Number of Cylinders and Displacement.....4 cylinders, 239 cu in. (3.9 L)
Air Intake System.....Naturally aspirated.
Bore and Stroke.....4.19 x 4.33 in. (106 x 110 mm)
Net hp at 2200 rpm:
- (S.N. —299999).....55 SAE hp (41 kW) DIN 42 kW
- (S.N. 300000—).....60 SAE hp (45 kW) DIN 46 kW

Maximum Torque at 1200 rpm.....165 lb-ft 224 N•m
Nozzle Opening Pressure:
- New.....3320 ± 40 psi (22 891 ± 275 kPa)
- Used.....3120 ± 40 psi (21 512 ± 275 kPa)

Valve Clearance (Cold):
- Intake.....0.014 in. (0.36 mm)
- Exhaust.....0.018 in. (0.46 mm)

Oil Pressure at 2375 rpm.....50 ± 15 psi (345 ± 105 kPa)
Static Injection Pump Timing.....Timing lines aligned w/ flywheel located at TDC
Dynamic Injection Pump Timing at Rated Load rpm*:
- 4239D.....14.5 + 0 - 1° BTDC
- 4039D.....15.5 + 0 - 1° BTDC

Speeds:
- Slow Idle (S.N. —300360).....1000 ± 25 rpm
- Slow Idle (S.N. 300361—).....850 ± 25 rpm w/ balancer shafts added
- Fast Idle.....2375—2400 rpm
- Full Load Rating.....2200 rpm
- Converted Stall (Min).....2000 rpm

Cylinder Pressure Hot.....350 psi (2415 kPa) cranking w/ injectors removed
Flywheel Teeth.....142
Electrical System.....12 V
Alternator.....51 amp/65 amp

*Note: *For latest information, see Dealer Technical Assistance Center (DTAC) Solution 6718.*

TRANSMISSION

Model and Speed (Standard).....Four-speed transmission (1st and 2nd collar shift, 3rd and 4th synchronized) w/ hydraulic reverser
Reverser:
- Charge Pump Flow (Min) at 125 psi (860 kPa) and 1500 rpm:
  - New.....3.0 gpm (11.3 L/min)
  - Used.....2.00 gpm (7.6 L/min)
- System Pressure at 1500 rpm.....125 ± 15 psi (860 ± 100 kPa)
- Cooler Pressure.....25 ± 5 psi (175 ± 35 kPa)

Torque Converter.....Single stage, dual phase, overrunning stator, 11 in. (280 mm), stall ratio 2.78 to 1

FRONT WHEEL DRIVE

Automatic self-locking differential. Manual engagement by lever in operator’s station.

Continued on next page

HYDRAULIC SYSTEM

Relief Pressure Setting:
- (S.N. —742526) ..... 2450—2700 psi (16 900—18 500 kPa)
- (S.N. 742527—) ..... 2550—2800 psi (17 600—19 300 kPa)

Pump ..... Gear (two section)
- Main Flow at 2000 psi (13 790 kPa) (Minimum) and 2000 rpm:
  - New ..... 17.0 gpm (64.0 L/min)
  - Used ..... 14.5 gpm (55 L/min)
- Steering Flow at 2000 psi (13 790 kPa) (Minimum) and 2000 rpm:
  - New ..... 4.3 gpm (16.0 L/min)
  - Used ..... 3.5 gpm (13 L/min)

Steering Pump Relief Setting ..... 2750—3200 psi (19 000—22 000 kPa)
Priority Valve Setting ..... 2400—2650 psi (16 550—18 250 kPa)

RELIEF VALVE SETTINGS*

Loader Bucket Rollback and Dump ..... 3200 psi (22 064 kPa)
Backhoe:
- Bucket Curl ..... 2700 psi (18 100 kPa)
- Bucket Dump ..... 3200 psi (22 064 kPa)
- Boom Lower ..... 2000 psi (13 780 kPa)
- Boom Raise ..... 3200 psi (22 064 kPa)
- Crowd In ..... 2500 psi (17 200 kPa)
- Crowd Out ..... 3200 psi (22 064 kPa)
- Swing Left and Right ..... 2625 psi (18 100 kPa)

