

# NEBRASKA OECD TRACTOR TEST 1788-SUMMARY 341

## JOHN DEERE 7710 POWRQUAD DIESEL

### 20 SPEED

Chassis serial numbers \*RW7710H030004\* and higher

#### 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/hl)	Mean Atmospheric Conditions
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>					
<b>Rated Engine Speed (PTO speed 1007 rpm)</b>					
137.85 (102.79)	2100	8.24 (31.18)	0.419 (0.255)	16.73 (3.30)	
<b>Maximum Power (2 hours)</b>					
150.94 (112.55)	1650	8.15 (30.84)	0.379 (0.230)	18.53 (3.65)	

#### VARYING POWER AND FUEL CONSUMPTION

137.85 (102.79)	2100	8.24 (31.18)	0.419 (0.255)	16.73 (3.30)	Air temperature
121.64 (90.70)	2177	7.74 (29.29)	0.446 (0.272)	15.72 (3.10)	77°F (25°C)
91.99 (68.60)	2204	6.46 (24.44)	0.492 (0.300)	14.25 (2.81)	Relative humidity
61.86 (46.13)	2226	5.30 (20.07)	0.601 (0.366)	11.67 (2.30)	71%
31.30 (23.34)	2250	4.10 (15.54)	0.920 (0.560)	7.63 (1.50)	Barometer
1.56 (1.16)	2280	2.86 (10.84)	12.878 (7.833)	0.54 (0.11)	28.73" Hg (97.29 kPa)

Maximum Torque - 522 lb.-ft. (707 Nm) at 1300 rpm

Maximum Torque Rise - 51.2%

Torque rise at 1699 engine rpm - 33%

#### 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/hl)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
<b>Maximum Power 7th (B3) Gear</b>									
123.87 (92.37)	10330 (45.95)	4.50 (7.24)	2102	3.66	0.466 (0.283)	15.06 (2.97)	197 (91)	56 (13)	28.96 (98.07)
<b>75% of Pull at Maximum Power 7th (B3) Gear</b>									
97.63 (72.80)	7725 (34.36)	4.74 (7.63)	2191	2.63	0.512 (0.312)	13.70 (2.70)	194 (90)	58 (14)	28.98 (98.13)
<b>50% of Pull at Maximum Power 7th (B3) Gear</b>									
66.27 (49.41)	5136 (22.84)	4.84 (7.79)	2218	1.76	0.611 (0.371)	11.49 (2.26)	188 (87)	59 (15)	28.98 (98.13)
<b>75% of Pull at Reduced Engine Speed 10th (C2) Gear</b>									
97.79 (72.92)	7714 (34.31)	4.75 (7.65)	1654	2.63	0.435 (0.264)	16.15 (3.18)	195 (90)	59 (15)	28.98 (98.13)
<b>50% of Pull at Reduced Engine Speed 10th (C2) Gear</b>									
66.47 (49.57)	5156 (22.93)	4.84 (7.78)	1668	1.76	0.487 (0.296)	14.41 (2.84)	186 (86)	58 (14)	28.98 (98.13)

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

**Dates of Test:** October 31-November 29, 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) 0.8427 Fuel weight 7.017 lbs/gal (0.841 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: 30.0 hours

**ENGINE: Make** John Deere Diesel **Type** six cylinder vertical with turbocharger **Serial No.** \*RG6081T111452\* **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 4.56" x 5.06" (115.9 mm x 128.5 mm) **Compression ratio** 17.0 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 pump return fuel **Muffler** vertical **Cooling medium temperature control** 2 thermostats and variable speed fan

**ENGINE OPERATING PARAMETERS: Fuel rate:** 56.4 - 59.5 lb/h (25.6 - 27.0 kg/h) **High idle:** 2250 - 2300 rpm **Turbo boost:** nominal 13.2 - 17.5 psi (91 - 121 kPa) as measured 16.2 psi (112 kPa)

