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University of Nebraska - Lincoln

Year 1997

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Test 1741: John Deere 7410 Powrquad  
Diesel 16-Speed

Tractor Museum  
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# NEBRASKA OECD TRACTOR TEST 1741—SUMMARY 241

## JOHN DEERE 7410 POWRQUAD DIESEL

### 16 SPEED

#### POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Gal/hr (l/h)	lb/hp.hr (kg/kWh)	Hp.hr/gal (kW.h/l)	Mean Atmospheric Conditions
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>					
<b>Rated Engine Speed—(PTO speed—1002 rpm)</b>					
106.32 (79.28)	2100	6.25 (23.64)	0.414 (0.252)	17.02 (3.35)	
<b>Maximum Power (2 hours)</b>					
109.54 (81.68)	1900	6.10 (23.07)	0.392 (0.238)	17.97 (3.54)	
<b>VARYING POWER AND FUEL CONSUMPTION</b>					
106.32 (79.28)	2100	6.25 (23.64)	0.414 (0.252)	17.02 (3.35)	Air temperature
93.42 (69.67)	2167	5.75 (21.77)	0.434 (0.264)	16.25 (3.20)	76°F (24°C)
70.97 (52.92)	2201	4.86 (18.38)	0.482 (0.293)	14.62 (2.88)	Relative humidity
47.98 (35.78)	2225	3.92 (14.83)	0.575 (0.350)	12.24 (2.41)	37%
24.01 (17.90)	2250	2.85 (10.80)	0.837 (0.509)	8.41 (1.66)	Barometer
1.03 (0.77)	2273	1.96 (7.42)	13.373 (8.134)	0.53 (0.10)	29.12" Hg (98.61 kPa)

Maximum Torque 362 lb.-ft. (490 Nm) at 1300 rpm  
 Maximum Torque Rise 36.3%  
 Torque rise at 1700 engine rpm 24%

#### 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/kWh)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
<b>Maximum Power—7th (B3) Gear</b>									
95.86 (71.48)	7913 (35.20)	4.54 (7.31)	2101	3.62	0.459 (0.279)	15.34 (3.02)	195 (90)	45 (7)	29.25 (99.05)
<b>75% of Pull at Maximum Power—7th (B3) Gear</b>									
75.46 (56.27)	5970 (26.56)	4.74 (7.63)	2179	3.05	0.500 (0.304)	14.09 (2.78)	192 (89)	47 (8)	28.99 (98.17)
<b>50% of Pull at Maximum Power—7th (B3) Gear</b>									
51.72 (38.56)	3991 (17.75)	4.86 (7.82)	2213	2.05	0.596 (0.362)	11.82 (2.33)	188 (87)	50 (10)	28.96 (98.07)
<b>75% of Pull at Reduced Engine Speed—11th (C3) Gear</b>									
75.45 (56.26)	5978 (26.59)	4.73 (7.62)	1368	3.05	0.429 (0.261)	16.42 (3.23)	198 (92)	49 (9)	28.98 (98.14)
<b>50% of Pull at Reduced Engine Speed—11th (C3) Gear</b>									
51.45 (38.36)	3979 (17.70)	4.85 (7.80)	1390	2.14	0.462 (0.281)	15.25 (3.00)	187 (86)	52 (11)	28.92 (97.93)

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

**Dates of Test:** October 8-23, 1997

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

**FUEL OIL and TIME:** Fuel No. 2 Diesel Cetane No. 53.9 Specific gravity converted to 60°/60° F (15°/15°C) 0.8459 Fuel weight 7.043 lbs/gal (0.844 kg/l) Oil SAE 15W-40 API service classification CE, CG-4 To motor 4.905 gal (18.566 l) Drained from motor 4.818 gal (18.237 l) Transmission and hydraulic lubricant John Deere Hy-Gard fluid Front axle lubricant John Deere Hy-Gard fluid and API GL-5 Gear Lubricant Total time engine was operated 22.0 hours.

