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## Test 1810: John Deere 9120 18 Speed

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# NEBRASKA OECD TRACTOR TEST 1810—SUMMARY 376

## JOHN DEERE 9120 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
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>					
<b>Rated Engine Speed—(PTO speed—1108 rpm)</b>					
244.57 (182.37)	2100	14.55 (55.09)	0.418 (0.254)	16.80 (3.31)	
<b>Standard Power Take-off Speed—(PTO speed—1003 rpm)</b>					
262.97 (196.10)	1900	14.42 (54.58)	0.385 (0.234)	18.24 (3.59)	
<b>Maximum Power (2 hours)</b>					
262.97 (196.10)	1900	14.42 (54.58)	0.385 (0.234)	18.24 (3.59)	

#### VARYING POWER AND FUEL CONSUMPTION

244.57 (182.37)	2100	14.55 (55.09)	0.418 (0.254)	16.80 (3.31)	Air temperature
213.31 (159.07)	2159	13.33 (42.46)	0.439 (0.267)	16.01 (3.15)	75°F(24°C)
161.10 (120.13)	2177	10.94 (41.40)	0.477 (0.290)	14.73 (2.90)	Relative humidity
107.21 (79.95)	2199	8.71 (32.99)	0.571 (0.347)	12.30 (2.42)	58%
54.67 (40.77)	2220	6.28 (23.77)	0.807 (0.491)	8.71 (1.72)	Barometer
1.13 (0.84)	2238	3.72 (14.07)	23.195 (14.109)	0.30 (0.06)	29.02" Hg(98.27 kPa)

Maximum Torque - 874 lb.-ft. (1185 Nm) at 1400 rpm

Maximum Torque Rise - 42.7%

Torque rise at 1702 engine rpm - 28%

#### 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)	Hp.hr/gal (kW.h/l)	Temp.°F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
<b>Maximum Power—7th Gear</b>									
226.02 (168.54)	16927 (75.30)	5.01 (8.06)	2098	2.56	0.450 (0.274)	15.59 (3.07)	202 (94)	81 (27)	28.84 (97.66)
<b>75% of Pull at Maximum Power—7th Gear</b>									
175.94 (131.20)	12678 (56.39)	5.20 (8.38)	2168	1.89	0.484 (0.295)	14.51 (2.86)	188 (87)	85 (29)	28.82 (97.60)
<b>50% of Pull at Maximum Power—7th Gear</b>									
119.49 (89.11)	8451 (37.59)	5.30 (8.53)	2193	1.22	0.553 (0.336)	12.70 (2.50)	183 (84)	85 (29)	28.80 (97.53)
<b>75% of Pull at Reduced Engine Speed—9th Gear</b>									
175.79 (131.08)	12672 (56.37)	5.20 (8.37)	1759	1.99	0.433 (0.263)	16.23 (3.20)	190 (88)	86 (30)	28.81 (97.56)
<b>50% of Pull at Reduced Engine Speed—9th Gear</b>									
119.35 (89.00)	8459 (37.63)	5.29 (8.52)	1778	1.22	0.478 (0.290)	14.71 (2.90)	179 (81)	85 (29)	28.79 (97.49)

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

**Dates of Test:** September 23 -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: 25.0 hours

**ENGINE: Make** John Deere Diesel **Type** six cylinder vertical with turbocharger and air to air aftercooler **Serial No.**\*RG6081H209014\* **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 4.56" x 5.06"(115.8 mm x 128.5 mm) **Compression ratio** 17.0 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 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:** 97.4-104.9 lb/h (44.2-47.6 kg/h) **High idle:** 2205 - 2255 rpm **Turbo boost:** nominal 27.6 - 30.5 psi (190 - 210 kPa) as measured 29.8 psi (206 kPa)

