NEBRASKA OECD TRACTOR TEST 1801–SUMMARY 367
JOHN DEERE 8520 DIESEL
16 SPEED

Location of Test: Nebraska Tractor Test Laboratory, University of Nebraska, Lincoln, Nebraska 68583-0832

Dates of Test: May 2 - 31, 2002

Manufacturer: John Deere Tractor Works, 3500 East Donald St., P.O. Box 270, Waterloo Ia, 50704-0270

POWER TAKE-OFF PERFORMANCE

Power HP *(kW)*	Crank shaft speed rpm	Gal/hr *(l/h)*	lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION					
Rated Engine Speed (PTO speed 1009 rpm)					
256.49 *(191.26)*	2200	14.97 *(56.68)*	0.411 *(0.250)*	17.13 *(3.37)*	
Maximum Power (2 hours)					
292.88 *(218.40)*	2002	16.11 *(60.97)*	0.387 *(0.236)*	18.18 *(3.58)*	
VARYING POWER AND FUEL CONSUMPTION					
256.49 *(191.26)*	2200	14.97 *(56.68)*	0.411 *(0.250)*	17.13 *(3.37)*	Air temperature
224.05 *(167.07)*	2261	13.50 *(51.10)*	0.424 *(0.258)*	16.60 *(3.27)*	75°F *(24°C)*
168.92 *(125.96)*	2271	10.86 *(41.10)*	0.453 *(0.275)*	15.56 *(3.06)*	Relative humidity
113.13 *(84.36)*	2283	7.96 *(30.14)*	0.496 *(0.302)*	14.21 *(2.80)*	18%
56.79 *(42.34)*	2294	5.02 *(19.02)*	0.623 *(0.379)*	11.30 *(2.23)*	Barometer
1.01 *(0.75)*	2302	2.94 *(11.12)*	20.591 *(12.525)*	0.34 *(0.07)*	28.80" Hg *(97.53 kPa)*

Maximum Torque - 922 lb.-ft. *(1250 Nm)* at 1301 rpm
Maximum Torque Rise - 50.7%
Torque rise at 1800 engine rpm - 36%

DRAWBAR PERFORMANCE
UNBALLASTED - FRONT DRIVE ENGAGED
FUEL CONSUMPTION CHARACTERISTICS

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp.°F *(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Power 8th Gear									
225.13 *(167.88)*	17772 *(79.05)*	4.75 *(7.65)*	2203	4.36	0.468 *(0.285)*	15.06 *(2.97)*	200 *(93)*	57 *(14)*	28.79 *(97.49)*
75% of Pull at Maximum Power 8th Gear									
175.85 *(131.13)*	13313 *(59.22)*	4.95 *(7.97)*	2265	2.97	0.500 *(0.304)*	14.10 *(2.78)*	202 *(94)*	58 *(14)*	28.80 *(97.53)*
50% of Pull at Maximum Power 8th Gear									
119.29 *(88.96)*	8899 *(39.58)*	5.03 *(8.09)*	2278	1.98	0.567 *(0.345)*	12.42 *(2.45)*	202 *(94)*	61 *(16)*	28.78 *(97.46)*
75% of Pull at Reduced Engine Speed 10th Gear									
175.62 *(130.96)*	13277 *(59.06)*	4.96 *(7.98)*	1704	2.97	0.422 *(0.257)*	16.69 *(3.29)*	206 *(96)*	60 *(16)*	28.80 *(97.53)*
50% of Pull at Reduced Engine Speed 10th Gear									
118.98 *(88.72)*	8889 *(39.54)*	5.02 *(8.08)*	1711	2.07	0.459 *(0.279)*	15.35 *(3.02)*	203 *(95)*	63 *(17)*	28.77 *(97.43)*

FUEL, OIL and TIME: Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F *(15°/15°C)*** 0.8457 **Fuel weight** 7.042 lbs/gal *(0.844 kg/l)* **Oil SAE** 15W-40 **API service classification** CH-4 **Transmission and hydraulic lubricant** John Deere Hy-Gard fluid **Front axle lubricant** John Deere Hy-Gard fluid **Total time engine was operated:** 23.5 hours

ENGINE: Make John Deere Diesel **Type** six cylinder vertical with turbocharger and air to air aftercooler **Serial No.***RG6081H203783* **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** 4.56" x 5.06"*(115.8 mm x 128.5 mm)* **Compression ratio** 16.5 to 1 **Displacement** 496 cu in *(8134 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements and aspirator **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** one paper element and water separator **Fuel cooler** radiator for pump inlet fuel **Muffler** vertical **Cooling medium temperature control** 2 thermostats and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: 99.7 - 107.1 lb/h *(45.2 - 48.6 kg/h)* **High idle:** 2275 - 2325 rpm **Turbo boost:** nominal 26.9 - 29.7 psi *(185 - 205 kPa)* as measured 29.1 psi *(201 kPa)*