**ENGINE:** Make John Deere Diesel Type six cylinder vertical with turbocharger Serial No. \*T06068T720090\* Crankshaft lengthwise Rated engine speed 2100 Bore and stroke (as specified) 4.19" x 5.00" (106.5 mm x 127.0 mm) Compression ratio 17.0 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 return fuel Muffler underhood Exhaust vertical Cooling medium temperature control two thermostats and variable speed fan

**ENGINE OPERATING PARAMETERS:** Fuel rate: 43.7-45.4 lb/h (19.8-20.6 kg/h) High idle: 2225-2325 rpm Turbo boost nominal 7.5-11.9 psi (52-82 kPa) as measured 8.4 psi (58 kPa)

**CHASSIS:** Type front wheel assist Serial No. \*RW7410H003245\* Tread width rear 60.0" (1525 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 (2.90) third 2.16 (3.47) fourth 2.64 (4.25) fifth 3.17 (5.10) sixth 3.83 (6.14) seventh 4.57 (7.35) eighth 5.04 (8.11) ninth 5.59 (9.00) tenth 6.07 (9.77) eleventh 7.26 (11.69) twelfth 8.90 (14.33) thirteenth 10.45 (16.81) fourteenth 12.58 (20.25) fifteenth 15.06 (24.25) sixteenth 18.46 (29.71) reverse 1.76 (2.85), 2.13 (3.43), 2.55 (4.11), 3.13 (5.04), 3.75 (6.04), 4.52 (7.28), 5.42 (8.72), 5.98 (9.62), 6.64 (10.68), 7.20 (11.58), 8.62 (13.87), 10.56 (16.99), 12.39 (19.94), 14.93 (24.02), 17.87 (28.76), 21.90 (35.24) Clutch multiple wet disc

**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 (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
4th (A4) Gear									
84.68 (63.28)	13502 (60.06)	2.36 (3.79)	2124	14.39	0.515 (0.313)	13.69 (2.70)	190 (88)	45 (7)	29.02 (98.27)
5th (B1) Gear									
94.31 (70.32)	11583 (51.52)	3.05 (4.91)	2101	6.59	0.464 (0.282)	15.18 (2.99)	193 (89)	55 (13)	29.20 (98.88)
6th (B2) Gear									
95.36 (71.11)	9524 (42.36)	3.75 (6.04)	2104	4.73	0.458 (0.278)	15.39 (3.03)	195 (91)	53 (12)	29.21 (98.92)
7th (B3) Gear									
95.86 (71.48)	7913 (35.20)	4.54 (7.31)	2101	3.62	0.459 (0.279)	15.34 (3.02)	195 (90)	45 (7)	29.25 (99.05)
8th (C1) Gear									
95.31 (71.07)	7096 (31.56)	5.04 (8.11)	2104	3.29	0.460 (0.280)	15.30 (3.01)	196 (91)	51 (11)	29.25 (99.05)
9th (B4) Gear									
94.24 (70.27)	6313 (28.08)	5.60 (9.01)	2098	2.96	0.464 (0.283)	15.16 (2.99)	195 (91)	48 (9)	29.25 (99.05)
10th (C2) Gear									
94.00 (70.10)	5783 (25.72)	6.10 (9.81)	2102	2.64	0.464 (0.282)	15.18 (2.99)	198 (92)	51 (11)	29.23 (98.98)
11th (C3) Gear									
94.23 (70.27)	4820 (21.44)	7.33 (11.80)	2101	2.30	0.464 (0.282)	15.18 (2.99)	197 (91)	51 (11)	29.23 (98.98)
12th (C4) Gear									
90.00 (67.11)	3740 (16.63)	9.03 (14.52)	2100	1.72	0.485 (0.295)	14.52 (2.86)	197 (92)	52 (11)	29.21 (98.92)