*Note: *Tolerance is + 200 - 0 psi (+ 1380 - 0 kPa)*

CYCLE TIMES (At Fast Idle)

Oil Temperature ..... 150 ± 10°F (65 ± 5°C)
Loader:
- Boom Lower (Float Down) ..... 3.7 sec
- Boom Lower (Power Down) ..... 3.3 sec
- Boom Raise ..... 5.3 sec
- Bucket Dump (Just Clear Ground) ..... 2.5 sec
- Bucket Rollback (Just Clear Ground) ..... 2.4 sec

Backhoe Boom:
- Crowd In ..... 3.5 sec
- Crowd Out ..... 2.8 sec
- Lower ..... 2.3 sec
- Raise ..... 2.2 sec

Backhoe Bucket:
- Curl ..... 2.8 sec
- Dump ..... 2.2 sec

Backhoe Swing (to Cushion) ..... 4.0 sec
Stabilizer:
- Down ..... 2.0 sec
- Up ..... 2.5 sec

Extendible Dipperstick
- Extend and Retract ..... 3.0 sec

Steering:
- Right to Left (S.N. —730024) ..... 4.0 turns
- Left to Right (S.N. —730024) ..... 3.0 turns
- Right to Left (S.N. 730025—) ..... 3.2 turns
- Left to Right (S.N. 730025—) ..... 2.4 turns

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LUBRICANTS

See front of this book for the codes [ ].

CAPACITIES	U.S.	Metric
Engine:		
Cooling System [N]	17 qt	16 L
Crankcase w/ Filter [E]	9.4 qt	8.9 L
Torque Converter and Reverser System [C]	8 qt	7.6 L
Transaxle [C]	6 gal	23 L
Fuel Tank	26 gal	98 L
Hydraulic System Reservoir [C]	8 gal	30 L
Transaxle:		
w/ FWD [C] APL 1552	9.75 gal	37 L
w/ FWD [C] APL 735	6.25 gal	24 L
Front Axle FWD [J]	7 qt	6.5 L
Front Wheel Planetaries [J]	1.2 qt	1.0 L

TIRE PRESSURE (Cold Inflation)

Tire Size	Type	Rating	Normal Pressure
Front:			
7.5—8.00 x 16 (w/o FWD)	F3	10 PR	40 psi (276 kPa)
11 x 15 (w/o FWD)	1-1A	8 PR	44 psi (303 kPa)
F/12 x 16.5 (w/ FWD)	F3	8 PR	60 psi (415 kPa)
Rear:			
14.9 x 24 (w/o FWD)	R4	6 PR	20 psi (138 kPa)
16.9 x 24 (w/ FWD)	R4	6 or 8 PR	29 psi (200 kPa)
17.5 x 24 (w/o FWD)	R4	8 PR	29 psi (200 kPa)

300B LOADER AND BACKHOE LOADER 6,232 lb (2826 kg)

Transport Height.....7 ft 8 in. (2.31 m)
Transport Length.....15 ft 4.2 in. (4.8 m)
Machine Width.....6 ft 8 in. (2.03 m)

ENGINE.....John Deere 300 Series

Number of Cylinders and Displacement:
- Gasoline.....3 cylinders, 152 cu in. (2.5 L)
- Diesel.....3 cylinders, 164 cu in. (2.7 L)

Air Intake System.....Naturally aspirated
Bore and Stroke.....3.86 x 4.33 in. (98 x 110 mm) or 4.02 x 4.33 in. (102 x 110 mm)
Net hp at 2500 rpm.....43 SAE h.p. (32.1 kW) DIN 33.7 kW
Maximum Torque at 1300 rpm.....110 lb-ft (149 N•m)
Nozzle Opening Pressure:
- New.....3200 ± 50 psi (22 060 ± 345 kPa)
- Used.....3000 ± 50 psi (20 680 ± 345 kPa)

Valve Clearance (Cold):
- Intake.....0.014 in. (0.36 mm)
- Exhaust:
  - Diesel.....0.018 in. (0.46 mm)
  - Gasoline.....0.022 in. (0.56 mm)