**CHASSIS: Type** four wheel drive with duals **Serial No.**\*RW9120P002038\* **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)	Consumption Hp.hr/gal (kW.h/l)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
1st Gear									
210.25 (156.78)	35182 (156.50)	2.24 (3.61)	2109	9.92	0.485 (0.295)	14.48 (2.85)	179 (82)	54 (12)	28.82 (97.60)
2nd Gear									
218.66 (163.06)	28471 (126.65)	2.88 (4.63)	2097	5.42	0.465 (0.283)	15.10 (2.97)	193 (89)	76 (24)	28.86 (97.73)
3rd Gear									
225.68 (168.29)	26251 (116.77)	3.22 (5.19)	2101	4.51	0.451 (0.274)	15.57 (3.07)	193 (89)	76 (24)	28.87 (97.77)
4th Gear									
225.27 (167.98)	23326 (103.76)	3.62 (5.83)	2098	3.97	0.453 (0.276)	15.49 (3.05)	199 (93)	83 (28)	28.84 (97.66)
5th Gear									
224.89 (167.70)	20977 (93.31)	4.02 (6.47)	2099	3.32	0.449 (0.273)	15.63 (3.08)	201 (94)	78 (26)	28.85 (97.70)
6th Gear									
222.71 (166.07)	18514 (82.35)	4.51 (7.26)	2099	2.66	0.456 (0.277)	15.41 (3.04)	201 (94)	80 (27)	28.84 (97.66)
7th Gear									
226.02 (168.54)	16927 (75.30)	5.01 (8.06)	2098	2.56	0.450 (0.274)	15.59 (3.07)	202 (94)	81 (27)	28.84 (97.66)
8th Gear									
222.29 (165.76)	14861 (66.10)	5.61 (9.03)	2098	2.18	0.454 (0.276)	15.46 (3.05)	197 (92)	74 (23)	28.87 (97.77)
9th Gear									
219.79 (163.90)	13304 (59.18)	6.20 (9.97)	2096	1.99	0.460 (0.280)	15.27 (3.01)	191 (88)	67 (19)	29.01 (98.24)
10th Gear									
216.18 (161.21)	11679 (51.95)	6.94 (11.17)	2098	1.70	0.466 (0.284)	15.06 (2.97)	192 (89)	68 (20)	29.00 (98.21)
11th Gear									
215.65 (160.81)	10502 (46.72)	7.70 (12.39)	2099	1.51	0.468 (0.284)	15.02 (2.96)	192 (89)	70 (21)	28.98 (98.14)
12th Gear									
215.43 (160.65)	9490 (42.21)	8.51 (13.70)	2097	1.31	0.467 (0.284)	15.03 (2.96)	192 (89)	72 (22)	28.96 (98.07)

**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** 35375 lb (16046 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 119°F (48°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 procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1810**, Nebraska Summary 376, 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	74.7
Transport speed - no load - 18th gear	74.5
Bystander in 18th gear	88.2

### TIRES, BALLAST AND WEIGHT

**Rear Tires** - No., size, ply & psi (kPa)

**Front Tires** - No., size, ply & psi (kPa)

**Height of Drawbar**

**Static Weight with operator** - Rear

- Front

- Total

### Tested Without Ballast

Four 620/70R46;\*\*\*;7(50)

Four 620/70R46;\*\*\*;11(75)

20.5 in (520 mm)

15290 lb (6935 kg)

20260 lb (9190 kg)

35550 lb (16125 kg)