**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 (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
4th (A4) Gear									
85.25 (63.57)	13498 (60.04)	2.37 (3.81)	2124	13.88	0.512 (0.311)	13.75 (2.71)	189 (87)	47 (8)	29.00 (98.21)
5th (B1) Gear									
95.15 (70.95)	12555 (55.85)	2.84 (4.57)	1986	7.94	0.453 (0.276)	15.55 (3.06)	192 (89)	52 (11)	29.19 (98.85)
6th (B2) Gear									
97.66 (72.83)	10921 (48.58)	3.35 (5.40)	1903	5.83	0.437 (0.266)	16.12 (3.18)	196 (91)	54 (12)	29.20 (98.88)
7th (B3) Gear									
99.20 (73.97)	9089 (40.43)	4.09 (6.59)	1905	4.26	0.431 (0.262)	16.35 (3.22)	197 (92)	46 (8)	29.25 (99.05)
8th (C1) Gear									
98.34 (73.34)	8128 (36.16)	4.54 (7.30)	1906	3.70	0.435 (0.265)	16.19 (3.19)	199 (93)	51 (11)	29.24 (99.02)
9th (B4) Gear									
98.03 (73.10)	7277 (32.37)	5.05 (8.13)	1902	3.29	0.437 (0.266)	16.12 (3.17)	199 (93)	47 (8)	29.25 (99.05)
10th (C2) Gear									
97.95 (73.04)	6688 (29.75)	5.49 (8.84)	1902	3.13	0.435 (0.264)	16.20 (3.19)	200 (93)	51 (11)	29.24 (99.02)
11th (C3) Gear									
97.53 (72.73)	5516 (24.53)	6.63 (10.67)	1906	2.64	0.439 (0.267)	16.03 (3.16)	200 (93)	52 (11)	29.22 (98.95)
12th (C4) Gear									
94.68 (70.60)	4346 (19.33)	8.17 (13.15)	1907	2.05	0.451 (0.275)	15.60 (3.07)	200 (93)	52 (11)	29.22 (98.95)

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** 12855 lb (5830 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 167° F (75°C). This tractor did not meet manufacturers claim of 72.0 dB(A) cab sound level. 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. **1741**, Summary 241, November 11, 1997.

LOUIS I. LEVITICUS  
Engineer-in-Charge

L.L. BASHFORD  
R.D. GRISSO  
M.F. KOCHER  
Board of Tractor Test Engineers

**DRAWBAR PERFORMANCE  
(UNBALLASTED—FRONT DRIVE DISENGAGED)  
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/kWh)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp.°F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
<b>Maximum Power—7th (B3) Gear</b>									
95.99 (71.58)	8039 (35.76)	4.48 (7.21)	2105	3.86	0.457 (0.278)	15.41 (3.04)	195 (91)	46 (8)	29.25 (99.05)
<b>75% of Pull at Maximum Power—7th (B3) Gear</b>									
75.08 (55.99)	6028 (26.81)	4.67 (7.52)	2180	3.14	0.498 (0.303)	14.13 (2.78)	189 (87)	47 (8)	28.99 (98.17)
<b>50% of Pull at Maximum Power—7th (B3) Gear</b>									
51.37 (38.31)	4021 (17.88)	4.79 (7.71)	2214	2.25	0.584 (0.355)	12.06 (2.38)	186 (85)	51 (11)	28.95 (98.04)
<b>75% of Pull at Reduced Engine Speed—11th (C3) Gear</b>									
75.19 (56.07)	5992 (26.65)	4.71 (7.57)	1382	3.06	0.424 (0.258)	16.61 (3.27)	202 (94)	50 (10)	28.97 (98.10)
<b>50% of Pull at Reduced Engine Speed—11th (C3) Gear</b>									
51.38 (38.31)	4038 (17.96)	4.77 (7.68)	1388	2.25	0.452 (0.275)	15.59 (3.07)	187 (86)	53 (12)	28.91 (97.90)