CHASSIS: Type front wheel assist **Serial No.***RW8520P001941* **Tread width** rear 60.0" *(1524 mm)* to 157.9 *(4010 mm)* front 60.0" *(1523 mm)* to 120.2" *(3054 mm)* **Wheelbase** 116.1" *(2950 mm)* **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with full range operator controlled power shift **Nominal travel speeds mph *(km/h)*** first 1.19 *(1.91)* second 1.59 *(2.56)* third 2.11 *(3.40)* fourth 2.84 *(4.57)* fifth 3.18 *(5.12)* sixth 3.67 *(5.90)* seventh 4.26 *(6.85)* eighth 4.92 *(7.91)* ninth 5.67 *(9.12)* tenth 6.54 *(10.52)* eleventh 7.59 *(12.22)* twelfth 8.76 *(14.09)* thirteenth 10.32 *(16.61)* fourteenth 13.82 *(22.24)* fifteenth 18.40 *(29.61)* sixteenth 24.03 *(38.67)* reverse 1.11 *(1.79)*, 2.98 *(4.79)*, 3.74 *(6.02)*, 6.58 *(10.59)*@1500 engine rpm **Clutch** wet multiple disc hydraulically actuated by foot pedal **Brakes** wet multiple disc hydraulically operated by two foot pedals that can be locked together **Steering** hydrostatic **Power take-off** 1 3/4" shaft - 1000 rpm at 2179 engine rpm, (optional 1 3/8" shaft, 540 rpm at 1978 engine rpm or 1000 rpm at 2179 engine rpm) **Unladen tractor mass** 23800 lb *(10795 kg)*

DRAWBAR PERFORMANCE

UNBALLASTED - 2200 RPM

MAXIMUM POWER IN SELECTED GEARS

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp.°F *(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
					6th Gear				
210.73 *(157.14)*	23197 *(103.18)*	3.41 *(5.48)*	2248	9.87	0.504 *(0.306)*	13.99 *(2.76)*	201 *(94)*	57 *(14)*	28.79 *(97.49)*
					7th Gear				
221.63 *(165.27)*	20500 *(91.19)*	4.05 *(6.52)*	2203	5.80	0.476 *(0.290)*	14.80 *(2.91)*	201 *(94)*	56 *(13)*	28.79 *(97.49)*
					8th Gear				
225.13 *(167.88)*	17772 *(79.05)*	4.75 *(7.65)*	2203	4.36	0.468 *(0.285)*	15.06 *(2.97)*	200 *(93)*	57 *(14)*	28.79 *(97.49)*
					9th Gear				
223.53 *(166.69)*	15157 *(67.42)*	5.53 *(8.90)*	2202	3.41	0.476 *(0.289)*	14.82 *(2.92)*	202 *(94)*	71 *(22)*	28.63 *(96.95)*
					10th Gear				
224.20 *(167.19)*	13105 *(58.29)*	6.42 *(10.33)*	2201	2.97	0.474 *(0.289)*	14.85 *(2.93)*	201 *(94)*	69 *(21)*	28.63 *(96.95)*
					11th Gear				
220.22 *(164.22)*	11038 *(49.10)*	7.48 *(12.04)*	2201	2.52	0.484 *(0.295)*	14.55 *(2.87)*	201 *(94)*	73 *(23)*	28.64 *(96.99)*
					12th Gear				
217.38 *(162.10)*	9414 *(41.88)*	8.66 *(13.94)*	2200	2.07	0.490 *(0.298)*	14.38 *(2.83)*	201 *(94)*	74 *(23)*	28.64 *(96.99)*

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive Engaged dB(A)	Disengaged dB(A)
At no load in 8th gear	73.7	73.8
Transport speed - no load - 16th gear		77.2
Bystander in 16th Gear		86.9

TIRES, BALLAST AND WEIGHT	With Ballast	Without Ballast
Rear Tires - No., size, ply & psi(*kPa*)	Six 480/80R46;***;10(*70*)	Four 480/80R46;***;10(*70*)
Ballast - Triples (total)	2120 lb *(961 kg)*	None
- Cast Iron (total)	4460 lb *(2023 kg)*	None
Front Tires - No., size, ply & psi(*kPa*)	Four 380/85R34;**;18(*125*)	Two 380/85R34;**;23(*160*)
Ballast - Duals (total)	1300 lb *(590 kg)*	None
- Cast Iron (total)	1900 lb *(862 kg)*	None
Height of Drawbar	20.5 in (*520 mm*)	21.0 in (*535 mm*)
Static Weight with operator - Rear	20195 lb *(9160 kg)*	14215 lb *(6448 kg)*
- Front	13560 lb *(6151 kg)*	9760 lb *(4427 kg)*
- Total	33755 lb(*15311 kg*)	23975 lb(*10875 kg*)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

NOTE: The John Deere 8520 tractor is equipped with an electronic engine performance system that provides the following power levels:
1. In gears 1-7 when the three point hitch rockshaft is lowered below the transport lock position and the PTO is off - 248 PTO Hp*(185 kW)*.
2. All other conditions - 255 PTO Hp*(190 kW)*.

