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## Test 1744: John Deere 8100T Diesel 16-Speed

Nebraska Tractor Test Lab

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# NEBRASKA OECD TRACTOR TEST 1744—SUMMARY 260

## JOHN DEERE 8100T DIESEL

### 16 SPEED

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

**Dates of Test:** April 15 - 28, 1998

**Manufacturer:** John Deere Tractor Works, P.O. Box 270, Waterloo, Iowa 50704

#### 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—1007 rpm)					
162.10 (120.88)	2200	9.78 (37.02)	0.426 (0.259)	16.57 (3.27)	
Maximum Power (2 hours)					
178.82 (133.34)	2001	9.96 (37.69)	0.393 (0.239)	17.96 (3.54)	
VARYING POWER AND FUEL CONSUMPTION					
162.10 (120.88)	2200	9.78 (37.02)	0.426 (0.259)	16.57 (3.27)	Air temperature
141.26 (105.33)	2257	8.93 (33.81)	0.446 (0.271)	15.81 (3.12)	71°F (22°C)
106.48 (79.40)	2267	7.44 (28.18)	0.493 (0.300)	14.30 (2.82)	Relative humidity
71.49 (53.31)	2276	5.78 (21.90)	0.571 (0.347)	12.36 (2.43)	54%
35.83 (26.72)	2286	4.25 (16.10)	0.837 (0.509)	8.42 (1.66)	Barometer
1.00 (0.75)	2295	2.76 (10.47)	19.489 (11.855)	0.36 (0.07)	28.63"Hg (96.95 kPa)

Maximum Torque 568 lb.-ft. (770 Nm) at 1051 rpm  
Maximum Torque Rise 46.8%  
Torque rise at 1800 engine rpm 30%

#### DRAWBAR PERFORMANCE

##### 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									
138.47 (103.25)	12686 (56.43)	4.09 (6.59)	2199	2.47	0.495 (0.301)	14.25 (2.81)	188 (87)	68 (20)	29.09 (98.51)
75% of Pull at Maximum Power—8th Gear									
107.30 (80.02)	9455 (42.06)	4.26 (6.85)	2261	1.39	0.549 (0.334)	12.85 (2.53)	189 (87)	73 (23)	29.05 (98.37)
50% of Pull at Maximum Power—8th Gear									
72.19 (53.83)	6301 (28.03)	4.30 (6.91)	2268	0.84	0.651 (0.396)	10.84 (2.14)	188 (86)	73 (23)	29.04 (98.34)
75% of Pull at Reduced Engine Speed—10th Gear									
107.25 (79.97)	9429 (41.94)	4.27 (6.86)	1780	1.23	0.470 (0.286)	14.99 (2.95)	190 (88)	73 (23)	29.05 (98.37)
50% of Pull at Reduced Engine Speed—10th Gear									
72.18 (53.83)	6300 (28.02)	4.30 (6.91)	1782	0.84	0.544 (0.331)	12.97 (2.56)	187 (86)	73 (23)	29.04 (98.34)

**FUEL OIL and TIME:** Fuel No. 2 Diesel Cetane No. 50.6 Specific gravity converted to 60°/60° F (15°/15°C) 0.8471 Fuel weight 7.053 lbs/gal (0.845 kg/l) Oil SAE 15W-40 API service classification CD, CE, CF-4 Transmission and hydraulic lubricant John Deere Hy-Gard fluid Total time engine was operated 22.0 hours.

**ENGINE:** Make John Deere Diesel Type six cylinder vertical with turbocharger and air to air intercooler Serial No. \*RG6081H039776\* Crankshaft lengthwise Rated engine speed 2200 Bore and stroke (as specified) 4.56" × 5.06" (115.8 mm × 128.5 mm) Compression ratio 16.5 to 1 Displacement 496 cu in (8132 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 return fuel Muffler vertical Cooling medium temperature control two thermostats and variable speed fan

**ENGINE OPERATING PARAMETERS:** Fuel rate: 65.0-72.5 lb/h (29.5-32.9 kg/h) High idle: 2275-2325 rpm Turbo boost nominal 14.2-18.6 psi (98-128 kPa) as measured 17.5 psi (121 kPa)

