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Test 1799: John Deere 8320T Diesel 16-Speed

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NEBRASKA OECD TRACTOR TEST 1799-SUMMARY 365

JOHN DEERE 8320T DIESEL

16 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 1009 rpm)					
217.63 (162.29)	2200	12.86 (48.69)	0.416 (0.253)	16.92 (3.33)	
Maximum Power (2 hours)					
246.65 (183.93)	2000	13.41 (50.75)	0.383 (0.233)	18.40 (3.62)	
VARYING POWER AND FUEL CONSUMPTION					
217.63 (162.29)	2200	12.86 (48.69)	0.416 (0.253)	16.92 (3.33)	Air temperature
189.67 (141.44)	2257	11.63 (44.01)	0.432 (0.263)	16.32 (3.21)	75°F (24°C)
142.93 (106.58)	2266	9.50 (35.95)	0.468 (0.285)	15.05 (2.97)	Relative humidity
95.91 (71.52)	2277	7.32 (27.73)	0.538 (0.327)	13.09 (2.58)	40%
47.89 (35.71)	2286	5.07 (19.18)	0.745 (0.453)	9.45 (1.86)	Barometer
1.00 (0.75)	2296	3.15 (11.93)	22.146 (13.471)	0.32 (0.06)	28.95" Hg (98.04 kPa)

Maximum Torque - 780 lb.-ft. (1058 Nm) at 1405 rpm

Maximum Torque Rise - 50.2%

Torque rise at 1802 engine rpm - 33%

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 cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
Maximum Power 10th Gear									
184.86 (137.85)	13229 (58.85)	5.24 (8.43)	2199	2.00	0.486 (0.296)	14.48 (2.85)	187 (86)	65 (18)	29.17 (98.78)
75% of Pull at Maximum Power 10th Gear									
143.35 (106.89)	9900 (44.04)	5.43 (8.74)	2261	1.22	0.536 (0.326)	13.14 (2.59)	186 (85)	69 (21)	29.15 (98.71)
50% of Pull at Maximum Power 10th Gear									
96.43 (71.91)	6596 (29.34)	5.48 (8.82)	2272	0.75	0.624 (0.380)	11.28 (2.22)	182 (83)	70 (21)	29.15 (98.71)
75% of Pull at Reduced Engine Speed 12th Gear									
143.50 (107.01)	9906 (44.06)	5.43 (8.74)	1689	1.30	0.450 (0.274)	15.66 (3.09)	186 (85)	69 (21)	29.15 (98.71)
50% of Pull at Reduced Engine Speed 12th Gear									
96.66 (72.08)	6597 (29.34)	5.49 (8.84)	1700	0.81	0.504 (0.307)	13.97 (2.75)	183 (84)	71 (22)	29.15 (98.71)

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

Dates of Test: May 16 - 31, 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) 0.8457 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 Total time engine was operated: 21.5 hours

ENGINE: Make John Deere Diesel **Type** six cylinder vertical with turbocharger and air to air aftercooler **Serial No.** *RG6081H202236* **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 inlet fuel **Muffler** vertical **Cooling medium temperature control** 2 thermostats and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: 84.8 - 92.3 lb/h (38.5 - 41.9 kg/h) **High idle:** 2275 - 2325 rpm **Turbo boost:** nominal 23.2 - 26.1 psi (160 - 180 kPa) as measured 25.1 psi (173 kPa)