REMARKS: All test results were determined from observed data obtained in accordance with official OECD, SAE and Nebraska test procedures. For the maximum power tests the fuel temperature at the injection pump inlet was maintained at 102°F*(39°C)*. The pull in 6th gear (unballasted tractor) was limited to avoid excessive tractor bouncing. The performance figures on this summary were taken from a test conducted under the OECD Code II test code procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1801**, Nebraska Summary 367, July 23, 2002.

Brent T. Sampson
Test Engineer

L.L. Bashford
G.J. Hoffman
V.I. Adamchuk
Board of Tractor Test Engineers

DRAWBAR PERFORMANCE
UNBALLASTED - 2000 RPM
MAXIMUM POWER IN SELECTED GEARS

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp.°F*(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
					6th Gear				
212.94 *(158.79)*	23531 *(104.67)*	3.39 *(5.46)*	2232	9.49	0.498 *(0.303)*	14.14 *(2.79)*	202 *(94)*	57 *(14)*	28.79 *(97.49)*
					7th Gear				
225.58 *(168.22)*	21920 *(97.50)*	3.86 *(6.21)*	2144	7.92	0.475 *(0.289)*	14.83 *(2.92)*	201 *(94)*	57 *(14)*	28.79 *(97.49)*
					8th Gear				
244.59 *(182.39)*	21688 *(96.47)*	4.23 *(6.81)*	2034	7.76	0.456 *(0.278)*	15.43 *(3.04)*	202 *(94)*	57 *(14)*	28.79 *(97.49)*
					9th Gear				
251.66 *(187.67)*	19201 *(85.41)*	4.92 *(7.91)*	2001	5.64	0.450 *(0.273)*	15.67 *(3.09)*	202 *(94)*	73 *(23)*	28.64 *(96.99)*
					10th Gear				
256.36 *(191.17)*	16660 *(74.11)*	5.77 *(9.29)*	2002	3.84	0.442 *(0.269)*	15.93 *(3.14)*	203 *(95)*	70 *(21)*	28.63 *(96.95)*
					11th Gear				
253.85 *(189.30)*	14098 *(62.71)*	6.75 *(10.87)*	2002	3.23	0.447 *(0.272)*	15.77 *(3.11)*	203 *(95)*	73 *(23)*	28.64 *(96.99)*
					12th Gear				
253.48 *(189.02)*	12132 *(53.96)*	7.84 *(12.61)*	2003	2.70	0.446 *(0.271)*	15.81 *(3.11)*	204 *(95)*	74 *(23)*	28.64 *(96.99)*
					13th Gear				
251.10 *(187.24)*	10182 *(45.29)*	9.25 *(14.88)*	1997	2.25	0.451 *(0.274)*	15.62 *(3.08)*	205 *(96)*	75 *(24)*	28.64 *(96.99)*