**CHASSIS: Type** front wheel assist **Serial No.** \*RW7710H037953\* **Tread width** rear 60.0" (1524 mm) to 108.3 (2752 mm) front 60.0" (1524 mm) to 88.0" (2235 mm) **Wheelbase** 110.2" (2800 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (4) range operator controlled power shift **Nominal travel speeds mph (km/h)** first 1.50 (2.41) second 1.80 (2.90) third 2.16 (3.48) fourth 2.65 (4.26) fifth 3.18 (5.11) sixth 3.83 (6.16) seventh 4.58 (7.37) eighth 5.06 (8.14) ninth 5.61 (9.03) tenth 6.09 (9.80) eleventh 7.29 (11.73) twelfth 8.93 (14.37) thirteenth 9.36 (15.06) fourteenth 11.27 (18.14) fifteenth 13.50 (21.72) sixteenth 13.86 (22.31) seventeenth 16.54 (26.61) eighteenth 16.70 (26.87) nineteenth 20.00 (32.18) twentieth 24.50 (39.42) reverse 1.78 (2.86), 2.14 (3.44), 2.57 (4.13), 3.14 (5.05), 3.77 (6.06), 4.54 (7.30), 5.43 (8.74), 6.00 (9.65), 6.66 (10.71), 7.22 (11.62), 8.65 (13.92), 10.59 (17.05), 11.10 (17.86), 13.37 (21.51), 16.01 (25.76), 16.45 (26.47), 19.61 (31.56), 19.80 (31.87), 23.72 (38.17), 29.06 (46.76)

**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)	Temp. °F (°C) cool- ing med	Barom. inch Hg (kPa)		
4th(A4)Gear									
100.67 (75.07)	15820 (70.37)	2.39 (3.84)	2169	14.20	0.551 (0.335)	12.74 (2.51)	190 (88)	48 (9)	28.94 (98.00)
5th(B1)Gear									
117.85 (87.88)	15228 (67.74)	2.90 (4.67)	2094	9.97	0.489 (0.297)	14.35 (2.83)	196 (91)	50 (10)	28.94 (98.00)
6th(B2)Gear									
128.71 (95.98)	14555 (64.74)	3.32 (5.34)	1931	7.39	0.452 (0.275)	15.54 (3.06)	200 (93)	52 (11)	28.95 (98.04)
7th(B3)Gear									
133.07 (99.23)	14154 (62.96)	3.53 (5.67)	1701	6.61	0.429 (0.261)	16.34 (3.22)	207 (97)	54 (12)	28.95 (98.04)
8th(C1)Gear									
134.26 (100.12)	13164 (58.56)	3.82 (6.16)	1651	5.40	0.426 (0.259)	16.48 (3.25)	208 (98)	55 (13)	28.96 (98.07)
9th(B4)Gear									
134.77 (100.50)	11803 (52.50)	4.28 (6.89)	1648	4.50	0.424 (0.258)	16.53 (3.26)	207 (97)	55 (13)	28.96 (98.07)
10th(C2) Gear									
136.15 (101.53)	10921 (48.58)	4.68 (7.52)	1651	3.99	0.421 (0.256)	16.68 (3.29)	209 (98)	57 (14)	28.97 (98.10)
11th(C3)Gear									
136.42 (101.73)	9027 (40.15)	5.67 (9.12)	1656	3.15	0.421 (0.256)	16.66 (3.28)	209 (98)	57 (14)	28.97 (98.10)
12th(C4) Gear									
134.88 (100.58)	7218 (32.11)	7.01 (11.28)	1659	2.37	0.428 (0.260)	16.40 (3.23)	205 (96)	57 (14)	28.97 (98.10)
13th(D1) Gear									
134.27 (100.12)	6865 (30.54)	7.33 (11.80)	1656	2.29	0.424 (0.258)	16.55 (3.26)	201 (94)	58 (14)	28.98 (98.14)
14th(D2) Gear									
131.88 (98.34)	5583 (24.83)	8.86 (14.26)	1652	1.85	0.433 (0.263)	16.22 (3.19)	206 (97)	58 (14)	28.98 (98.14)

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Engaged dB(A)	Disengaged dB(A)
At no load in 7th (B3)gear	73.0	73.0
Transport speed-no load- 20th(E4)gear		75.2
Bystander in 20th(E4)Gear		84.4

