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NEBRASKA OECD TRACTOR TEST 1681—SUMMARY 153

JOHN DEERE 7400 POWRQUAD DIESEL

16 SPEED

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

Dates of Test: May 12 to June 2, 1994

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—1003 rpm)					
102.05 (76.10)	2099	5.98 (22.63)	0.410 (0.249)	17.07 (3.36)	
Maximum Power (2 hours)					
107.24 (79.97)	1900	5.87 (22.24)	0.383 (0.233)	18.26 (3.60)	
VARYING POWER AND FUEL CONSUMPTION					
102.05 (76.10)	2099	5.98 (22.63)	0.410 (0.249)	17.07 (3.36)	Air temperature
89.05 (66.40)	2156	5.53 (20.95)	0.435 (0.264)	16.10 (3.17)	75°F (24°C)
67.63 (50.43)	2186	4.72 (17.86)	0.488 (0.297)	14.33 (2.82)	Relative humidity
45.84 (34.18)	2210	3.86 (14.61)	0.587 (0.358)	11.88 (2.34)	56%
23.13 (17.25)	2230	2.96 (11.20)	0.895 (0.544)	7.81 (1.54)	Barometer
0.82 (0.61)	2247	2.02 (7.63)	17.246 (10.491)	0.41 (0.08)	29.08" Hg (98.46 kPa)

Maximum Torque 349 lb.-ft. (474 Nm) at 1301 rpm

Maximum Torque Rise 36.9%

Torque rise at 1701 engine rpm 27%

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—7th (B3) Gear									
91.22 (68.02)	7566 (33.65)	4.52 (7.28)	2099	4.38	0.458 (0.279)	15.27 (3.01)	200 (93)	70 (21)	29.00 (98.21)
75% of Pull at Maximum Power—7th (B3) Gear									
71.63 (53.42)	5674 (25.24)	4.73 (7.62)	2176	3.41	0.508 (0.309)	13.76 (2.71)	196 (91)	77 (25)	28.95 (98.04)
50% of Pull at Maximum Power—7th (B3) Gear									
48.80 (36.39)	3781 (16.82)	4.84 (7.79)	2203	2.51	0.613 (0.373)	11.41 (2.25)	192 (89)	79 (26)	28.95 (98.04)
75% of Pull at Reduced Engine Speed—11th (C3) Gear									
71.34 (53.20)	5675 (25.24)	4.71 (7.59)	1362	3.41	0.421 (0.256)	16.62 (3.27)	208 (98)	79 (26)	28.95 (98.04)
50% of Pull at Reduced Engine Speed—11th (C3) Gear									
48.57 (36.22)	3805 (16.92)	4.79 (7.70)	1370	2.43	0.460 (0.280)	15.22 (3.00)	187 (86)	80 (27)	28.95 (98.04)

FUEL OIL and TIME: Fuel No. 2 Diesel Cetane No. 53.9 Specific gravity converted to 60°/60° F (15°/15°C) 0.8400 Fuel weight 6.994 lbs/gal (0.838 kg/l) Oil SAE 15W-40 API service classification SG/CE To motor 4.248 gal (16.080 l) Drained from motor 4.135 gal (15.651 l) Transmission and hydraulic lubricant John Deere Hy-Gard fluid Front axle lubricant John Deere GL-5 Gear Lubricant Total time engine was operated 19.5 hours.

ENGINE: Make John Deere Diesel Type six cylinder vertical with turbocharger Serial No. *TO6068T435241* Crankshaft lengthwise Rated engine speed 2100 Bore and stroke (as specified) 4.19" × 5.0" (106.5 mm × 127.0 mm) Compression ratio 17.8 to 1 Displacement 414 cu in (6788 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 inlet fuel Muffler underhood Exhaust vertical Cooling medium temperature control two thermostats and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: 40.1-43.2 lb/h (18.2-19.6 kg/h) High idle: 2225-2325 rpm Turbo boost nominal 8.7-10.2 psi (60-70 kPa) as measured 9.0 psi (62 kPa)