**DRAWBAR PERFORMANCE**  
**(Unballasted at 1900 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									
210.46 (156.94)	35211 (156.62)	2.24 (3.61)	2109	9.92	0.485 (0.295)	14.48 (2.85)	180 (82)	54 (12)	28.82 (97.60)
2nd Gear									
227.74 (169.83)	33487 (148.96)	2.55 (4.10)	1901	7.68	0.442 (0.269)	15.88 (3.13)	183 (84)	54 (12)	28.82 (97.60)
3rd Gear									
230.23 (171.68)	30290 (134.74)	2.85 (4.59)	1901	6.83	0.436 (0.265)	16.11 (3.17)	199 (93)	77 (25)	28.85 (97.70)
4th Gear									
234.77 (175.07)	27124 (120.65)	3.25 (5.22)	1900	4.88	0.428 (0.260)	16.42 (3.23)	199 (93)	76 (24)	28.87 (97.77)
5th Gear									
236.49 (176.35)	24554 (109.22)	3.61 (5.81)	1906	4.24	0.426 (0.259)	16.49 (3.25)	200 (93)	84 (29)	28.84 (97.66)
6th Gear									
235.73 (175.78)	21725 (96.64)	4.07 (6.55)	1900	3.13	0.427 (0.259)	16.47 (3.24)	185 (85)	64 (18)	29.05 (98.37)
7th Gear									
237.41 (177.03)	19641 (87.37)	4.53 (7.29)	1904	2.75	0.423 (0.258)	16.59 (3.27)	190 (88)	59 (15)	29.09 (98.51)
8th Gear									
236.63 (176.46)	17526 (77.96)	5.06 (8.15)	1899	2.47	0.425 (0.258)	16.53 (3.26)	190 (88)	62 (17)	29.08 (98.48)
9th Gear									
233.90 (174.42)	15664 (69.68)	5.60 (9.01)	1901	2.28	0.431 (0.262)	16.29 (3.21)	188 (86)	56 (13)	29.09 (98.51)
10th Gear									
232.59 (173.44)	13939 (62.00)	6.26 (10.07)	1898	1.99	0.432 (0.263)	16.26 (3.20)	195 (90)	68 (20)	29.00 (98.21)
11th Gear									
231.90 (172.93)	12486 (55.54)	6.97 (11.21)	1903	1.89	0.433 (0.263)	16.22 (3.20)	195 (90)	69 (21)	28.98 (98.14)
12th Gear									
232.63 (173.47)	11326 (50.38)	7.70 (12.40)	1902	1.61	0.434 (0.264)	16.20 (3.19)	195 (90)	71 (22)	28.97 (98.10)
13th Gear									
224.88 (167.69)	9822 (43.69)	8.59 (13.82)	1899	1.41	0.448 (0.272)	15.69 (3.09)	195 (90)	73 (23)	28.96 (98.07)

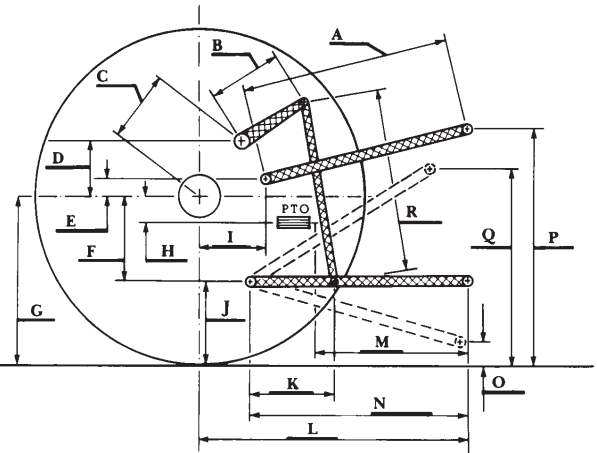
## THREE POINT HITCH PERFORMANCE (OECD Static Test)

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:	2930 psi (202 bar)
	<b>Single outlet set      Two outlet sets combined</b>
Pump delivery rate at minimum pressure and rated engine speed:	34.0 GPM (128.7 l/min) 48.2 GPM (182.5 l/min)
iii) Pump delivery rate at maximum hydraulic power:	30.8 GPM (116.6 l/min) 44.3 GPM (167.7 l/min)
Delivery pressure:	2005 psi (138 bar) 2150 psi (148 bar)
Power:	36.0 HP (26.8 kW) 55.6 HP (41.5 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

#### SAE Static Test—System pressure 2575 psi (177 Bar)

Hitchpoint 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)

Hitchpoint 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 9120 DIESEL**

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Institute of Agriculture and Natural Resources  
University of Nebraska-Lincoln  
Darrell Nelson, Dean and Director