Oil Pressure at 2500 rpm.....50 ± 15 psi (345 ± 105 kPa)
Static Injection Pump Timing.....Timing lines aligned w/ flywheel located at TDC
Dynamic Injection Pump Timing at Rated Full Load*.....16 + 0 - 1° BTDC
Speeds:
- Slow Idle:
  - Diesel.....800 ± 25 rpm
  - Gasoline.....600 rpm
- Fast Idle, Throttle Lever:
  - Diesel.....2675—2400 rpm
  - Gasoline.....2680 rpm
- Fast Idle, Accelerator Pedal:
  - Diesel.....2775 ± 25 rpm
  - Gasoline.....2275 ± 25 rpm
- Full Load Rating.....2500 rpm

Cylinder Pressure Hot (Min):
- Diesel.....350 psi (2415 kPa) cranking w/ injectors removed
- Gasoline.....120 psi (830 kPa)

Flywheel Teeth.....142

*Note: *For latest information, see Dealer Technical Assistance Center (DTAC) Solution 6718.*

TRANSMISSION

Model and Speeds.....Collar shift w/ hydraulic reverser: 8 forward, 8 reverse
Pump Flow (Min).....7.0 gpm (0.44 L/s) used at 150 psi (1035 kPa) and 2500 rpm
Reverser System Pressure.....155—165 psi (1070—1140 kPa)
Lube Pressure.....8—10 psi (55—69 kPa) (clutch pedal depressed)
Clutch Operating Pressure.....155—165 psi (1070—1140 kPa)
Filter Relief Pressure.....50 psi (345 kPa) differential

Continued on next page

HYDRAULIC SYSTEM

Pump Size	3.01 cu in. (49.3 cm^3)
Standby Pressure	2300—2400 psi (15 860—16 550 kPa)
Charge Pressure at 2200 rpm	30—130 psi (207—897 kPa)
Accumulator Charge Pressure	475—525 psi (3275—3620 kPa)
Surge Relief Pressure	150 psi (1035 kPa)
Filter Relief Pressure	50 psi (345 kPa) differential
Pump Flow (Min):	
New	20.6 gpm (1.3 L/s) at 2000 psi (13 790 kPa) and 1800 rpm
Used	19.5 gpm (1.2 L/s) at 1750 psi (12 065 kPa) and 2000 rpm
Priority Valve Setting	1750—1850 psi (12 065—12 755 kPa)
Cooler Bypass Valve (S.N. —282490)	
Relieves to Lubrication at	70 psi (485 kPa)
Relieves to Sump at	100 psi 9690 kPa)
Cooler Bypass Valve (S.N. 282491—)	
Relieves to Lubrication at	120 psi (830 kPa)
Relieves to Sump at	130 psi (895 kPa)

RELIEF VALVE SETTINGS

Loader Circuit Relief Valve:	
Bucket Rollback	2750 psi (18 960 kPa)
Bucket Dump	1500 psi (10 345 kPa)
9250 Backhoe Circuit Relief Valve:	
Boom Raise	2750 psi (18 960 kPa)
Crowd and Boom Lower	2500 psi (17 240 kPa)
Swing Right	1875 psi (12 930 kPa)
Swing Left	2375 psi (16 375 kPa)
9250A Backhoe Circuit Relief Valve:	
Boom Raise	3500 psi (24 135 kPa)
Crowd and Boom Lower	2375 psi (16 375 kPa)
Swing Right	2375 psi (16 375 kPa)
Swing Left	2375 psi (16 375 kPa)

CYCLE TIMES (Fast Idle and Hot Oil)

Loader:	
Boom Down (Float)	4.0 sec
Bucket Dump	2.3 sec
Boom Up	4.7 sec

LUBRICANTS

See front of this book for the codes [ ].

CAPACITIES	U.S.	Imp.	Metric
Engine:			
Cooling System [N]	3 gal	2.5 gal	11.4 L
Crankcase w/ Filter [E]	9 qt	7.5 qt	8.5 L
Transmission and Hydraulic System (Refill) [C]	8.5 gal	7.1 gal	32.0 L
Loader Hydraulic System [C]	2.5 gal	2.1 gal	9.5 L
Fuel Tank	19.5 gal	16.3 gal	73.8 L

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TIRE PRESSURE (Cold Inflation)