CHASSIS: Type front wheel assist Serial No. *RW7400H001545* Tread width rear 60.0" (1524 mm) to 100.3" (2548 mm) front 60.0" (1524 mm) to 88.0" (2235 mm) Wheel base 103.3" (2625 mm) Hydraulic control system direct engine drive Transmission selective gear fixed ratio with partial (4) range operator controlled powershift Nominal travel speeds mph (km/h) first 1.49 (2.40) second 1.81 (2.91) third 2.16 (3.47) fourth 2.64 (4.25) fifth 3.17 (5.10) sixth 3.83 (6.16) seventh 4.57 (7.35) eighth 5.04 (8.11) ninth 5.59 (9.00) tenth 6.09 (9.80) eleventh 7.26 (11.69) twelfth 8.90 (14.33) thirteenth 10.45 (16.81) fourteenth 12.63 (20.32) fifteenth 15.06 (24.24) sixteenth 18.46 (29.71), reverse 1.76 (2.84), 2.13 (3.43), 2.55 (4.10), 3.12 (5.02), 3.74 (6.02), 4.52 (7.28), 5.39 (8.68), 5.95 (9.58), 6.61 (10.64), 7.20 (11.58), 8.59 (13.82), 10.52 (16.93) Clutch multiple wet disc hydraulically actuated by foot pedal Brakes wet multiple disc hydraulically actuated by two foot pedals which can be locked together Steering hydrostatic Power take-off 540 rpm at 2080 engine rpm and 1000 rpm at 2093 engine rpm Unladen tractor mass 12738 lb (5778 kg)

**DRAWBAR PERFORMANCE
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)
3rd (A3) Gear									
67.83 (50.58)	12958 (57.64)	1.96 (3.16)	2167	14.79	0.552 (0.336)	12.67 (2.50)	186 (85)	66 (19)	29.09 (98.51)
4th (A4) Gear									
80.98 (60.39)	12143 (54.01)	2.50 (4.03)	2141	10.24	0.499 (0.304)	14.02 (2.76)	197 (92)	70 (21)	29.09 (98.51)
5th (B1) Gear									
89.59 (66.81)	11778 (52.39)	2.85 (4.59)	2037	10.30	0.465 (0.283)	15.03 (2.96)	204 (95)	74 (23)	29.08 (98.48)
6th (B2) Gear									
93.92 (70.04)	10661 (47.42)	3.30 (5.32)	1902	7.70	0.434 (0.264)	16.10 (3.17)	205 (96)	77 (25)	29.08 (98.48)
7th (B3) Gear									
97.15 (72.45)	8978 (39.94)	4.06 (6.53)	1902	5.33	0.426 (0.259)	16.42 (3.24)	206 (97)	71 (22)	28.99 (98.17)
8th (C1) Gear									
97.04 (72.37)	8071 (35.90)	4.51 (7.26)	1902	4.54	0.427 (0.260)	16.36 (3.22)	205 (96)	67 (19)	28.99 (98.17)
9th (B4) Gear									
95.96 (71.56)	7157 (31.84)	5.03 (8.09)	1901	4.22	0.432 (0.263)	16.21 (3.19)	208 (98)	74 (23)	28.98 (98.14)
10th (C2) Gear									
96.33 (71.83)	6601 (29.36)	5.47 (8.81)	1901	3.82	0.430 (0.262)	16.26 (3.20)	206 (96)	68 (20)	28.99 (98.17)
11th (C3) Gear									
94.98 (70.82)	5403 (24.03)	6.59 (10.61)	1900	3.09	0.434 (0.264)	16.11 (3.17)	207 (97)	75 (24)	28.97 (98.10)
12th (C4) Gear									
90.70 (67.64)	4189 (18.63)	8.12 (13.07)	1898	2.76	0.451 (0.275)	15.49 (3.05)	208 (98)	76 (24)	28.96 (98.07)

