

# NEBRASKA OECD TRACTOR TEST 1887-SUMMARY 554

## JOHN DEERE 8330 DIESEL

### 16 SPEED

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

**Dates of tests:** September 25 - October 17, 2006

**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) 0.8409 Fuel weight 7.002 lbs/gal (0.839 kg/l) Oil SAE 15W-40 API service classification CI-4 Transmission and hydraulic lubricant John Deere Hy-Gard fluid Front axle lubricant John Deere Hy-Gard fluid Total time engine was operated: 26.5 hours

**ENGINE:** Make John Deere Diesel Type six cylinder vertical with turbocharger and air to air aftercooler Serial No.\*RG6090L006227\* Crankshaft lengthwise Rated engine speed 2100 Bore and stroke 4.661" x 5.354" (118.4 mm x 136.0 mm) Compression ratio 16.3 to 1 Displacement 548 cu in (8984 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 water separator Fuel cooler radiator for pump return fuel Muffler vertical Cooling medium temperature control 2 thermostats and variable speed fan

**ENGINE OPERATING PARAMETERS:** Fuel rate: 84.9 - 91.9 lb/h (38.5 - 41.7 kg/h) High idle: 2175 - 2225 rpm Turbo boost: nominal 23.2 - 27.6 psi (160 - 190 kPa) as measured 25.5 psi (176 kPa)

**CHASSIS:** Type front wheel assist Serial No.\*RW8330P005615\* Tread width rear 60.0" (1524 mm) to 132.5" (3368 mm) front 60.0" (1524 mm) to 88.0" (2235 mm) Wheelbase 120.1" (3050 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 1.12 (1.81) second 1.51 (2.43) third 2.01 (3.24) fourth 2.69 (4.33) fifth 3.02 (4.86) sixth 3.48 (5.60) seventh 4.05 (6.51) eighth 4.66 (7.50) ninth 5.39 (8.67) tenth 6.21 (9.99) eleventh 7.21 (11.61) twelfth 8.31 (13.38) thirteenth 9.80 (15.77) fourteenth 13.12 (21.12) fifteenth 17.47 (28.12) sixteenth 23.41 (37.67) reverse 1.06 (1.70), 2.83 (4.55), 3.57 (5.74), 6.55 (10.54) @ 1500 engine rpm 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 1000 rpm at 2003 engine rpm Unladen tractor mass 21335 lb (9677 kg)

#### 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
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>					
<b>Rated Engine Speed—(PTO speed—1047 rpm)</b>					
226.56 (168.95)	2100	12.38 (46.86)	0.383 (0.233)	18.30 (3.61)	
<b>Standard Power Take-off Speed(1000 rpm)</b>					
248.75 (185.49)	2005	13.26 (50.19)	0.373 (0.227)	18.76 (3.70)	
<b>Maximum Power (1 hour)</b>					
261.49 (194.99)	1800	14.03 (53.12)	0.376 (0.229)	18.64 (3.67)	

#### VARYING POWER AND FUEL CONSUMPTION

226.56 (168.95)	2100	12.38 (46.86)	0.383 (0.233)	18.30 (3.61)	Air temperature
198.18 (147.78)	2156	11.30 (42.76)	0.399 (0.243)	17.54 (3.46)	77°F (25°C)
149.17 (111.24)	2168	9.24 (34.98)	0.434 (0.264)	16.14 (3.18)	Relative humidity
99.62 (74.29)	2176	7.17 (27.14)	0.504 (0.307)	13.90 (2.74)	32%
50.32 (37.52)	2189	4.87 (18.44)	0.678 (0.412)	10.33 (2.04)	Barometer
1.51 (1.13)	2197	3.37 (12.76)	15.613 (9.497)	0.45 (0.09)	28.87" Hg (97.77 kPa)