CHASSIS: Type tracklayer-rubber tracked **Serial No.** *RW8320T901132* **Track width** 88.0" (2235 mm) to 119.5 (3035 mm) **Length of track on ground** 89.0" (2261 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 0.96 (1.55) second 1.29 (2.08) third 1.72 (2.77) fourth 2.31 (3.71) fifth 2.58 (4.16) sixth 2.99 (4.80) seventh 3.46 (5.57) eighth 3.99 (6.42) ninth 4.61 (7.42) tenth 5.31 (8.55) eleventh 6.18 (9.94) twelfth 7.12 (11.46) thirteenth 8.39 (13.50) fourteenth 11.24 (18.09) fifteenth 14.96 (24.08) sixteenth 19.11 (30.78) reverse 0.90 (1.45), 2.42 (3.89), 3.04 (4.89), 5.35 (8.61) @1500 engine rpm **Clutch** wet multiple disc hydraulically actuated by foot pedal **Brakes** wet multiple disc hydraulically actuated foot pedal **Steering** electro-hydraulic differential steering controlled by steering wheel **Power take-off** 1000 rpm at 2179 engine rpm **Unladen tractor mass** 26735 lb (12127 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)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp.°F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
5th Gear									
162.39 (121.09)	26656 (118.57)	2.28 (3.68)	2254	14.28	0.553 (0.337)	12.73 (2.51)	180 (82)	50 (10)	29.19 (98.85)
6th Gear									
176.96 (131.96)	24154 (107.44)	2.75 (4.42)	2200	8.35	0.507 (0.308)	13.91 (2.74)	182 (83)	52 (11)	29.19 (98.85)
7th Gear									
180.93 (134.92)	20645 (91.83)	3.29 (5.29)	2197	5.57	0.497 (0.302)	14.18 (2.79)	184 (84)	58 (14)	29.19 (98.85)
8th Gear									
184.50 (137.58)	17904 (79.64)	3.86 (6.22)	2199	3.75	0.485 (0.295)	14.51 (2.86)	186 (85)	61 (16)	29.18 (98.82)
9th Gear									
184.22 (137.37)	15314 (68.12)	4.51 (7.26)	2198	2.61	0.487 (0.296)	14.45 (2.85)	186 (86)	65 (18)	29.18 (98.82)
10th Gear									
184.86 (137.85)	13229 (58.85)	5.24 (8.43)	2199	2.00	0.486 (0.296)	14.48 (2.85)	187 (86)	65 (18)	29.17 (98.78)
11th Gear									
180.96 (134.94)	11101 (49.38)	6.11 (9.84)	2195	1.38	0.498 (0.303)	14.16 (2.79)	187 (86)	67 (19)	29.17 (98.78)
12th Gear									
179.23 (133.65)	9510 (42.30)	7.07 (11.37)	2195	1.14	0.502 (0.305)	14.04 (2.77)	187 (86)	67 (19)	29.16 (98.75)
13th Gear									
176.33 (131.49)	7903 (35.15)	8.37 (13.47)	2199	0.75	0.511 (0.311)	13.78 (2.72)	188 (86)	67 (19)	29.16 (98.75)

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 99°F(37°C). 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. **1799**, Nebraska Summary 365, July 23, 2002.

Brent T. Sampson
Test Engineer

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

TRACTOR SOUND LEVEL WITH CAB

dB(A)

At no load in 9th gear	75.2
Transport speed - no load - 16th gear	76.8
Bystander in 16th Gear	88.7

TIRES, BALLAST AND WEIGHT

	With Ballast	Without Ballast
Track width	24.0 in (610 mm)	24.0 in (610 mm)
Ballast - Cast iron(front)	2250 lb (1021 kg)	None
Height of Drawbar	18.5 in (470 mm)	18.5 in (470 mm)
Static Weight with operator	29160 lb(13227 kg)	26910 lb(12206 kg)

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)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
5th Gear									
164.13 (122.39)	27225 (121.10)	2.26 (3.64)	2243	14.69	0.553 (0.337)	12.73 (2.51)	180 (82)	50 (10)	29.19 (98.85)
6th Gear									
177.08 (132.05)	24198 (107.64)	2.74 (4.42)	2202	8.62	0.506 (0.308)	13.91 (2.74)	183 (84)	52 (11)	29.19 (98.85)
7th Gear									
191.48 (142.79)	23767 (105.72)	3.02 (4.86)	2099	9.15	0.487 (0.296)	14.48 (2.85)	184 (84)	56 (13)	29.19 (98.85)
8th Gear									
201.37 (150.16)	22378 (99.54)	3.37 (5.43)	2004	7.80	0.471 (0.286)	14.97 (2.95)	187 (86)	62 (17)	29.18 (98.82)
9th Gear									
208.50 (155.48)	19486 (86.68)	4.01 (6.46)	2001	4.84	0.455 (0.277)	15.48 (3.05)	187 (86)	64 (18)	29.18 (98.82)
10th Gear									
211.83 (157.96)	16910 (75.22)	4.70 (7.56)	2000	3.52	0.446 (0.271)	15.79 (3.11)	189 (87)	66 (19)	29.17 (98.78)
11th Gear									
210.71 (157.13)	14339 (63.78)	5.51 (8.87)	1999	2.38	0.450 (0.274)	15.65 (3.08)	190 (88)	67 (19)	29.17 (98.78)
12th Gear									
209.96 (156.56)	12294 (54.68)	6.40 (10.31)	2001	1.77	0.453 (0.275)	15.57 (3.07)	190 (88)	67 (19)	29.16 (98.75)
13th Gear									
208.57 (155.53)	10327 (45.94)	7.57 (12.19)	1999	1.30	0.452 (0.275)	15.57 (3.07)	190 (88)	67 (19)	29.16 (98.75)

