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January 2000

Test 1773: John Deere 8210 Diesel 16-Speed

Nebraska Tractor Test Lab

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NEBRASKA OECD TRACTOR TEST 1773-SUMMARY 308

JOHN DEERE 8210 DIESEL

16 SPEED

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

Dates of Test: April 19-May 16, 2000

Manufacturer: John Deere Waterloo Works, P.O.
Box 270, Waterloo Ia, USA 50704

FUEL, OIL and TIME: Fuel No. 2 Diesel
Specific gravity converted to 60°/60°F (15°/15°C)
0.8487 **Fuel weight** 7.067 lbs/gal (0.847 kg/l) **Oil**
SAE 15W-40 **API service classification** CF-4
Transmission and hydraulic lubricant John
Deere Hy-Gard fluid **Front axle lubricant** SAE
85W-140 **API GL-5** **Total time engine was**
operated: 27.0 hours

ENGINE: Make John Deere Diesel **Type** six
cylinder vertical with turbocharger and air to air
aftercooler **Serial No.** *RG6081H098409*
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 prestrainer **Fuel cooler** radiator for pump
return fuel **Muffler** vertical **Cooling medium**
temperature control 2 thermostats and variable
speed fan

ENGINE OPERATING PARAMETERS: **Fuel**
rate: 73.0 - 80.5 lb/h (33.1 - 36.5 kg/h) **High idle:**
2275 - 2325 rpm **Turbo boost:** nominal 16.1 - 20.5
psi (111 - 141 kPa) as measured 18.7 psi (129 kPa)

CHASSIS: **Type** front wheel assist **Serial**
No. *RW8210P001510* **Tread width** rear 60.0"
(1524 mm) to 130.6 (3318 mm) front 60.0" (1524
mm) to 88.0" (2235 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 1.38 (2.22) second
1.76 (2.83) third 2.24 (3.61) fourth 2.86 (4.61) fifth
3.47 (5.58) sixth 3.91 (6.29) seventh 4.43 (7.13)
eighth 5.00 (8.04) ninth 5.64 (9.07) tenth 6.36 (10.23)
eleventh 7.20 (11.59) twelfth 8.12 (13.07) thirteenth
10.34 (16.64) fourteenth 13.20 (21.25) fifteenth
16.81 (27.05) sixteenth 23.42 (37.70) @2400 engine
rpm, reverse 1.20 (1.93), 3.03 (4.87), 3.72 (5.99),
6.56 (10.55) @1600 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** 19350 lb (8777 kg)

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)					
187.29 (139.66)	2200	10.73 (40.63)	0.405 (0.246)	17.45 (3.44)	
Maximum Power (2 hours)					
214.65 (160.07)	2000	11.47 (43.41)	0.378 (0.230)	18.72 (3.69)	

VARYING POWER AND FUEL CONSUMPTION

187.29 (139.66)	2200	10.73 (40.63)	0.405 (0.246)	17.45 (3.44)	Air temperature
162.80 (121.40)	2253	9.81 (37.12)	0.426 (0.259)	16.60 (3.27)	78°F (26°C)
122.78 (91.56)	2264	7.98 (30.21)	0.459 (0.279)	15.38 (3.03)	Relative humidity
82.26 (61.34)	2274	6.24 (23.62)	0.536 (0.326)	13.18 (2.60)	39%
41.36 (30.85)	2284	4.46 (16.87)	0.762 (0.463)	9.28 (1.83)	Barometer
1.00 (0.75)	2291	2.76 (10.45)	19.489 (11.855)	0.36 (0.07)	28.55" Hg (96.68 kPa)

Maximum Torque - 667 lb.-ft. (905 Nm) at 1100 rpm

Maximum Torque Rise -49.4%

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 7th Gear									
165.18 (123.18)	14419 (64.14)	4.30 (6.91)	2199	5.22	0.456 (0.277)	15.50 (3.05)	195 (91)	65 (18)	28.95 (98.04)
75% of Pull at Maximum Power 7th Gear									
129.15 (96.31)	10802 (48.05)	4.48 (7.22)	2258	3.53	0.499 (0.303)	14.17 (2.79)	190 (88)	73 (23)	28.96 (98.07)
50% of Pull at Maximum Power 7th Gear									
87.78 (65.45)	7211 (32.08)	4.56 (7.35)	2268	2.53	0.571 (0.347)	12.37 (2.44)	187 (86)	72 (22)	28.95 (98.04)
75% of Pull at Reduced Engine Speed 9th Gear									
129.18 (96.33)	10817 (48.11)	4.48 (7.21)	1773	3.80	0.430 (0.262)	16.43 (3.24)	191 (88)	72 (22)	28.96 (98.07)
50% of Pull at Reduced Engine Speed 9th Gear									
87.62 (65.34)	7211 (32.08)	4.56 (7.33)	1779	2.47	0.480 (0.292)	14.74 (2.90)	187 (86)	71 (22)	28.95 (98.04)