Maximum torque - 835 lb.-ft. (1133 Nm) at 1598 rpm

Maximum torque rise - 47.3%

Torque rise at 1699 engine rpm - 40%

#### 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.h/l)	Temp. °F (°C) cool-ing med	Air dry bulb	Barom. inch Hg (kPa)
<b>Maximum Power—10th Gear</b>									
199.42 (148.71)	12014 (53.44)	6.22 (10.02)	2099	3.86	0.435 (0.265)	16.09 (3.17)	189 (87)	57 (14)	28.60 (96.85)
<b>75% of Pull at Maximum Power—10th Gear</b>									
155.60 (116.03)	9026 (40.15)	6.46 (10.40)	2154	2.68	0.470 (0.286)	14.91 (2.94)	189 (87)	66 (19)	28.61 (96.88)
<b>50% of Pull at Maximum Power—10th Gear</b>									
105.41 (78.60)	6001 (26.70)	6.59 (10.60)	2172	1.66	0.551 (0.335)	12.71 (2.50)	184 (84)	67 (19)	28.60 (96.85)
<b>75% of Pull at Reduced Engine Speed—12th Gear</b>									
155.69 (116.09)	9021 (40.13)	6.47 (10.42)	1610	2.83	0.451 (0.274)	15.54 (3.06)	205 (96)	69 (21)	28.60 (96.85)
<b>50% of Pull at Reduced Engine Speed—12th Gear</b>									
105.60 (78.75)	6005 (26.71)	6.60 (10.61)	1624	1.71	0.488 (0.297)	14.34 (2.82)	184 (85)	68 (20)	28.60 (96.85)

**DRAWBAR PERFORMANCE**  
**UNBALLASTED - FRONT DRIVE ENGAGED - 2100 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)	
7th Gear									
180.15 (134.34)	18482 (82.21)	3.66 (5.88)	2112	14.47	0.486 (0.295)	14.42 (2.84)	194 (90)	72 (22)	28.69 (97.16)
8th Gear									
196.27 (146.36)	16044 (71.37)	4.59 (7.38)	2099	5.67	0.443 (0.270)	15.80 (3.11)	183 (84)	54 (12)	28.60 (96.85)
9th Gear									
197.49 (147.27)	13855 (61.63)	5.35 (8.60)	2099	4.94	0.440 (0.268)	15.90 (3.13)	189 (87)	56 (13)	28.60 (96.85)
10th Gear									
199.42 (148.71)	12014 (53.44)	6.22 (10.02)	2099	3.86	0.435 (0.265)	16.09 (3.17)	189 (87)	57 (14)	28.60 (96.85)
11th Gear									
197.54 (147.30)	10170 (45.24)	7.28 (11.72)	2099	3.50	0.439 (0.267)	15.97 (3.15)	192 (89)	58 (14)	28.60 (96.85)
12th Gear									
197.70 (147.42)	8775 (39.03)	8.45 (13.60)	2100	2.80	0.436 (0.265)	16.06 (3.16)	199 (93)	62 (17)	28.60 (96.85)

**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 119°F(48°C). The performance figures on this summary were taken from a test conducted under the OECD Code II test code procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1887**, Nebraska Summary 554, December 8, 2006.

Roger M. Hoy  
 Director

M.F. Kocher  
 V.I. Adamchuk  
 J.A. Smith  
 Board of Tractor Test Engineers

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Engaged dB(A)	Disengaged dB(A)
At no load in 8th gear	74.9	74.1
Transport speed-no load- 16th gear		74.9
Bystander in 16th gear		87.1