Tire Size	Type	Rating	Normal Pressure
Front:			
11L-15	F3	8 ply	40 psi (275 kPa)
7.50/8.00-16	F3	10 ply	56 psi (385 kPa)
Rear:			
14.9-24	R3, R4	6 ply	22 psi (150 kPa)
17.5L-24	R4	8 ply	22 psi 9150 kPa)

300D BACKHOE LOADER 12,200 lb (5533 kg)

Transport Height .....12 ft (3.67 m)
Transport Length .....22 ft 6 in. (6.85 m)
Machine Width .....7.08 ft (2.15 m)

ENGINE.....John Deere 4039D

Number of Cylinders and Displacement	4 cylinders, 239 cu in. (3.9 L)
Air intake System	Naturally aspirated
Bore and Stroke	4.19 x 4.33 in. (106 x 10 mm)
Net hp at 2200 rpm	60 SAE hp (46 kW) DIN 46 kW
Maximum Torque at 1200 rpm	165 lb-ft (224 N•m)
Nozzle Opening Pressure:	
New	3320 ± 40 psi (22 891 ± 275 kPa)
Used	3120 ± 40 psi (21 512 ± 275 kPa)
Valve Clearance (Cold):	
Intake	0.014 in. (0.36 mm)
Exhaust	0.018 in. (0.46 mm)
Oil Pressure at 2375 rpm	50 ± 15 psi (345 ± 105 kPa)
Static Injection Pump Timing	Timing lines aligned w/ flywheel located at TDC
Dynamic Injection Pump Timing at Rated Load rpm*	15.5 + 0 - 1° BTDC
Speeds:	
Slow Idle	850 ± 25 rpm
Fast Idle	2375—2400 rpm
Full Load Rating	2200 rpm
Converter Stall	1775—2175 rpm
Combined Converter/Loader Stall	1100—1700 rpm
Cylinder Pressure Hot	350 psi (2415 kPa) cranking w/ injectors removed
Number of Flywheel Teeth	142
Electrical System	12 V
Alternator:	
(S.N. —778740)	78 amp Delco
(S.N. 77841—787513)	78 amp Delco
(S.N. 787514—)	95 amp Bosch

*Note: *For latest information, see Dealer Technical Assistance Center (DTAC) Solution 6718.*

TRANSMISSION

Model and Speed (Standard)	Four-speed transmission (1st and 2nd collar shift, 3rd and 4th synchronized) w/ hydraulic reverser
Reverser Charge Pump Flow (Min) at 125 psi (860 kPa) and 1500 rpm:	
(S.N. —792482):	
New	3.0 gpm (11.3 L/min)
Used	2.00 gpm (7.6 L/min)
(S.N. 792483—):	
New	3.2 gpm (12.05 L/min)
Used	2.25 gpm (8.5 L/min)
Reverser:	
System Pressure at 1500 rpm	135 ± 15 psi (931 ± 100 kPa)
Cooler Pressure	25 ± 5 psi (175 ± 35 kPa)
Torque Converter	Single stage, dual phase, overrunning stator, 11 in. (280 mm), stall ratio 2.83 to 1

FRONT WHEEL DRIVE

Automatic self-locking differential. Electric engagement by switch in operator’s station.

Continued on next page

HYDRAULIC SYSTEM—Open-Center

Relief Pressure Setting ..... 2550—2800 psi (17 600—19 300 kPa)
Pump ..... Gear (two section)
- Main Flow (Min) at 2000 psi (13 700 kPa) and 2000 rpm ..... 17.0 gpm (64.0 L/min)
- Steering Flow (Min) at 2000 psi (13 700 kPa) and 2000 rpm:
  - New ..... 6.4 gpm (24.0 L/min)
  - Used ..... 4.8 gpm (18.0 L/min)

Steering Pump Relief Setting ..... 2850—3200 psi (19 650—22 000 kPa)
Priority Valve Setting ..... 2400—2650 psi (16 550—18 250 kPa)

RELIEF VALVE SETTINGS*

Loader Bucket Rollback and Dump ..... 3200 psi (22 000 kPa)
Backhoe:
- Boom Lower ..... 2000 psi (13 700 kPa)
- Boom Raise ..... 3200 psi (22 000 kPa)
- Bucket Curl ..... 2700 psi (18 600 kPa)
- Bucket Dump ..... 3200 psi (22 000 kPa)
- Crowd In ..... 2500 psi (17 200 kPa)
- Crowd Out ..... 3200 psi (22 000 kPa)
- Swing Left and Right ..... 2625 psi (18 100 kPa)