DRAWBAR PERFORMANCE
UNBALLASTED - FRONT DRIVE ENGAGED
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 cool- ing med	Air dry bulb °C	Barom. inch Hg (kPa)
4th Gear									
134.64 (100.40)	19515 (86.81)	2.59 (4.16)	2252	13.92	0.529 (0.322)	13.37 (2.63)	188 (87)	51 (11)	28.93 (97.97)
5th Gear									
159.40 (118.86)	18255 (81.20)	3.27 (5.27)	2229	9.06	0.476 (0.290)	14.84 (2.92)	190 (88)	55 (13)	28.93 (97.97)
6th Gear									
171.14 (127.62)	17973 (79.95)	3.57 (5.75)	2140	8.49	0.454 (0.276)	15.57 (3.07)	193 (89)	58 (14)	28.94 (98.00)
7th Gear									
182.60 (136.17)	17785 (79.11)	3.85 (6.20)	2041	8.65	0.440 (0.267)	16.07 (3.17)	194 (90)	63 (17)	28.94 (98.00)
8th Gear									
187.77 (140.02)	16182 (71.98)	4.35 (7.00)	2001	6.59	0.428 (0.261)	16.50 (3.25)	196 (91)	63 (17)	28.95 (98.04)
9th Gear									
189.32 (141.18)	14286 (63.55)	4.97 (8.00)	1999	5.39	0.424 (0.258)	16.66 (3.28)	198 (92)	67 (19)	28.96 (98.07)
10th Gear									
189.03 (140.96)	12527 (55.72)	5.66 (9.11)	2000	4.51	0.425 (0.259)	16.62 (3.27)	198 (92)	70 (21)	28.96 (98.07)
11th Gear									
187.79 (140.03)	10916 (48.56)	6.45 (10.38)	1998	3.80	0.430 (0.261)	16.44 (3.24)	199 (93)	72 (22)	28.96 (98.07)
12th Gear									
186.86 (139.34)	9561 (42.53)	7.33 (11.80)	2002	3.44	0.431 (0.262)	16.41 (3.23)	197 (92)	74 (23)	28.96 (98.07)
13th Gear									
185.17 (138.08)	7403 (32.93)	9.38 (15.10)	1998	2.62	0.436 (0.265)	16.21 (3.19)	202 (94)	74 (23)	28.96 (98.07)

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Engaged dB(A)	Disengaged dB(A)
At no load in 7th gear	76.7	76.6
Transport speed - no load - 16th gear		78.0
Bystander in 16th Gear		89.2

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 113°F(45°C). The pull in 3rd gear(ballasted 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. **1773**, Nebraska Summary 308, July 7, 2000.

Brent T. Sampson
Test Engineer

L. L. Bashford
M. F. Kocher
R. D. Grisso, Jr.
Board of Tractor Test Engineers

TIRES, BALLAST AND WEIGHT

	With Ballast	Without Ballast
Rear Tires - No., size, ply & psi(kPa)	Four 18.4R46;**,12(85)	Two 18.4R46;**,18(125)
Ballast - Duals (total)	1760 lb (798 kg)	None
- Cast Iron (total)	2280 lb (1034 kg)	None
Front Tires - No., size, ply & psi(kPa)	Two 14.9R34;***,30(205)	Two 14.9R34;***,24(165)
Ballast - Liquid (total)	None	None
- Cast Iron (total)	950 lb (431 kg)	None
Height of Drawbar	22.0 in (560 mm)	21.0 in(535 mm)
Static Weight with operator - Rear	15250 lb (6917 kg)	11555 lb(5241 kg)
- Front	9255 lb (4198 kg)	7960 lb(3611 kg)
- Total	24505 lb(11115 kg)	19515 lb(8852 kg)