**TIRES, BALLAST AND WEIGHT**

	With Ballast	Without Ballast
<b>Rear Tires</b> - No., size, ply & psi(kPa)	Four 480/80R46;***;15(105)	Two 480/80R46;***;19(130)
<b>Ballast</b> - Duals (total)	1770 lb (803 kg)	None
- Cast Iron (total)	5355 lb (2429 kg)	None
<b>Front Tires</b> - No., size, ply & psi(kPa)	Two 420/90R30;**,23(160)	Two 420/90R30;**,19(130)
<b>Ballast</b> - Liquid (total)	None	None
- Cast Iron (total)	1785 lb (810 kg)	None
<b>Height of Drawbar</b>	22.0 in (560 mm)	21.5 in (545 mm)
<b>Static Weight with operator</b> - Rear	18860 lb (8555 kg)	12580 lb (5706 kg)
- Front	11560 lb (5244 kg)	8930 lb (4051 kg)
- Total	30420 lb (13799 kg)	21510 lb (9757 kg)

**DRAWBAR PERFORMANCE**  
**UNBALLASTED-FRONT DRIVE ENGAGED - 1800 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)
7th Gear									
180.35 (134.49)	18511 (82.34)	3.65 (5.88)	2110	14.37	0.486 (0.295)	14.42 (2.84)	193 (89)	72 (22)	28.69 (97.16)
8th Gear									
210.19 (156.74)	18496 (82.28)	4.26 (6.86)	2013	8.62	0.439 (0.267)	15.93 (3.14)	190 (88)	54 (12)	28.60 (96.85)
9th Gear									
218.08 (162.62)	17000 (75.62)	4.81 (7.74)	1934	7.04	0.430 (0.262)	16.28 (3.21)	196 (91)	55 (13)	28.60 (96.85)
10th Gear									
227.97 (170.00)	16483 (73.32)	5.19 (8.35)	1801	6.76	0.430 (0.262)	16.27 (3.21)	206 (97)	57 (14)	28.60 (96.85)
11th Gear									
231.66 (172.75)	14180 (63.07)	6.13 (9.86)	1797	5.10	0.423 (0.258)	16.54 (3.26)	204 (96)	59 (15)	28.60 (96.85)
12th Gear									
231.44 (172.58)	12157 (54.08)	7.14 (11.49)	1800	4.02	0.422 (0.257)	16.58 (3.27)	202 (94)	63 (17)	28.60 (96.85)
13th Gear									
231.16 (172.38)	10263 (45.65)	8.45 (13.59)	1792	3.27	0.422 (0.257)	16.60 (3.27)	205 (96)	65 (18)	28.61 (96.88)

**DRAWBAR PERFORMANCE**  
**BALLASTED - FRONT DRIVE ENGAGED - 1800 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 Gear									
142.12 (105.98)	27876 (124.00)	1.91 (3.08)	2158	11.02	0.524 (0.319)	13.37 (2.63)	178 (81)	43 (6)	28.78 (97.46)
4th Gear									
181.72 (135.51)	26734 (118.92)	2.55 (4.10)	2103	9.10	0.480 (0.292)	14.58 (2.87)	185 (85)	44 (7)	28.77 (97.43)
5th Gear									
195.26 (145.61)	25733 (114.46)	2.85 (4.58)	2062	7.74	0.458 (0.279)	15.29 (3.01)	189 (87)	46 (8)	28.76 (97.39)
6th Gear									
212.86 (158.73)	24591 (109.39)	3.25 (5.23)	2005	6.11	0.437 (0.266)	16.04 (3.16)	189 (87)	46 (8)	28.76 (97.39)
7th Gear									
223.23 (166.46)	23810 (105.91)	3.52 (5.66)	1862	5.76	0.432 (0.263)	16.19 (3.19)	199 (93)	47 (8)	28.75 (97.36)
8th Gear									
229.38 (171.05)	21738 (96.69)	3.96 (6.37)	1799	4.77	0.427 (0.259)	16.42 (3.23)	203 (95)	48 (9)	28.74 (97.33)
9th Gear									
234.43 (174.82)	19009 (84.56)	4.62 (7.44)	1802	3.77	0.418 (0.254)	16.76 (3.30)	201 (94)	48 (9)	28.74 (97.33)
10th Gear									
237.18 (176.87)	16594 (73.82)	5.36 (8.63)	1799	3.16	0.413 (0.251)	16.95 (3.34)	203 (95)	49 (9)	28.74 (97.33)
11th Gear									
235.19 (175.38)	14054 (62.52)	6.28 (10.10)	1802	2.52	0.419 (0.255)	16.73 (3.30)	202 (95)	49 (9)	28.74 (97.33)
12th Gear									
234.03 (174.51)	12089 (53.78)	7.26 (11.68)	1802	2.20	0.420 (0.255)	16.68 (3.29)	206 (97)	50 (10)	28.73 (97.29)
13th Gear									
231.55 (172.66)	10120 (45.02)	8.58 (13.81)	1800	1.81	0.423 (0.257)	16.55 (3.26)	202 (94)	51 (11)	28.72 (97.26)

