January 2002

Test 1811: John Deere 9220 18 Speed

Nebraska Tractor Test Lab
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NEBRASKA OECD TRACTOR TEST 1811–SUMMARY 377
JOHN DEERE 9220 DIESEL
18 SPEED

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—1108 rpm)					
282.16 *(210.41)*	2101	17.03 *(64.45)*	0.424 *(0.258)*	16.57 *(3.26)*	
Standard Power Take-off Speed—(PTO speed—1000 rpm)					
317.95 *(237.10)*	1894	17.62 *(66.70)*	0.389 *(0.237)*	18.05 *(3.55)*	
Maximum Power (2 hours)					
334.09 *(249.13)*	1801	18.43 *(69.75)*	0.387 *(0.236)*	18.13 *(3.57)*	
VARYING POWER AND FUEL CONSUMPTION					
282.16 *(210.41)*	2101	17.03 *(64.46)*	0.424 *(0.258)*	16.57 *(3.26)*	Air temperature
246.47 *(183.79)*	2155	15.55 *(58.86)*	0.443 *(0.270)*	15.85 *(3.12)*	78°F *(25°C)*
185.96 *(138.67)*	2172	13.16 *(49.80)*	0.497 *(0.302)*	14.13 *(2.78)*	Relative humidity
123.70 *(92.24)*	2188	10.98 *(41.56)*	0.623 *(0.379)*	11.27 *(2.22)*	56%
63.27 *(47.18)*	2209	8.16 *(30.88)*	0.906 *(0.551)*	7.75 *(1.53)*	Barometer
1.12 *(0.83)*	2228	5.04 *(19.08)*	31.620 *(19.234)*	0.22 *(0.04)*	28.52" Hg *(98.58 kPa)*

Maximum Torque - 1094 lb.-ft. *(1483 Nm)* at 1398 rpm
Maximum Torque Rise - 54.9%
Torque rise at 1699 engine rpm - 45%

DRAWBAR PERFORMANCE (Unballasted)
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)*	Fuel Consumption Hp.hr/gal *(kW.h/l)*	Temp.°F *(°C)* cool-ing med	Temp.°F *(°C)* Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Power—6th Gear									
264.34 *(197.12)*	22019 *(97.94)*	4.50 *(7.25)*	2097	3.30	0.451 *(0.275)*	15.56 *(3.06)*	190 *(88)*	68 *(20)*	28.86 *(97.73)*
75% of Pull at Maximum Power—6th Gear									
206.25 *(153.80)*	16542 *(73.58)*	4.68 *(7.52)*	2163	2.64	0.502 *(0.305)*	14.00 *(2.76)*	186 *(85)*	64 *(18)*	29.09 *(98.51)*
50% of Pull at Maximum Power—6th Gear									
139.82 *(104.26)*	11021 *(49.02)*	4.76 *(7.66)*	2184	1.88	0.591 *(0.360)*	11.88 *(2.34)*	183 *(84)*	64 *(18)*	29.09 *(98.51)*
75% of Pull at Reduced Engine Speed—8th Gear									
206.08 *(153.68)*	16502 *(73.40)*	4.68 *(7.54)*	1752	2.55	0.448 *(0.272)*	15.69 *(3.09)*	182 *(83)*	65 *(18)*	29.09 *(98.51)*
50% of Pull at Reduced Engine Speed—8th Gear									
139.90 *(104.32)*	10978 *(48.83)*	4.78 *(7.69)*	1774	1.68	0.507 *(0.308)*	13.86 *(2.73)*	179 *(82)*	65 *(18)*	29.09 *(98.51)*

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

Dates of Test: September 20-27, 2002

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

FUEL, OIL and TIME: Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F *(15°/15°C)*** 0.8435 **Fuel weight** 7.023 lbs/gal *(0.842 kg/l)* **Oil SAE** 15W-40 **API service classification** CH-4 **Transmission, hydraulic and final drive 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.***RG6125H031928* **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 5.00" x 6.50"*(127.0 mm x 165.0 mm)* **Compression ratio** 17.0 to 1 **Displacement** 765 cu in *(12536 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 oil, radiator for transmission, front and rear axle oil **Fuel filter** two paper cartridges **Muffler** vertical **Cooling medium temperature control** 2 thermostats and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: 112.7-120.2 lb/h *(51.1-54.5 kg/h)* **High idle:** 2205 - 2255 rpm **Turbo boost:** nominal 16.0 - 17.4 psi *(110 - 120 kPa)* as measured 16.8 psi *(116 kPa)*