**DRAWBAR PERFORMANCE AT 2100 RPM (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 (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
4th (A4) Gear									
79.77 (59.49)	12615 (56.11)	2.37 (3.82)	2125	14.34	0.516 (0.314)	13.55 (2.67)	195 (91)	68 (20)	29.09 (98.51)
5th (B1) Gear									
89.00 (66.37)	11021 (49.02)	3.03 (4.87)	2102	7.78	0.465 (0.283)	15.04 (2.96)	200 (93)	73 (23)	29.08 (98.48)
6th (B2) Gear									
90.47 (67.46)	91.01 (40.48)	3.73 (6.00)	2100	5.65	0.460 (0.280)	15.21 (3.00)	203 (95)	77 (25)	29.08 (98.48)
7th (B3) Gear									
91.22 (68.02)	7566 (33.65)	4.52 (7.28)	2099	4.38	0.458 (0.279)	15.27 (3.01)	200 (93)	70 (21)	29.00 (98.21)
8th (C1) Gear									
90.10 (67.19)	6729 (29.93)	5.02 (8.08)	2100	3.82	0.463 (0.282)	15.11 (2.98)	199 (93)	65 (18)	29.00 (98.21)
9th (B4) Gear									
89.72 (66.91)	6028 (26.81)	5.58 (8.98)	2097	3.58	0.465 (0.283)	15.04 (2.96)	206 (96)	72 (22)	28.98 (98.14)
10th (C2) Gear									
89.73 (66.91)	5542 (24.65)	6.07 (9.77)	2097	3.41	0.465 (0.283)	15.04 (2.96)	204 (95)	69 (21)	28.98 (98.14)
11th (C3) Gear									
88.34 (65.88)	4527 (20.14)	7.32 (11.78)	2100	2.84	0.472 (0.287)	14.81 (2.92)	204 (95)	75 (24)	28.97 (98.10)
12th (C4) Gear									
85.18 (63.52)	3551 (15.79)	9.00 (14.48)	2095	2.34	0.490 (0.298)	14.28 (2.81)	207 (97)	76 (24)	28.96 (98.07)

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 157° F (69°C). The performance results on this summary were taken from OECD tests conducted under the Code II Restricted Standard Test Code procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1681**, Summary 153, July 21, 1994.

LOUIS I. LEVITICUS
Engineer-in-Charge

R.D. GRISSO
M.F. KOCHER
K. VON BARGEN
Board of Tractor Test Engineers

DRAWBAR PERFORMANCE (FRONT DRIVE DISENGAGED)

FUEL CONSUMPTION CHARACTERISTICS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption		Temp. °F (°C)		Barom. inch Hg (kPa)
					lb/hp.hr (kg/kWh)	Hp.hr/gal (kW.h/l)	cool- ing med	Air dry bulb	
Maximum Power—7th (B3) Gear									
91.61 (68.31)	7742 (34.44)	4.44 (7.14)	2101	4.86	0.455 (0.277)	15.37 (3.03)	206 (96)	70 (21)	29.00 (98.21)
75% of Pull at Maximum Power—7th (B3) Gear									
71.93 (53.64)	5789 (25.75)	4.66 (7.50)	2175	3.43	0.503 (0.306)	13.91 (2.74)	198 (92)	77 (25)	28.95 (98.04)
50% of Pull at Maximum Power—7th (B3) Gear									
49.30 (36.76)	3875 (17.23)	4.77 (7.68)	2203	2.30	0.599 (0.365)	11.67 (2.30)	191 (88)	77 (25)	28.95 (98.04)
75% of Pull at Reduced Engine Speed—11th (C3) Gear									
71.95 (53.65)	5807 (25.83)	4.65 (7.48)	1365	3.51	0.416 (0.253)	16.80 (3.31)	202 (94)	79 (26)	28.95 (98.04)
50% of Pull at Reduced Engine Speed—11th (C3) Gear									
49.06 (36.58)	3870 (17.21)	4.75 (7.65)	1380	2.30	0.450 (0.274)	15.53 (3.06)	186 (86)	81 (27)	28.95 (98.04)