**TIRES, BALLAST AND WEIGHT**

	With Ballast	Without Ballast
<b>Rear Tires</b> - No., size, ply & psi(kPa)	Four 18.4R42;**,10(70)	Two 18.4R42;**,16(110)
<b>Ballast</b> - Duals (total)	1570 lb (712 kg)	None
- Cast Iron (total)	1000 lb (454 kg)	None
<b>Front Tires</b> - No., size, ply & psi(kPa)	Two 14.9R30;***;20(140)	Two 14.9R30;***;16(110)
<b>Ballast</b> - Liquid (total)	None	None
- Cast Iron (total)	1110 lb (503 kg)	None
<b>Height of Drawbar</b>	24.0 in (610 mm)	21.5 in (545 mm)
<b>Static Weight with operator</b> - Rear	12280 lb (5570 kg)	9970 lb (4522 kg)
- Front	6645 lb (3014 kg)	5275 lb (2393 kg)
- Total	18925 lb (8584 kg)	15245 lb (6915 kg)

**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** 540 rpm at 2072 engine rpm or 1000 rpm at 2086 engine rpm **Unladen tractor mass** 15070 lb (6836 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 inlet was maintained at 138°F(59°C). The pull in 3<sup>rd</sup> (A3) 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.

**NOTE:** The performance figures on this report apply to tractor chassis serial numbers \*RW7710H030004\* and higher

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1788**, Nebraska Summary 341, December 14, 2000.

David L. Morgan  
Assistant Director

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

**DRAWBAR PERFORMANCE**  
**BALLASTED - FRONT DRIVE ENGAGED(1650 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)	Consumption Hp.hr/gal (kW.h/l)	Temp.°F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
3rd(A3)Gear									
108.49 (80.90)	19685 (87.56)	2.07 (3.33)	2167	8.59	0.508 (0.309)	13.81 (2.72)	191 (88)	55 (13)	28.90 (97.87)
4th(A4)Gear									
123.44 (92.05)	19120 (85.05)	2.42 (3.90)	2035	6.97	0.468 (0.285)	14.99 (2.95)	195 (90)	54 (12)	28.90 (97.87)
5th(B1)Gear									
132.25 (98.62)	18427 (81.97)	2.69 (4.33)	1866	5.77	0.435 (0.265)	16.12 (3.18)	196 (91)	53 (12)	28.90 (97.87)
6th(B2)Gear									
136.38 (101.70)	17632 (78.43)	2.90 (4.67)	1655	5.04	0.419 (0.255)	16.75 (3.30)	207 (97)	52 (11)	28.89 (97.83)
7th(B3)Gear									
139.03 (103.67)	14771 (65.70)	3.53 (5.68)	1655	3.38	0.410 (0.250)	17.11 (3.37)	203 (95)	49 (9)	28.89 (97.83)
8th(C1)Gear									
137.96 (102.87)	13201 (58.72)	3.92 (6.31)	1652	2.69	0.412 (0.251)	17.01 (3.35)	208 (98)	53 (12)	28.92 (97.93)
9th(B4)Gear									
137.77 (102.73)	11824 (52.60)	4.37 (7.03)	1654	2.35	0.415 (0.253)	16.90 (3.33)	208 (98)	54 (12)	28.92 (97.93)
10th(C2)Gear									
137.94 (102.87)	10916 (48.55)	4.74 (7.63)	1650	2.18	0.412 (0.250)	17.04 (3.36)	207 (97)	50 (10)	28.92 (97.93)
11th(C3)Gear									
137.82 (102.78)	9081 (40.39)	5.69 (9.16)	1649	2.00	0.414 (0.252)	16.94 (3.34)	201 (94)	47 (8)	28.88 (97.80)
12th(C4)Gear									
135.27 (100.87)	7260 (32.29)	6.99 (11.24)	1647	1.65	0.423 (0.257)	16.60 (3.27)	206 (97)	46 (8)	28.88 (97.80)
13th(D1)Gear									
134.24 (100.10)	6835 (30.40)	7.37 (11.85)	1659	1.65	0.426 (0.259)	16.48 (3.25)	207 (97)	44 (7)	28.87 (97.77)
14th(D2)Gear									
131.65 (98.17)	5584 (24.84)	8.84 (14.23)	1646	1.30	0.433 (0.263)	16.22 (3.20)	205 (96)	45 (7)	28.87 (97.77)