DRAWBAR PERFORMANCE
BALLASTED - FRONT DRIVE ENGAGED(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)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)	
3rd Gear									
135.84 (101.30)	24988 (111.15)	2.04 (3.28)	2253	12.78	0.526 (0.320)	13.43 (2.65)	186 (86)	65 (18)	28.86 (97.73)
4th Gear									
160.34 (119.57)	23517 (104.61)	2.56 (4.12)	2138	9.65	0.488 (0.297)	14.47 (2.85)	192 (89)	68 (20)	28.87 (97.77)
5th Gear									
178.59 (133.17)	22856 (101.67)	2.93 (4.72)	2001	8.79	0.452 (0.275)	15.63 (3.08)	198 (92)	68 (20)	28.88 (97.80)
6th Gear									
187.44 (139.77)	20554 (91.43)	3.42 (5.50)	2000	5.55	0.431 (0.262)	16.41 (3.23)	195 (90)	72 (22)	28.87 (97.77)
7th Gear									
191.27 (142.63)	18289 (81.35)	3.92 (6.31)	2002	4.50	0.422 (0.257)	16.74 (3.30)	203 (95)	72 (22)	28.87 (97.77)
8th Gear									
189.83 (141.55)	15967 (71.02)	4.46 (7.17)	2000	3.62	0.425 (0.259)	16.61 (3.27)	198 (92)	73 (23)	28.87 (97.77)
9th Gear									
190.35 (141.94)	14124 (62.82)	5.05 (8.13)	1999	3.26	0.425 (0.258)	16.64 (3.28)	200 (93)	73 (23)	28.87 (97.77)
10th Gear									
189.81 (141.54)	12439 (55.33)	5.72 (9.21)	1997	2.80	0.427 (0.259)	16.57 (3.26)	200 (93)	74 (23)	28.87 (97.77)
11th Gear									
187.98 (140.18)	10838 (48.21)	6.50 (10.47)	1998	2.25	0.431 (0.262)	16.39 (3.23)	201 (94)	74 (23)	28.87 (97.77)
12th Gear									
186.05 (138.74)	9422 (41.91)	7.41 (11.92)	2010	2.07	0.435 (0.265)	16.25 (3.20)	197 (91)	75 (24)	28.89 (97.83)
13th Gear									
183.05 (136.50)	7294 (32.45)	9.41 (15.15)	1998	1.51	0.440 (0.267)	16.07 (3.17)	201 (94)	76 (24)	28.91 (97.90)

DRAWBAR PERFORMANCE
BALLASTED - FRONT DRIVE ENGAGED(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)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
3rd Gear									
133.94 (99.88)	24873 (110.64)	2.02 (3.25)	2253	13.65	0.530 (0.322)	13.33 (2.63)	185 (85)	65 (18)	28.86 (97.73)
4th Gear									
157.78 (117.65)	21566 (95.93)	2.74 (4.42)	2201	5.98	0.481 (0.293)	14.69 (2.89)	191 (88)	67 (19)	28.86 (97.73)
5th Gear									
162.23 (120.97)	17993 (80.03)	3.38 (5.44)	2204	4.33	0.469 (0.285)	15.07 (2.97)	197 (92)	69 (21)	28.88 (97.80)
6th Gear									
167.06 (124.58)	16330 (72.64)	3.84 (6.17)	2199	3.62	0.456 (0.277)	15.50 (3.05)	192 (89)	71 (22)	28.88 (97.80)
7th Gear									
167.39 (124.82)	14376 (63.95)	4.37 (7.03)	2201	3.26	0.455 (0.276)	15.55 (3.06)	202 (94)	73 (23)	28.87 (97.77)
8th Gear									
165.83 (123.66)	12556 (55.85)	4.95 (7.97)	2201	2.62	0.459 (0.279)	15.40 (3.03)	195 (90)	73 (23)	28.87 (97.77)
9th Gear									
164.12 (122.39)	10979 (48.83)	5.61 (9.02)	2202	2.44	0.464 (0.282)	15.25 (3.00)	197 (92)	73 (23)	28.87 (97.77)
10th Gear									
163.38 (121.83)	9677 (43.05)	6.33 (10.19)	2196	2.16	0.464 (0.283)	15.22 (3.00)	194 (90)	74 (23)	28.87 (97.77)
11th Gear									
160.48 (119.67)	8350 (37.14)	7.21 (11.60)	2202	1.88	0.474 (0.288)	14.90 (2.94)	200 (93)	74 (23)	28.87 (97.77)
12th Gear									
158.24 (118.00)	7290 (32.43)	8.14 (13.10)	2200	1.61	0.481 (0.292)	14.70 (2.90)	195 (91)	75 (24)	28.87 (97.77)