CHASSIS: Type four wheel drive with duals **Serial No.***RW9220P002071* **Tread width** rear 66.5"*(1689 mm)* to 142.3"*(3615 mm)*, front 66.5"*(1689 mm)* to 142.3" *(3615 mm)* **Wheelbase** 137.8"*(3500 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 2.44 *(3.92)* second 3.00 *(4.83)* third 3.32 *(5.35)* fourth 3.72 *(5.98)* fifth 4.09 *(6.59)* sixth 4.57 (7.36) seventh 5.06 *(8.15)* eighth 5.65 *(9.09)* ninth 6.23 *(10.02)* tenth 6.95 *(11.19)* eleventh 7.70 *(12.39)* twelfth 8.51 *(13.69)* thirteenth 9.47 *(15.24)* fourteenth 10.47 *(16.85)* fifteenth 12.94 *(20.83)* sixteenth 15.93 *(25.63)* seventeenth 19.69 *(31.69)* eighteenth 24.23 *(39.00)* reverse 2.43 *(3.92)*, 3.32 *(5.35)*, 3.72 *(5.98)*, 5.06 *(8.15)*, 5.65 *(9.09)*, 7.70 *(12.39)*

DRAWBAR PERFORMANCE

(Unballasted at 2100 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)*
				1st Gear					
220.45 *(164.39)*	35831 *(159.38)*	2.31 *(3.71)*	2155	9.52	0.506 *(0.308)*	13.87 *(2.73)*	184 *(84)*	54 *(12)*	28.98 *(98.14)*
				2nd Gear					
253.23 *(188.83)*	33483 *(148.94)*	2.84 *(4.56)*	2098	7.34	0.469 *(0.285)*	14.98 *(2.95)*	185 *(85)*	58 *(14)*	29.02 *(98.27)*
				3rd Gear					
261.63 *(195.10)*	30773 *(136.89)*	3.19 *(5.13)*	2100	5.85	0.455 *(0.277)*	15.44 *(3.04)*	185 *(85)*	62 *(17)*	29.06 *(98.41)*
				4th Gear					
264.57 *(197.29)*	27543 *(122.52)*	3.60 *(5.80)*	2098	4.68	0.449 *(0.273)*	15.63 *(3.08)*	185 *(85)*	62 *(17)*	29.06 *(98.41)*
				5th Gear					
267.14 *(199.21)*	25057 *(111.46)*	4.00 *(6.43)*	2098	3.95	0.449 *(0.273)*	15.65 *(3.08)*	190 *(88)*	72 *(22)*	28.87 *(97.77)*
				6th Gear					
264.34 *(197.12)*	22019 *(97.94)*	4.50 *(7.25)*	2097	3.30	0.451 *(0.275)*	15.56 *(3.06)*	190 *(88)*	68 *(20)*	28.86 *(97.73)*
				7th Gear					
267.74 *(199.65)*	20064 *(89.25)*	5.00 *(8.05)*	2099	3.02	0.447 *(0.272)*	15.71 *(3.09)*	199 *(93)*	70 *(21)*	28.87 *(97.77)*
				8th Gear					
266.32 *(198.60)*	17804 *(79.20)*	5.61 *(9.03)*	2099	2.64	0.450 *(0.274)*	15.59 *(3.07)*	196 *(91)*	71 *(22)*	28.87 *(97.77)*
				9th Gear					
260.18 *(194.02)*	15728 *(69.96)*	6.20 *(9.98)*	2100	2.36	0.461 *(0.280)*	15.24 *(3.00)*	187 *(86)*	64 *(18)*	28.82 *(97.60)*
				10th Gear					
259.79 *(193.73)*	14062 *(62.55)*	6.93 *(11.15)*	2095	2.07	0.462 *(0.281)*	15.21 *(3.00)*	192 *(89)*	65 *(18)*	28.84 *(97.66)*
				11th Gear					
258.70 *(192.91)*	12583 *(55.97)*	7.71 *(12.41)*	2101	1.88	0.464 *(0.282)*	15.13 *(2.98)*	190 *(88)*	66 *(19)*	28.86 *(97.73)*
				12th Gear					
259.47 *(193.49)*	11449 *(50.93)*	8.50 *(13.68)*	2094	1.68	0.462 *(0.281)*	15.21 *(3.00)*	190 *(88)*	67 *(19)*	28.86 *(97.73)*