**DRAWBAR PERFORMANCE**  
**BALLASTED - FRONT DRIVE DISENGAGED**  
**FUEL CONSUMPTION CHARACTERISTICS**

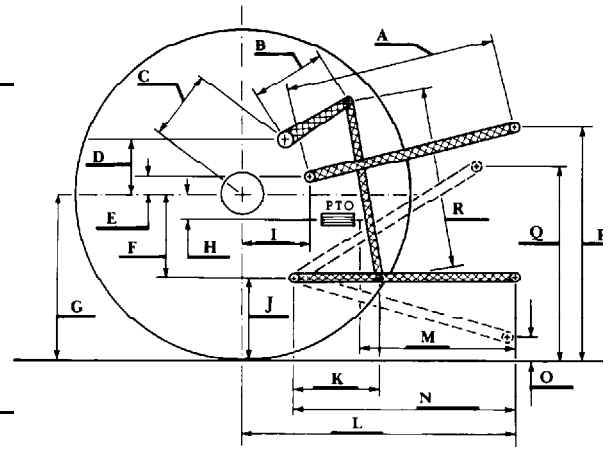
Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp.°F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
<b>Maximum Power 7th(B3)Gear</b>									
126.68 (94.47)	10546 (46.91)	4.50 (7.25)	2099	2.83	0.458 (0.279)	15.32 (3.02)	197 (91)	48 (9)	28.88 (97.80)
<b>75% of Pull at Maximum Power 7th(B3) Gear</b>									
99.97 (74.55)	7915 (35.21)	4.74 (7.62)	2193	2.06	0.511 (0.311)	13.72 (2.70)	191 (88)	49 (9)	28.89 (97.83)
<b>50% of Pull at Maximum Power 7th(B3)Gear</b>									
67.90 (50.64)	5276 (23.47)	4.83 (7.77)	2221	1.36	0.609 (0.370)	11.53 (2.27)	185 (85)	49 (9)	28.89 (97.83)
<b>75% of Pull at Reduced Engine Speed 10th(C2) Gear</b>									
99.88 (74.48)	7882 (35.06)	4.75 (7.65)	1657	2.06	0.432 (0.263)	16.25 (3.20)	191 (88)	49 (9)	28.89 (97.83)
<b>50% of Pull at Reduced Engine Speed 10th(C2) Gear</b>									
67.89 (50.63)	5273 (23.46)	4.83 (7.77)	1674	1.36	0.487 (0.296)	14.42 (2.84)	184 (84)	49 (9)	28.90 (97.87)
<b>MAXIMUM POWER IN SELECTED GEARS</b>									
4th(A4) Gear									
107.59 (80.23)	17132 (76.21)	2.36 (3.79)	2132	13.43	0.527 (0.321)	13.31 (2.62)	193 (89)	53 (12)	28.90 (97.87)
5th(B1) Gear									
123.91 (92.40)	15219 (67.70)	3.05 (4.91)	2100	4.84	0.466 (0.283)	15.07 (2.97)	194 (90)	49 (9)	28.89 (97.83)
6th(B2) Gear									
126.06 (94.00)	12618 (56.13)	3.75 (6.03)	2096	2.92	0.458 (0.279)	15.31 (3.02)	197 (92)	51 (11)	28.89 (97.83)
7th(B3) Gear									
126.68 (94.47)	10546 (46.91)	4.50 (7.25)	2099	2.83	0.458 (0.279)	15.32 (3.02)	197 (91)	48 (9)	28.88 (97.80)
8th(C1) Gear									
124.51 (92.85)	9343 (41.56)	5.00 (8.04)	2100	2.23	0.462 (0.281)	15.19 (2.99)	203 (95)	52 (11)	28.92 (97.93)
9th(B4) Gear									
123.45 (92.06)	8325 (37.03)	5.56 (8.95)	2098	2.05	0.469 (0.285)	14.98 (2.95)	206 (96)	55 (13)	28.91 (97.90)
10th(C2) Gear									
125.02 (93.22)	7766 (34.54)	6.04 (9.72)	2097	1.88	0.467 (0.284)	15.04 (2.96)	201 (94)	51 (11)	28.92 (97.93)
11th(C3) Gear									
123.13 (91.82)	6375 (28.36)	7.24 (11.66)	2101	1.62	0.469 (0.285)	14.96 (2.95)	198 (92)	46 (8)	28.88 (97.80)
12th(C4) Gear									
119.05 (88.77)	5016 (22.31)	8.90 (14.32)	2098	1.36	0.489 (0.298)	14.34 (2.82)	197 (91)	47 (8)	28.88 (97.80)