**CHASSIS:** Type Tracklayer-rubber tracked Serial No. \*RW8100T902006\* Tread width 60.0" (1524 mm) to 88.0" (2235 mm) Length of track on ground 89.0" (2260 mm) Hydraulic control system direct engine drive Transmission selective gear fixed ratio with full range operator controlled powershift Nominal travel speeds mph (km/h) first 1.16 (1.87) second 1.49 (2.39) third 1.89 (3.04) fourth 2.41 (3.88) fifth 2.92 (4.70) sixth 3.30 (5.31) seventh 3.73 (6.01) eighth 4.21 (6.78) ninth 4.75 (7.65) tenth 5.36 (8.63) eleventh 6.07 (9.77) twelfth 6.85 (11.02) thirteenth 8.71 (14.02) fourteenth 11.13 (17.91) fifteenth 14.17 (22.80) sixteenth 18.10 (29.13) reverse 1.01 (1.63), 2.55 (4.10), 2.88 (4.63), 5.53 (8.90) — 1600 engine rpm Clutch multiple wet disc hydraulically actuated by foot pedal Brakes wet multiple disc hydraulically actuated by foot pedal Steering electro-hydraulic differential steering controlled by steering wheel Power take-off 1000 rpm at 2180 engine rpm Unladen tractor mass 24470 lb (11100 kg)

# **DRAWBAR PERFORMANCE AT 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)
105.59 (78.74)	24040 (106.93)	1.65 (2.65)	2257	14.78	3rd Gear 0.591 (0.359)	11.94 (2.35)	185 (85)	52 (11)	29.13 (98.65)
127.78 (95.28)	22265 (99.04)	2.15 (3.46)	2201	10.57	4th Gear 0.536 (0.326)	13.15 (2.59)	187 (86)	57 (14)	29.13 (98.65)
136.31 (104.57)	18616 (82.81)	2.74 (4.42)	2202	5.99	5th Gear 0.503 (0.306)	14.02 (2.76)	188 (86)	62 (17)	29.12 (98.61)
138.24 (103.09)	16489 (73.35)	3.14 (5.06)	2200	4.26	6th Gear 0.497 (0.302)	14.19 (2.79)	188 (86)	65 (18)	29.10 (98.54)
138.81 (103.51)	14444 (64.25)	3.60 (5.80)	2200	3.22	7th Gear 0.492 (0.299)	14.33 (2.82)	188 (87)	67 (19)	29.09 (98.51)
138.47 (103.25)	12686 (56.43)	4.09 (6.59)	2199	2.39	8th Gear 0.495 (0.301)	14.25 (2.81)	188 (87)	68 (20)	29.09 (98.51)
135.74 (101.22)	10954 (48.72)	4.65 (7.48)	2197	1.85	9th Gear 0.504 (0.307)	13.98 (2.75)	190 (88)	69 (21)	29.09 (98.51)
133.75 (99.74)	9516 (42.33)	5.27 (8.48)	2200	1.39	10th Gear 0.510 (0.310)	13.84 (2.73)	189 (87)	69 (21)	29.09 (98.51)
129.03 (96.22)	8078 (35.93)	5.99 (9.64)	2200	1.00	11th Gear 0.529 (0.322)	13.32 (2.62)	190 (88)	70 (21)	29.09 (98.51)
126.50 (94.33)	7016 (31.21)	6.76 (10.88)	2198	0.92	12th Gear 0.539 (0.328)	13.08 (2.58)	190 (88)	73 (23)	29.07 (98.44)
120.10 (89.56)	5211 (23.18)	8.64 (13.91)	2202	0.60	13th Gear 0.566 (0.344)	12.46 (2.45)	192 (89)	73 (23)	29.07 (98.44)

## **TRACTOR SOUND LEVEL WITH CAB**

	<b>dB(A)</b>
At 75% load in 9th Gear	76.0
Bystander in 16th gear	89.5

## **TRACKS, BALLAST AND WEIGHT**

**Track width**  
**Ballast**—Cast iron—Front  
**Height of Drawbar**  
**Static Weight with Operator**

## **Tested Without Ballast**

16.0 in (405 mm)  
None  
18.0 in (445 mm)  
24635 lb (11174 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 return was maintained at 164°F (73°C). The performance results on this summary were taken from OECD tests conducted under the Code II Test Code procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1744**, Summary 260, May 26, 1998.