*Note: *Tolerance is + 200 - 0 psi (+ 1380 - 0 kPa)*

CYCLE TIMES (at Fast Idle)

Oil Temperature ..... 150 ± 10°F (65 ± 5°C)
Loader:
- Boom Lower (Float Down) ..... 3.7 sec
- Boom Lower (Power Down) ..... 3.3 sec
- Boom Raise ..... 5.4 sec
- Bucket Dump (Just Clear Ground) ..... 2.5 sec
- Bucket Rollback (Just Clear Ground) ..... 2.4 sec

Backhoe:
- Boom Lower ..... 2.3 sec
- Boom Raise ..... 2.2 sec
- Bucket Curl ..... 2.8 sec
- Bucket Dump ..... 2.2 sec
- Crowd In ..... 3.5 sec
- Crowd Out ..... 2.8 sec
- Swing (To Cushion) ..... 4.0 sec

Stabilizer:
- Down ..... 2.0 sec
- Up ..... 2.5 sec

Extendible Dipperstick Extend and Retract ..... 3.0 sec
Steering:
- Right to Left ..... 3.2 turns
- Left to Right ..... 2.4 turns
- Right to Left ..... 2.7 turns
- Left to Right ..... 2.7 turns

Continued on next page

CYLINDER DRIFT TIME

Oil Temperature	150 ± 10°F (65 ± 5°C)
Engine Speed	Slow idle
Maximum Allowable Function Drift	2.0 in./min (50 mm/min)
Maximum Allowable Cylinder Drift:	
Backhoe Boom, Crowd (Standard Dipper)	0.2 in./min (5 mm/min)
Backhoe Boom, Crowd (Extendible Dipper)	0.25 in./min (6 mm/min)
Backhoe Bucket	0.12 in./min (3 mm/min)
John Deere Extendible Dipper Cylinder	0.25 in./min (6 mm/min)
Loader Boom and Bucket	0.12 in./min (3 mm/min)
Maximum Allowable Swing Drift	6.0 in./min (150 mm/min)

LUBRICANTS

See front of this book for the codes [ ].

CAPACITIES	U.S.	Metric
Engine:		
Cooling System [N]	17 qt	16 L
Crankcase w/ Filter [E]	9 qt	8.5 L
Torque Converter and Reverser System [C]	8 qt	7.6 L
Transaxle [C]	6 gal	23 L
Fuel Tank	28 gal	106 L
Hydraulic System Reservoir [C]	11 gal	41 L
Transaxle w/ FWD [C]	6.25 gal	24 L
Front Axle FWD [J]	7 qt	6.5 L
Front Wheel Planetaries [J]	1.2 qt	1.0 L

TIRE PRESSURE (Cold Inflation)

Tire Size	Type	Rating	Normal Pressure
Front:			
7.50/8.00 L x 16	F3	10 PR	60 psi (414 kPa)
11 L x 15	F3	8 PR	44 psi (306 kPa)
11 L x 16	F3	12 PR	64 psi (441 kPa)
12 L x 16.5		8 PR	60 psi (414 kPa)
Rear:			
16.9 L x 24	R3	6 PR	28 psi (193 kPa)
16.9 L x 24	R4	6 PR	28 psi (193 kPa)
16.9 L x 24	R4	8 PR	28 psi (193 kPa)
17.5 L x 24	R4	10 PR	32 psi (221 kPa)
19.5 L x 24	R4	8 PR	24 psi (165 kPa)

310 BACKHOE LOADER 12,519 lb (5678 kg)

Transport Height.....11 ft 5 in. (2.9 m)
Transport Length.....12 ft 5 in. (3.05 m)
Machine Width .....6 ft 5 in. (1.9 m)

ENGINE.....John Deere 300 Series

Number of Cylinders and Displacement:
- Gasoline .....3 cylinders, 164 cu in. (2.7 L)
- Diesel .....3 cylinders, 164 cu in. (2.7 L)