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)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
4th Gear									
158.04 (117.85)	28906 (128.58)	2.05 (3.30)	2249	13.77	0.570 (0.347)	12.36 (2.44)	182 (83)	68 (20)	28.62 (96.92)
5th Gear									
171.04 (127.54)	26952 (119.89)	2.38 (3.83)	2227	9.82	0.529 (0.322)	13.32 (2.62)	184 (84)	69 (21)	28.63 (96.95)
6th Gear									
184.51 (137.59)	26121 (116.19)	2.65 (4.26)	2132	9.10	0.499 (0.303)	14.12 (2.78)	182 (83)	72 (22)	28.63 (96.95)
7th Gear									
199.97 (149.12)	25544 (113.63)	2.94 (4.72)	2020	8.50	0.476 (0.289)	14.80 (2.92)	187 (86)	74 (23)	28.63 (96.95)
8th Gear									
206.53 (154.01)	22359 (99.46)	3.46 (5.57)	2000	5.36	0.460 (0.280)	15.33 (3.02)	190 (88)	76 (24)	28.68 (97.12)
9th Gear									
211.16 (157.46)	19337 (86.01)	4.10 (6.59)	2002	3.22	0.448 (0.273)	15.71 (3.09)	189 (87)	71 (22)	28.70 (97.19)
10th Gear									
210.37 (156.87)	16577 (73.74)	4.76 (7.66)	2000	2.38	0.453 (0.275)	15.56 (3.07)	191 (88)	72 (22)	28.69 (97.16)
11th Gear									
208.69 (155.62)	14082 (62.64)	5.56 (8.94)	1998	1.76	0.456 (0.277)	15.46 (3.05)	192 (89)	73 (23)	28.69 (97.16)
12th Gear									
208.71 (155.63)	12144 (54.02)	6.44 (10.37)	2001	1.37	0.455 (0.277)	15.49 (3.05)	192 (89)	74 (23)	28.69 (97.16)
13th Gear									
205.01 (152.88)	10093 (44.90)	7.62 (12.26)	2001	1.14	0.465 (0.283)	15.15 (2.98)	192 (89)	75 (24)	28.68 (97.12)

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: III

Quick Attach: yes

Maximum Force Exerted Through Whole Range: ~~16520~~ **16520** lbs (73.5 kN)

i) Opening pressure of relief valve: NA

Sustained pressure at compensator cutoff: 2940 psi (203 bar) High flow option
2930 psi (202 bar)
two outlet sets combined

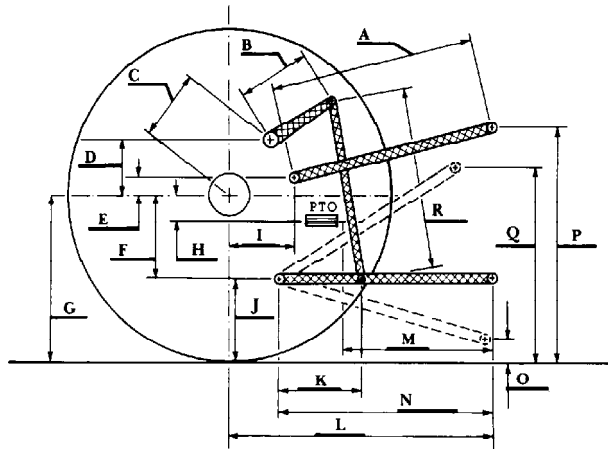
ii) Pump delivery rate at minimum pressure and rated engine speed: 34.6 GPM (131.0 l/min) 43.3 GPM (163.9 l/min)

iii) Pump delivery rate at maximum hydraulic power: 34.2 GPM (129.5 l/min) 42.7 GPM (161.6 l/min)
Delivery pressure: 2490 psi (172 bar) 2295 psi (158 bar)
Power: 49.7 HP (37.1 kW) 57.2 HP (42.7 kW)
single outlet set

ii) Pump delivery rate at minimum pressure and rated engine speed: 33.1 GPM (125.3 l/min) 34.2 GPM (129.5 l/min)

iii) Pump delivery rate at maximum hydraulic power: 31.6 GPM (119.6 l/min) 30.8 GPM (116.6 l/min)
Delivery pressure: 2150 psi (148 bar) 2090 psi (144 bar)
Power: 39.6 HP (29.5 kW) 37.6 HP (28.0 kW)

HITCH DIMENSIONS AS TESTED - NO LOAD



	inch	mm
A	29.5	750
B	20.5	520
C	22.9	582
D	22.2	565
E	10.2	260
F	11.0	280
G	33.5	851
H	3.1	79
I	15.6	395
J	22.5	571
K	28.9	733
L	49.9	1268
*L'	53.4	1357
M	25.5	647
N	42.6	1082
O	9.0	230
P	40.8	1037
Q	38.7	983
R	45.1	1146

*L' to Quick Attach ends



JOHN DEERE 8320T DIESEL

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