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

CATEGORY: III

Quick Attach: Walterscheid lower link ends lift cylinders  
 2 x 80 mm  
 Maximum Force Exerted Through Whole Range: 10161 lbs (45.2 kN)  
 i) Opening pressure of relief valve: NA

Sustained pressure at compensator cutoff: 2870 psi (198 bar)  
 ii) Pump delivery rate at minimum pressure and rated engine speed: 27.0 GPM (102.2 l/min)  
 iii) Pump delivery rate at maximum hydraulic power: 25.1 GPM (95.0 l/min)  
 Delivery pressure: 2590 psi (179 bar)  
 Power: 37.9 HP (28.3 kW)



HITCH DIMENSIONS AS TESTED NO LOAD

	OECD test		SAE test	
	inch	mm	inch	mm
A	27.2	692	26.6	676
B	14.8	375	14.8	375
C	24.5	623	24.5	623
D	23.1	588	23.1	588
E	11.1	283	7.5	190
F	10.8	275	10.8	275
G	35.6	905	34.2	870
H	4.1	105	4.1	105
I	19.8	504	19.8	504
J	24.8	630	23.4	595
K	24.1	612	23.1	587
L	47.5	1206	46.4	1179
M	23.1	586	22.0	559
N	39.8	1011	38.7	984
O	9.0	229	8.0	203
P	51.8	1315	45.4	1153
Q	38.8	984	36.8	933
R	38.1	968	35.9	911

### THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi. (bar) 2950 (203)  
 Location: lift cylinders  
 Hydraulic oil temperature: °F (°C) 144 (62)  
 Location: hydraulic sump  
 Category: IHN  
 Quick attach: No

**SAE Static Test** System pressure 2650 psi (182 Bar)  
 with lift cylinders (1) x 70 mm and (1) x 80 mm

Hitch point distance to ground level in. (mm) 8.1 (206) 16.0 (406) 24.0 (610) 32.0 (813) 40.0 (1016)  
 Lift force on frame lb 10953 10994 10629 9855 8397  
 " " " " " (kN) (48.7) (48.7) (47.3) (43.8) (37.4)

with lift cylinders (2) x 80 mm

Hitch point distance to ground level in. (mm) 7.7 (196) 16.0 (406) 24.0 (610) 32.0 (813) 40.0 (1016)  
 Lift force on frame lb 12177 12564 12177 11268 9549  
 " " " " " (kN) (54.2) (55.9) (54.2) (50.1) (42.5)

**ASAE Static Test** System pressure 2860 psi (197 Bar)  
 with lift cylinders (1) x 70 mm and (1) x 80 mm

Hitch point distance to ground level in. (mm) 8.1 (206) 16.0 (406) 24.0 (610) 32.0 (813) 40.0 (1016)  
 Lift force on frame lb 11959 11949 11605 10760 9168  
 " " " " " (kN) (53.2) (53.2) (51.6) (47.9) (40.8)

with lift cylinders (2) x 80 mm

Hitch point distance to ground level in. (mm) 7.7 (196) 16.0 (406) 24.0 (610) 32.0 (813) 40.0 (1016)  
 Lift force on frame lb 13295 13718 13295 12303 10426  
 " " " " " (kN) (59.1) (61.0) (59.1) (54.7) (46.4)



JOHN DEERE 7710 DIESEL