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

CATEGORY: III

Quick Attach: Yes

Lift cylinders:

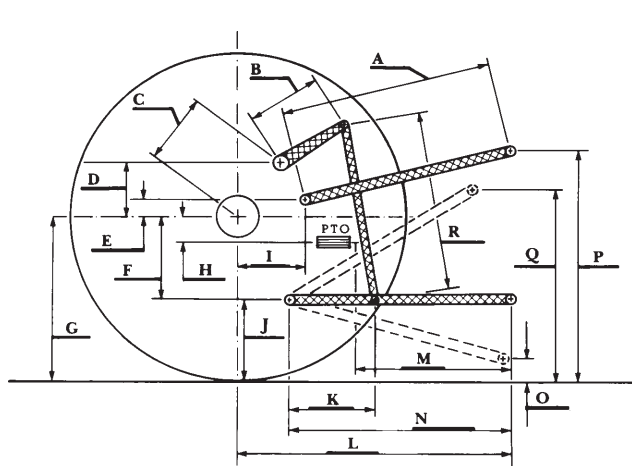
1 x 90 & 1 x 100 mm      2 x 100 mm

Maximum force exerted through whole range:

14191 lbs (63.1 kN)      15683 lbs (69.8 kN)

	<u>63 cc pump</u>	<u>85 cc pump</u>
i) Sustained pressure at compensator cutoff:	2990 psi (206 bar)	2996 psi (207 bar)
	<b>two outlet sets combined    three outlet sets combined</b>	
ii) Pump delivery rate at minimum pressure and rated engine speed:	45.6 GPM(172.6 l/min)	61.1 GPM(231.3 l/min)
iii) Pump delivery rate at maximum		
hydraulic power:	45.6 GPM(172.6 l/min)	60.7 GPM(229.8 l/min)
Delivery pressure:	2474 psi (171 bar)	2458 psi (169 bar)
Power:	65.8 HP (49.1 kW)	87.0 HP (64.9 kW)
	<b>single outlet set</b>	
ii) Pump delivery rate at minimum pressure and rated engine speed:	40.7 GPM(154.1 l/min)	38.5 GPM(145.7 l/min)
iii) Pump delivery rate at maximum		
hydraulic power:	39.5 GPM(149.5 l/min)	36.4 GPM(137.8 l/min)
Delivery pressure:	2098 psi (145 bar)	2006 psi (138 bar)
Power:	48.3 HP (36.1 kW)	42.6 HP (31.8 kW)

### HITCH DIMENSIONS AS TESTED—NO LOAD



	inch	mm
A	29.3	744
B	20.5	520
C	20.9	532
D	18.9	480
E	7.3	185
F	14.4	365
G	35.6	905
H	7.9	200
I	20.7	525
J	21.2	540
K	28.7	730
L	49.3	1252
*L'	53.4	1357
M	22.4	569
N	42.6	1081
O	9.0	230
P	43.2	1099
Q	39.4	1001
R	42.8	1087

\*L' to Quick Attach ends



**JOHN DEERE 8330 DIESEL**

Institute of Agriculture and Natural Resources  
University of Nebraska-Lincoln