Clutch wet multiple disc hydraulically actuated by foot pedal **Brakes** wet multiple disc hydraulically actuated foot pedal **Steering** hydrostatic and articulated **Power take-off** 1000 rpm at 1895 engine rpm **Unladen tractor mass** 36505 lb *(16558 kg)*

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

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 106°F *(41°C)*. The pull in 1st gear was limited to avoid 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. **1811**, Nebraska Summary 377, December 13,2002.

Leonard L. Bashford
Director

V.I. Adamchuk
M.F. Kocher
W.P. Campbell
Board of Tractor Test Engineers

TRACTOR SOUND LEVEL WITH CAB	dB(A)
At no load in 6th gear	73.8
Transport speed - no load - 18th gear	75.7
Bystander in 18th gear	90.5

TIRES, BALLAST AND WEIGHT	Tested Without Ballast
Rear Tires - No., size, ply & psi*(kPa)*	Four 620/70R46;***;7*(50)*
Front Tires - No., size, ply & psi*(kPa)*	Four 620/70R46;***;11*(75)*
Height of Drawbar	21.5 in *(545 mm)*
Static Weight with operator - Rear	15160 lb *(6876 kg)*
- Front	21520 lb *(9761 kg)*
- Total	36680 lb*(16637 kg)*

DRAWBAR PERFORMANCE
(Unballasted at 1800 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)*
				1st Gear					
222.91 *(166.22)*	36064 *(160.42)*	2.32 *(3.73)*	2155	9.11	0.501 *(0.305)*	14.01 *(2.76)*	184 *(84)*	54 *(12)*	28.98 *(98.13)*
				2nd Gear					
252.94 *(188.62)*	34843 *(154.99)*	2.72 *(4.38)*	2055	9.11	0.473 *(0.288)*	14.84 *(2.92)*	184 *(84)*	60 *(16)*	29.03 *(98.31)*
				3rd Gear					
266.51 *(198.74)*	33965 *(151.08)*	2.94 *(4.74)*	1995	8.69	0.454 *(0.276)*	15.48 *(3.05)*	186 *(85)*	62 *(17)*	29.05 *(98.37)*
				4th Gear					
276.65 *(206.30)*	32517 *(144.64)*	3.19 *(5.13)*	1922	8.02	0.445 *(0.270)*	15.80 *(3.11)*	186 *(86)*	63 *(17)*	29.08 *(98.48)*
				5th Gear					
289.95 *(216.22)*	32402 *(144.13)*	3.36 *(5.40)*	1823	7.34	0.438 *(0.267)*	16.03 *(3.16)*	188 *(86)*	63 *(17)*	29.07 *(98.44)*
				6th Gear					
291.84 *(217.62)*	28920 *(128.64)*	3.78 *(6.09)*	1802	5.23	0.440 *(0.268)*	15.95 *(3.14)*	196 *(91)*	73 *(23)*	28.87 *(97.77)*
				7th Gear					
297.88 *(222.13)*	26388 *(117.38)*	4.23 *(6.81)*	1799	4.14	0.430 *(0.262)*	16.33 *(3.22)*	197 *(92)*	67 *(19)*	28.87 *(97.77)*
				8th Gear					
300.80 *(224.30)*	23755 *(105.67)*	4.75 *(7.64)*	1799	3.67	0.428 *(0.261)*	16.39 *(3.23)*	202 *(94)*	70 *(21)*	28.87 *(97.77)*
				9th Gear					
298.92 *(222.90)*	21274 *(94.63)*	5.27 *(8.48)*	1802	3.21	0.429 *(0.261)*	16.37 *(3.22)*	202 *(94)*	72 *(22)*	28.87 *(97.77)*
				10th Gear					
294.69 *(219.75)*	18628 *(82.86)*	5.93 *(9.55)*	1806	2.74	0.434 *(0.264)*	16.19 *(3.19)*	192 *(89)*	64 *(18)*	28.83 *(97.63)*
				11th Gear					
295.81 *(220.58)*	16877 *(75.07)*	6.57 *(10.58)*	1802	2.45	0.434 *(0.264)*	16.18 *(3.19)*	196 *(91)*	65 *(18)*	28.85 *(97.70)*
				12th Gear					
297.16 *(221.59)*	15326 *(68.17)*	7.27 *(11.70)*	1801	2.07	0.433 *(0.263)*	16.23 *(3.20)*	195 *(90)*	66 *(19)*	28.86 *(97.73)*
				13th Gear					
289.38 *(215.79)*	13331 *(59.30)*	8.14 *(13.10)*	1804	1.97	0.443 *(0.269)*	15.87 *(3.13)*	196 *(91)*	67 *(19)*	28.86 *(97.73)*