**MAXIMUM POWER IN SELECTED GEARS**

<b>5th (B1) Gear</b>									
83.47 (62.25)	11152 (49.61)	2.81 (4.52)	2136	14.26	0.520 (0.316)	13.54 (2.67)	191 (88)	44 (7)	29.04 (98.34)
<b>6th (B2) Gear</b>									
94.07 (70.15)	9631 (42.84)	3.66 (5.89)	2103	5.73	0.463 (0.281)	15.22 (3.00)	195 (90)	53 (12)	29.20 (98.88)
<b>7th (B3) Gear</b>									
95.99 (71.58)	8039 (35.76)	4.48 (7.21)	2105	3.86	0.457 (0.278)	15.41 (3.04)	195 (91)	46 (8)	29.25 (99.05)
<b>8th (C1) Gear</b>									
95.54 (71.25)	7231 (32.16)	4.96 (7.97)	2103	3.54	0.457 (0.278)	15.41 (3.04)	196 (91)	51 (11)	29.24 (99.02)
<b>9th (B4) Gear</b>									
95.42 (71.16)	6488 (28.86)	5.52 (8.88)	2100	3.06	0.460 (0.280)	15.32 (3.02)	195 (90)	50 (10)	29.25 (99.05)
<b>10th (C2) Gear</b>									
95.42 (71.15)	5969 (26.55)	6.00 (9.65)	2099	2.74	0.457 (0.278)	15.40 (3.03)	197 (91)	51 (11)	29.23 (98.98)
<b>11th (C3) Gear</b>									
95.56 (71.26)	4959 (22.06)	7.23 (11.63)	2102	2.33	0.459 (0.279)	15.35 (3.02)	196 (91)	52 (11)	29.22 (98.95)
<b>12th (C4) Gear</b>									
92.75 (69.16)	3912 (17.40)	8.89 (14.31)	2100	1.92	0.471 (0.286)	14.96 (2.95)	197 (91)	52 (11)	29.21 (98.92)

<b>TRACTOR SOUND LEVEL WITH CAB</b>	<b>Front Wheel Drive</b>	
	<b>Disengaged dB(A)</b>	<b>Engaged dB(A)</b>
At 75% load in 9th (B4) Gear	73.8	73.8
Bystander in 16th (D4) Gear	81.7	—

**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 14.9R28;\*\*\*, 16 (110)

21.5 in (545 mm)

8460 lb (3837 kg)

4560 lb (2068 kg)

13020 lb (5905 kg)

### 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 of the open relief valve: 2860 psi (197 bar)
- ii) Pump delivery rate at minimum pressure: 27.1 GPM (102.6 l/min)
- iii) Pump delivery rate at maximum
  - hydraulic power: 25.0 GPM (94.6 l/min)
  - Delivery pressure: 2560 psi (176 bar)
  - Power: 37.3 HP (27.8 kW)

### 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

system pressure—2650 psi (182 bar)  
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	10377	9369	8811	8217	7484
Lift force on frame (kN)	(46.2)	(41.7)	(39.2)	(36.6)	(33.3)

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.	11826	10773	10143	9405	8577
Lift force on frame (kN)	(52.6)	(47.9)	(45.1)	(41.8)	(38.2)

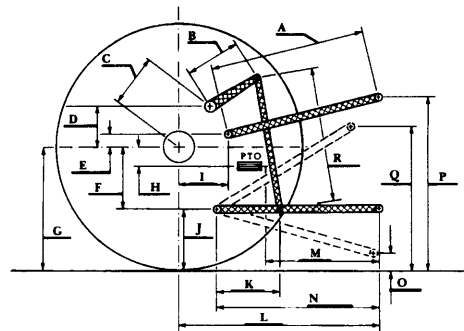
#### As per current SAE test procedures

system pressure—2860 psi (197 bar)  
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)

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)



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 7410 POWRQUAD DIESEL

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