Air Intake System.....Naturally aspirated
Bore and Stroke.....4.02 x 4.33 in. (102 x 110 mm)
Net hp at 2500 rpm.....50 SAE hp (37.4 kW) DIN 39.1 kW
Maximum Torque at 1300 rpm.....129 lb-ft (175 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.....0.014 in. (0.36 mm)
- Exhaust:
  - Diesel.....0.018 in. (0.6 mm)
  - Gasoline .....0.022 in. (0.56 mm)

Oil Pressure at 2500 rpm.....50 ± 15 psi (345 ± 105 kPa)
Static Injection Pump Timing .....Timing lines aligned w/ flywheel located at TDC
Dynamic Timing at Rated Load rpm*.....16 + 0 - 1° BTDC
Speeds:
- Slow Idle:
  - Diesel.....800 ± 25 rpm
  - Gasoline .....600 ± 25 rpm
- Fast Idle.....2675—2700 rpm
- Full Load Rating .....2500 rpm

Cylinder Pressure Hot (Min) .....120 psi (830 kPa) cranking w/ injectors removed
Flywheel Teeth.....142

*Note: *For latest information, see Dealer Technical Assistance Center (DTAC) Solution 6718.*

TRANSMISSION

Model and Speeds.....Collar shift w/ hydraulic reverser: 8 forward, 4 reverse
Pump Flow (Min) Used at 150 psi (1035 kPa) and 2200 rpm.....10.5 gpm (0.66 L/s)
Reverser System Pressure at Fast Idle.....155—165 psi (1070—1140 kPa)
Lube Pressure (Clutch Pedal Depressed).....8—10 psi (55—69 kPa)
Clutch Operating Pressure .....155—16 psi (1070—1140 kPa)
Filter Relief Pressure .....50 psi (345 kPa) differential

Continued on next page

HYDRAULIC SYSTEM—Close-Center

Pump:	
Size	3.0 cu in. (49.2 cm^3)
Flow (Min)	23 gpm (1.45 L/s) used at 2000 psi (13 790 kPa) and 2200 rpm
Standby Pressure	2300—2400 psi (15 860—16 550 kPa)
Charge Pressure at Fast Idle	55—130 psi (380—900 kPa)
Accumulator Charge Pressure	500 psi (3450 kPa)
Surge Relief Pressure	150 psi (1035 kPa)
Filter Relief Pressure	50 psi (345 kPa) differential
Priority Valve Setting at 1000 rpm	1300 ± 50 psi (8965 ± 345 kPa)
Cooler Bypass Valve:	
Relieves to Lubrication at	70 psi (485 kPa)
Relieves to Sump at	100 psi (690 kPa)

RELIEF VALVE SETTINGS

Loader Circuit Relief Valve:	
Auxiliary	2500 psi (17 240 kPa)
Bucket Dump	1500 psi (10 305 kPa)
Bucket Rollback	2750 psi (18 960 kPa)
9405 Backhoe Circuit Relief Valve:	
Boom Lower	2375 psi (16 375 kPa)
Boom Raise (Early Units)	3000 psi (20 685 kPa)
Boom Raise (Later Units)	3500 psi (24 135 kPa)
Crowd	2375 psi (16 375 kPa)
Swing Right and Left	2375 psi (16 375 kPa)
9500 Backhoe Circuit Relief Valve:	
Boom Lower	2375 psi (16 375 kPa)
Boom Raise (Early Units)	3000 psi (20 685 kPa)
Boom Raise (Later Units)	3000 psi (20 685 kPa)
Crowd	2375 psi (16 375 kPa)
Swing Right and Left	1625 psi (11 205 kPa)

CYCLE TIMES (Fast Idle and Hot Oil)

Loader Function:	
Boom Down (Power)	2.9 sec
Boom Down (Float)	3.5 sec
Boom Raise	4.1 sec
Bucket Dump (Boom at Full Height)	1.8 sec
Bucket Rollback (Flat on Ground)	0.8 sec
Bucket Rollback (From Maximum Dump Position and Boom at Full Height)	1.5 sec
Backhoe Functions:	
Boom Lower (Full Height to Maximum Depth)	4.1 sec
Boom Lower (Full Height to Ground)	1.9 sec
Boom Raise (Ground to Full Height)	2.1 sec
Boom Raise (Max Depth to Full Height)	4.5 sec
Bucket Curl	2.3 sec
Bucket Dump	1.9 sec
Dipperstick In	3.6 sec
Dipperstick Out	3.3 sec
Swing (180°)	3—5 sec

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LUBRICANTS

See front of this book for the codes [ ].