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: III
Quick Attach: yes
Maximum Force Exerted Through Whole Range: 13104 lbs *(58.3 kN)*

i) Opening pressure of relief valve:	NA	
Sustained pressure at compensator cutoff:	2920 psi *(201 bar)*	
	Single outlet set	**Two outlet sets combined**
Pump delivery rate at minimum pressure and rated engine speed:	34.5 GPM *(130.6 l/min)*	48.8 GPM *(184.7 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	30.6 GPM *(115.8 l/min)*	45.1 GPM *(170.7 l/min)*
Delivery pressure:	2000 psi *(138 bar)*	2110 psi *(145 bar)*
Power:	35.7 HP *(26.6 kW)*	55.5 HP *(41.4 kW)*

THREE POINT HITCH PERFORMANCE

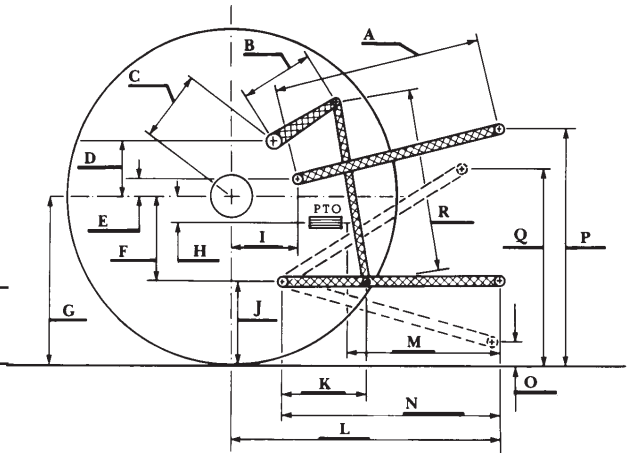
Observed Maximum Pressure psi. *(bar)*	2950 *(203)*
Location:	remote outlet
Hydraulic oil temperature: °F *(°C)*	147 *(64)*
Location:	hydraulic sump
Category:	III
Quick attach:	Yes

Category III (lift cylinders - 2x90 mm)
SAE Static Test—System pressure 2575 psi *(177 Bar)*

Hitch point distance to ground level in. *(mm)*	8.0 *(203)*	16.0 *(409)*	24.0 *(610)*	32.0 *(813)*	40.0 *(1016)*
Lift force on frame lb	14589	14463	14418	13995	12978
" " " " " " *(kN)*	*(64.9)*	*(64.3)*	*(64.1)*	*(62.3)*	*(57.7)*

ASAE Static Test—System pressure 2775 psi *(191 Bar)*

Hitch point distance to ground level in. *(mm)*	8.0 *(203)*	16.0 *(409)*	24.0 *(610)*	32.0 *(813)*	40.0 *(1016)*
Lift force on frame lb	15715	15580	15531	15076	13980
" " " " " " *(kN)*	*(69.9)*	*(69.3)*	*(69.1)*	*(67.1)*	*(62.2)*



HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	*mm*
A	30.8	*780*
B	18.6	*472*
C	26.2	*660*
D	24.4	*620*
E	11.3	*288*
F	13.8	*350*
G	35.6	*905*
H	4.8	*122*
I	22.7	*577*
J	21.9	*555*
K	28.8	*731*
L	55.3	*1405*
*L'	61.8	*1570*
M	25.4	*645*
N	44.0	*1117*
O	8.0	*203*
P	48.6	*1234*
Q	39.1	*993*
R	44.8	*1137*

*L' to Quick Attach ends

JOHN DEERE 9220 DIESEL

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