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: III

Quick Attach: Yes

Maximum Force Exerted Through Whole Range:

i) Opening pressure of relief valve:

Sustained pressure at compensator cutoff:

ii) Pump delivery rate at minimum pressure and rated engine speed:

iii) Pump delivery rate at maximum

hydraulic power:

Delivery pressure:

Power:

ii) Pump delivery rate at minimum pressure and rated engine speed:

iii) Pump delivery rate at maximum

hydraulic power:

Delivery pressure:

Power:

lift cylinders

1x80 mm & 1x90 mm

9617 lbs (42.8 kN)

NA

2920 psi (201 bar)

two outlet sets combined

35.1 GPM(132.9 l/min)

lift cylinders

1x90 & 1x100 mm

13622 lbs (60.6 kN)

NA

High flow option

2890 psi (199 bar)

single outlet set

31.8 GPM(120.4 l/min)

30.6 GPM(115.8 l/min)

30.4 GPM(115.1 l/min)

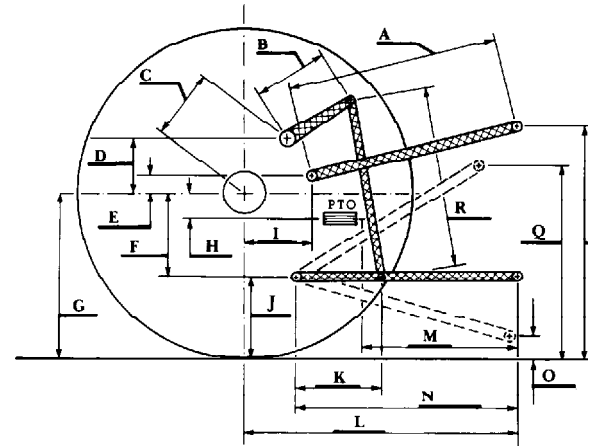
28.5 GPM(107.9 l/min)

2250 psi (155 bar)

2150 psi (148 bar)

39.9 HP (29.8 kW)

35.7 HP (26.7 kW)



THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi.(bar)

2920(201)

Location:

remote outlet

Hydraulic oil temperature: °F(°C)

150(65)

Location:

pump inlet

Category:

III

Quick attach:

yes

SAE Static Test System pressure 2640 psi (182 Bar)
with lift cylinders (1) 80 mm and (1) 90 mm

Hitch point distance to ground level in.(mm) 8.0(203) 16.0(406) 24.0(610) 32.0(813) 40.0(1016)

Lift force on frame lb 10967 10611 10647 10440 9599

" " " " " " (kN) (48.8) (47.2) (47.4) (46.4) (42.7)

with lift cylinders (1) 90 mm and (1) 100 mm

Hitch point distance to ground level in.(mm) 8.0(203) 16.0(406) 24.0(610) 32.0(813) 40.0(1016)

Lift force on frame lb 15413 14990 14990 14621 13689

" " " " " " (kN) (68.6) (66.7) (66.7) (65.0) (60.9)

ASAE Static Test System pressure 2900 psi (200 Bar)
with lift cylinders (1) 80 mm and (1) 90 mm

Hitch point distance to ground level in.(mm) 8.0(203) 16.0(406) 24.0(610) 32.0(813) 40.0(1016)

Lift force on frame lb 12020 11694 11733 11474 10518

" " " " " " (kN) (53.5) (52.0) (52.2) (51.0) (46.8)

with lift cylinders (1) 90 mm and (1) 100 mm

Hitch point distance to ground level in.(mm) 8.0(203) 16.0(406) 24.0(610) 32.0(813) 40.0(1016)

Lift force on frame lb 16922 16458 16458 16132 15011

" " " " " " (kN) (75.3) (73.2) (73.2) (71.8) (66.8)

HITCH DIMENSIONS AS TESTED NO LOAD

	inch	mm
A	28.3	718
B	19.5	495
C	21.7	550
D	19.5	495
E	4.8	123
F	13.8	350
G	35.6	905
H	7.8	197
I	20.3	515
J	21.8	555
K	28.2	716
L	48.9	1242
*L'	52.4	1331
M	22.0	558
N	38.1	967
O	9.0	229
P	43.8	1114
Q	40.1	1019
R	41.5	1054

*L' to Quick Attach ends



JOHN DEERE 8210 DIESEL

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