CAPACITIES	U.S.	Imp.	Metric
Engine:			
Cooling System [N] (Early Units)	7 qt	2.1 gal	6.62 L
Cooling System [N] (Later Units)	9 qt	2.7 gal	8.5 L
Crankcase w/ Filter [E]	3 gal	3.6 gal	11.3 L
Transmission and Hydraulic System [C]	20.5 gal	17.1 gal	77.6 L
Fuel Tank	19.5 gal	16.3 gal	73.8 L

TIRE PRESSURE (Cold Inflation)

Tire Size	Type	Rating	Normal Pressure
Front:			
7.50-16	F3	10 ply	60 psi (415 kPa)
11L-15	F3	8 ply	44 psi (305 kPa)
Rear:			
16.9-24	R4	8 ply	28 psi (195 kPa)
19.5L-24	R4	8 ply	24 psi (165 kPa)

310A BACKHOE LOADER — 12,519 lb (5678 kg)

Transport Height ..... **11 ft 3 in. (3.43 m)**
Transport Length ..... **23 ft 7 in. (7.19 m)**
Machine Width ..... **6 ft 10 in. (2.08 m)**

ENGINE ..... John Deere 300 Series

Number of Cylinders and Displacement	4 cylinders, 219 cu in. (3.6 L)
Air Intake System	Naturally aspirated
Bore and Stroke	4.02 x 4.33 in. (102 x 110 mm)
Net hp at 2500 rpm	58 SAE hp (43 kW) DIN 45 kW
Maximum Torque at 1300 rpm	150 lb-ft (203 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	0.014 in. (0.36 mm)
Exhaust	0.018 in. (0.45 mm)
Oil Pressure at 2500 rpm	50 ± 15 psi (345 ± 105 kPa)
Static Injection Pump Timing	Timing lines aligned w/ flywheel located at TDC
Dynamic Injection Pump Timing at Rated Load rpm*	17 + 0 - 1° BTDC
Speeds:	
Slow Idle	800 ± 25 rpm
Fast Idle	2675—2700 rpm
Full Load Rating	2500 rpm
Cylinder Pressure Hot (Min)	350 psi (2415 kPa) cranking w/ injectors removed
Flywheel Teeth	142

*Note: *For latest information, see Dealer Technical Assistance Center (DTAC) Solution 6718.*

TRANSMISSION

Model and Speeds	Collar shift w/ hydraulic reverser: 8 forward, 8 reverse
Pump Flow (Min)	10.5 gpm (0.66 L/s) used at 150 psi (1035 kPa) and 2200 rpm
Reverser System Pressure at Fast Idle	155—165 psi (1070—1140 kPa)
Lube Pressure (Clutch Pedal Depressed)	8—10 psi (55—69 kPa)
Clutch Operating Pressure	155—16 psi (1070—1140 kPa)
Filter Relief Pressure	50 psi (345 kPa) differential

HYDRAULIC SYSTEM—Close-Center

Pump:	
Size	3.0 cu in. (49.2 cm^3)
Flow (Min)	23 gpm (1.45 L/s) used at 2000 psi (13 790 kPa) and 2200 rpm
Standby Pressure	2300—2400 psi (15 860—16 550 kPa)
Charge Pressure at Fast Idle	55—130 psi (380—900 kPa)
Accumulator Charge Pressure	500 psi (3450 kPa)
Surge Relief Pressure	150 psi (1035 kPa)
Filter Relief Pressure	50 psi (345 kPa) differential
Priority Valve Setting at 1000 rpm	1300 ± 50 psi (8965 ± 345 kPa)
Cooler Bypass Valve (S.N. —282490):	
Relieves to Lubrication at	70 psi (485 kPa)
Relieves to Sump at	100 psi (690 kPa)
Cooler Bypass Valve (S.N. 282491—):	
Relieves to Lubrication at	120 psi (830 kPa)
Relieves to Sump	130 psi (895 kPa)

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