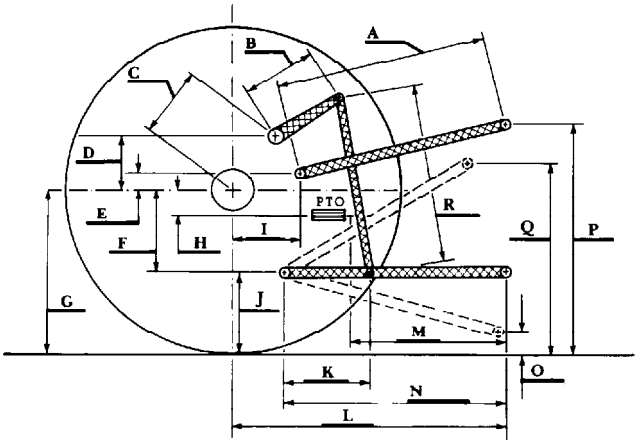
DRAWBAR PERFORMANCE
BALLASTED - 2000 RPM
MAXIMUM POWER IN SELECTED GEARS

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp.°F*(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
					3rd Gear				
181.53 *(135.37)*	35611 *(158.40)*	1.91 *(3.08)*	2260	12.79	0.541 *(0.329)*	13.02 *(2.57)*	203 *(95)*	47 *(8)*	28.97 *(98.10)*
					4th Gear				
226.66 *(169.02)*	33536 *(149.18)*	2.53 *(4.08)*	2123	8.20	0.479 *(0.291)*	14.71 *(2.90)*	205 *(96)*	47 *(8)*	28.98 *(98.13)*
					5th Gear				
242.06 *(180.50)*	32423 *(144.22)*	2.80 *(4.51)*	2069	7.24	0.460 *(0.280)*	15.30 *(3.01)*	204 *(95)*	47 *(8)*	28.98 *(98.13)*
					6th Gear				
255.58 *(190.58)*	30270 *(134.65)*	3.17 *(5.10)*	2002	5.85	0.445 *(0.271)*	15.84 *(3.12)*	203 *(95)*	48 *(9)*	28.98 *(98.13)*
					7th Gear				
259.52 *(193.53)*	26075 *(115.99)*	3.73 *(6.01)*	1998	4.24	0.437 *(0.266)*	16.11 *(3.17)*	203 *(95)*	49 *(9)*	29.00 *(98.21)*
					8th Gear				
259.32 *(193.37)*	22383 *(99.56)*	4.34 *(6.99)*	2000	3.46	0.438 *(0.266)*	16.09 *(3.17)*	206 *(96)*	49 *(9)*	29.00 *(98.21)*
					9th Gear				
260.15 *(193.99)*	19342 *(86.04)*	5.04 *(8.12)*	1999	2.93	0.436 *(0.265)*	16.15 *(3.18)*	205 *(96)*	51 *(11)*	29.01 *(98.24)*
					10th Gear				
258.40 *(192.69)*	16577 *(73.74)*	5.85 *(9.41)*	2001	2.49	0.440 *(0.267)*	16.03 *(3.16)*	205 *(96)*	51 *(11)*	29.02 *(98.27)*
					11th Gear				
253.91 *(189.34)*	13974 *(62.16)*	6.81 *(10.97)*	2000	2.22	0.445 *(0.271)*	15.83 *(3.12)*	206 *(97)*	52 *(11)*	29.02 *(98.27)*
					12th Gear				
251.40 *(187.47)*	11975 *(53.27)*	7.87 *(12.67)*	1999	1.95	0.451 *(0.275)*	15.61 *(3.07)*	206 *(97)*	52 *(11)*	29.03 *(98.31)*
					13th Gear				
247.09 *(184.25)*	9942 *(44.22)*	9.32 *(15.00)*	2002	1.68	0.460 *(0.280)*	15.31 *(3.02)*	206 *(97)*	52 *(11)*	29.04 *(98.34)*

THREE POINT HITCH PERFORMANCE (OECD Static Test)

	lift cylinders 2x100 mm	lift cylinders 1x100 mm&1x115 mm
CATEGORY: III		
Quick Attach: Yes		
Maximum Force Exerted Through Whole Range:	15387 lbs *(68.4 kN)*	17897 lbs *(79.6 kN)*
i) Opening pressure of relief valve:	NA	NA
		High flow option
Sustained pressure at compensator cutoff:	2980 psi *(205 bar)*	2990 psi *(206 bar)*
	two outlet sets combined	
ii) Pump delivery rate at minimum pressure and rated engine speed:	35.2 GPM *(133.2 l/min)*	43.8 GPM *(165.8 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	33.2 GPM *(125.7 l/min)*	43.2 GPM *(163.5 l/min)*
Delivery pressure:	2700 psi *(186 bar)*	2250 psi *(155 bar)*
Power:	52.4 HP *(39.1 kW)*	56.8 HP *(42.3 kW)*
	single outlet set	
ii) Pump delivery rate at minimum pressure and rated engine speed:	34.3 GPM *(129.8 l/min)*	33.6 GPM *(127.2 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	32.9 GPM *(124.5 l/min)*	28.3 GPM *(107.1 l/min)*
Delivery pressure:	2090 psi *(144 bar)*	2100 psi *(145 bar)*
Power:	40.1 HP *(29.9 kW)*	34.7 HP *(25.9 kW)*

HITCH DIMENSIONS AS TESTED NO LOAD



	inch	*mm*
A	28.8	*732*
B	20.5	*520*
C	21.7	*550*
D	19.5	*495*
E	7.3	*185*
F	13.8	*350*
G	37.6	*955*
H	7.8	*197*
I	20.3	*515*
J	23.8	*605*
K	28.9	*733*
L	49.9	*1268*
*L'	53.4	*1357*
M	22.0	*558*
N	38.1	*1082*
O	9.0	*230*
P	42.6	*1164*
Q	39.2	*995*
R	45.3	*1150*

*L' to Quick Attach ends

JOHN DEERE 8520 DIESEL

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