LEONARD L. BASHFORD  
Director

M. F. KOCHER  
R. D. GRISSO  
G. J. HOFFMAN  
Board of Tractor Test Engineers

**DRAWBAR PERFORMANCE AT 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								
104.94 (78.25)	23768 (105.73)	1.66 (2.66)	2258	14.43	0.589 (0.358)	11.98 (2.36)	186 (85)	54 (12) (98.65)
4th Gear								
126.76 (94.52)	22512 (100.14)	2.11 (3.40)	2191	11.89	0.542 (0.330)	13.02 (2.56)	188 (87)	60 (16) (98.65)
5th Gear								
139.79 (104.25)	20762 (92.35)	2.53 (4.06)	2091	8.74	0.496 (0.302)	14.22 (2.80)	189 (87)	64 (18) (98.58)
6th Gear								
146.39 (109.17)	19875 (88.41)	2.76 (4.45)	2003	7.73	0.477 (0.290)	14.78 (2.91)	191 (88)	67 (19) (98.51)
7th Gear								
150.54 (112.26)	17599 (78.28)	3.21 (5.16)	1999	5.28	0.466 (0.283)	15.14 (2.98)	188 (87)	67 (19) (98.51)
8th Gear								
152.03 (113.37)	15521 (69.04)	3.67 (5.91)	2000	3.67	0.461 (0.280)	15.32 (3.02)	191 (88)	69 (21) (98.51)
9th Gear								
151.36 (112.87)	13557 (60.30)	4.19 (6.74)	2000	2.77	0.460 (0.280)	15.33 (3.02)	192 (89)	69 (21) (98.51)
10th Gear								
151.16 (112.72)	11920 (53.02)	4.76 (7.63)	1999	2.16	0.460 (0.280)	15.33 (3.02)	193 (89)	69 (21) (98.51)
11th Gear								
147.85 (110.25)	10234 (45.52)	5.42 (8.72)	2001	1.62	0.472 (0.287)	14.94 (2.94)	192 (89)	71 (22) (98.48)
12th Gear								
145.52 (108.52)	8905 (39.61)	6.13 (9.86)	2002	1.23	0.478 (0.291)	14.75 (2.91)	194 (90)	73 (23) (98.44)
13th Gear								
139.88 (104.31)	6684 (29.73)	7.85 (12.63)	2005	0.84	0.498 (0.303)	14.17 (2.79)	196 (91)	73 (23) (98.44)

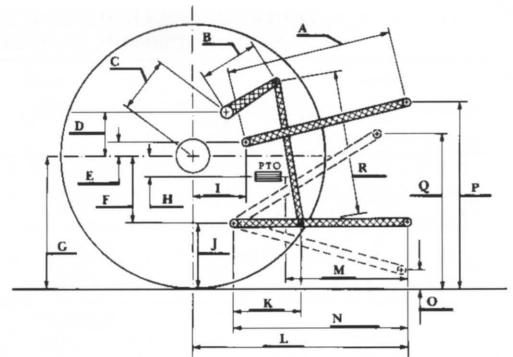
### THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: III

Quick Attach: yes

Maximum Force Exerted Through Whole Range: 15749 lbs (70.1 kN)

- i) Opening pressure of relief valve: NA
- Sustained pressure pump stalled: 2900 psi (200 bar)
- ii) Pump delivery rate at minimum pressure: 31.1 GPM (117.7 l/min)
- iii) Pump delivery rate at maximum
  - hydraulic power: 29.4 GPM (111.3 l/min)
  - Delivery pressure: 2570 psi (177 bar)
  - Power: 44.1 HP (32.9 kW)



HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	mm
A	28.9	733
B	19.5	495
C	22.9	582
D	22.2	565
E	10.2	260
F	11.0	280
G	33.6	853
H	3.2	81
I	15.6	395
J	22.6	573
K	28.3	718
L	48.5	1231
*L'	52.0	1320
M	25.5	647
N	41.6	1056
O	8.0	203
P	40.8	1037
Q	39.1	993
R	42.9	1089

\*L' to end of Quick Attach

### THREE POINT HITCH PERFORMANCE (SAE Static Test)

Observed Maximum Pressure psi (bar)	2890 (199)
Location	lift cylinder
Hydraulic oil Temperature °F (°C)	148 (64)
Location	hydraulic sump
Category	III
Quick Attach	yes

#### As per current SAE test procedures

Hitch point distance					
to ground level in. (mm)	8.0 (203)	16.1 (408)	24.1 (613)	32.1 (814)	40.0 (1016)
Lift force on frame lb.	15904	15964	16354	16348	15410
" " " " (kN)	(70.7)	(71.0)	(72.8)	(72.7)	(68.6)

#### As per current ASAE test procedures

Hitch point distance					
to ground level in. (mm)	8.0 (203)	16.1 (408)	24.1 (613)	32.1 (814)	40.0 (1016)
Lift force on frame lb.	17671	17634	18059	18053	16981
" " " " (kN)	(78.6)	(78.4)	(80.3)	(80.3)	(75.5)



JOHN DEERE 8100T DIESEL

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University of Nebraska—Lincoln  
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