MAXIMUM POWER IN SELECTED GEARS

5th (B1) Gear									
75.89 (56.59)	10015 (44.55)	2.84 (4.57)	2148	14.01	0.524 (0.318)	13.36 (2.63)	196 (91)	72 (22)	29.08 (98.48)
6th (B2) Gear									
87.83 (65.49)	9219 (41.01)	3.57 (5.75)	2100	8.16	0.472 (0.287)	14.82 (2.92)	204 (95)	77 (25)	29.08 (98.48)
7th (B3) Gear									
91.61 (68.31)	7742 (34.44)	4.44 (7.14)	2101	4.86	0.455 (0.277)	15.37 (3.03)	206 (96)	70 (21)	29.00 (98.21)
8th (C1) Gear									
91.22 (68.02)	6930 (30.83)	4.94 (7.94)	2098	3.91	0.458 (0.279)	15.26 (3.01)	200 (93)	66 (19)	29.00 (98.21)
9th (B4) Gear									
90.43 (67.44)	6160 (27.40)	5.51 (8.86)	2102	3.67	0.462 (0.281)	15.14 (2.98)	206 (96)	73 (23)	28.98 (98.14)
10th (C2) Gear									
91.41 (68.16)	5729 (25.48)	5.98 (9.63)	2098	3.19	0.456 (0.277)	15.35 (3.02)	203 (95)	69 (21)	28.98 (98.14)
11th (C3) Gear									
90.20 (67.26)	4692 (20.87)	7.21 (11.60)	2099	2.70	0.461 (0.280)	15.18 (2.99)	206 (96)	75 (24)	28.97 (98.10)
12th (C4) Gear									
87.86 (65.52)	3713 (16.52)	8.87 (14.28)	2098	2.30	0.474 (0.288)	14.75 (2.91)	207 (97)	76 (24)	28.96 (98.07)

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Disengaged dB(A)	Engaged dB(A)
At 75% load in 9th (B4) Gear	71.5	71.5
Bystander in 16th (D4) Gear	83.0	—

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

Two 18.4R38: *, 16 (110)

Two 13.6R28:***, 24 (165)

21.5 in (545 mm)

8435 lb (3826 kg)

4470 lb (2028 kg)

12905 lb (5854 kg)

THREE POINT HITCH PERFORMANCE (SAE Static Test)

Observed Maximum Pressure psi. (bar)	2950 (203)			
Location	lift cylinders			
Hydraulic oil temperature °F (°C)	140 (60)			
Location	hydraulic sump			
Category	II			
Quick attach	No			

With lift cylinders—1 × 70 mm and 1 × 80 mm

Hitch point distance to ground level in. (mm)	8.0 (203)	15.0 (381)	22.0 (559)	29.0 (737)	36.0 (914)
Lift force on frame lb	11178	10092	9491	8851	8061
Lift force on frame (kN)	(49.7)	(44.9)	(42.2)	(39.4)	(35.9)

With lift cylinders—2 × 80 mm

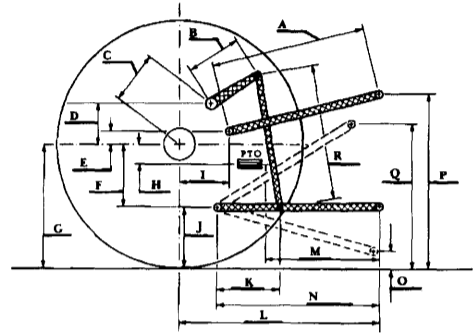
Hitch point distance to ground level in. (mm)	8.0 (203)	15.0 (381)	22.0 (559)	29.0 (737)	36.0 (914)
Lift force on frame lb.	12739	11605	10926	10131	9239
Lift force on frame (kN)	(56.7)	(51.6)	(48.6)	(45.1)	(41.1)

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: II

Quick Attach: none

Maximum Force Exerted Through Whole Range:	6858 lbs	(30.5 kN)
	7790 lbs	(34.6 kN) with 80 mm lift cylinders
i) Opening pressure of relief valve:	NA	
Sustained pressure with pump stalled:	2890 psi	(199 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	25.9 GPM	(98.0 l/min)
iii) Pump delivery rate at maximum hydraulic power:	23.6 GPM	(89.3 l/min)
Delivery pressure:	2620 psi	(181 bar)
Power:	36.1 HP	(26.9 kW)



HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	mm
A	27.8	705
B	15.7	400
C	21.8	554
D	20.6	523
E	4.9	125
F	9.8	250
G	32.3	820
H	3.1	80
I	18.0	456
J	22.5	570
K	21.1	537
L	44.2	1122
M	19.8	502
N	37.9	962
O	8.0	203
P	46.5	1180
Q	35.9	911
R	35.0	889



JOHN DEERE 7400 POWRQUAD DIESEL

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