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Test 1690: John Deere 8300 Diesel 16-Speed

Nebraska Tractor Test Lab

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NEBRASKA OECD TRACTOR TEST 1690—SUMMARY 176

JOHN DEERE 8300 DIESEL

16 SPEED

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

Dates of Test: April 13 to May 15, 1995

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—1009 rpm)					
202.92 (151.32)	2199	11.56 (43.75)	0.397 (0.242)	17.56 (3.46)	
Maximum Power (2 hours)					
224.92 (167.72)	2000	12.14 (45.96)	0.376 (0.229)	18.52 (3.65)	

VARYING POWER AND FUEL CONSUMPTION

202.92 (151.32)	2199	11.56 (43.75)	0.397 (0.242)	17.56 (3.46)	Air temperature
177.22 (132.15)	2255	10.37 (39.25)	0.408 (0.248)	17.09 (3.37)	75°F (24°C)
133.60 (99.62)	2266	8.35 (31.60)	0.436 (0.265)	16.00 (3.15)	Relative humidity
89.53 (66.76)	2278	6.37 (24.11)	0.496 (0.302)	14.06 (2.77)	37%
44.92 (33.50)	2286	4.39 (16.61)	0.681 (0.414)	10.23 (2.02)	Barometer
1.00 (0.75)	2295	2.54 (9.61)	17.665 (10.745)	0.39 (0.08)	28.92"Hg (97.94 kPa)

Maximum Torque 697 lb.-ft. (943 Nm) at 1400 rpm

Maximum Torque Rise 43.8%

Torque rise at 1799 engine rpm 28%

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)
Maximum Power—8th Gear									
179.60 (133.93)	14068 (62.58)	4.79 (7.70)	2199	4.81	0.448 (0.272)	15.58 (3.07)	200 (93)	60 (16)	28.77 (97.43)
75% of Pull at Maximum Power—8th Gear									
140.67 (104.90)	10552 (46.94)	5.00 (8.05)	2259	3.41	0.475 (0.289)	14.69 (2.89)	194 (90)	69 (21)	28.71 (97.22)
50% of Pull at Maximum Power—8th Gear									
95.34 (71.10)	7038 (31.30)	5.08 (8.18)	2272	2.42	0.540 (0.329)	12.91 (2.54)	186 (86)	69 (21)	28.71 (97.22)
75% of Pull at Reduced Engine Speed—10th Gear									
140.61 (104.85)	10541 (46.89)	5.00 (8.05)	1777	3.50	0.425 (0.258)	16.42 (3.24)	192 (89)	69 (21)	28.71 (97.22)
50% of Pull at Reduced Engine Speed—10th Gear									
95.22 (71.00)	7029 (31.26)	5.08 (8.18)	1787	2.51	0.465 (0.283)	15.00 (2.95)	188 (87)	69 (21)	28.71 (97.22)

FUEL OIL and TIME: Fuel No. 2 Diesel
Cetane No. 50.6 **Specific gravity converted to 60°/60° F (15°/15°C)** 0.8374 **Fuel weight** 6.972 lbs/gal (0.836 kg/l) **Oil SAE 15W-40 API service classification** CD, CE, CF-4 **To motor** 5.807 gal (21.982 l) **Drained from motor** 5.532 gal (20.940 l) **Transmission and hydraulic lubricant** John Deere Hy-Gard fluid **Front axle lubricant** John Deere GL-5 Gear Lubricant **Total time engine was operated** 24.0 hours.

ENGINE: Make John Deere **Diesel Type** six cylinder vertical with turbocharger and air to air intercooler **Serial No.** *RG6076H543097* **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** (as specified) 4.56" × 4.75" (115.8 mm × 120.7 mm) **Compression ratio** 15.0 to 1 **Displacement** 466 cu in (7627 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** vertical **Cooling medium temperature control** two thermostats and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: 78.3-86.6 lb/h (35.5-39.3 kg/h) **High idle:** 2275-2325 rpm **Turbo boost** nominal 21.3-26.0 psi (147-179 kPa) as measured 23.6 psi (163 kPa)

CHASSIS: Type front wheel assist **Serial No.** *RW8300P 002733* **Tread width** rear 60.0" (1524 mm) to 108.3" (2752 mm) front 60.0" (1524 mm) to 88.0" (2235 mm) **Wheel base** 116.1" (2950 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with full range operator controlled powershift **Nominal travel speeds mph (km/h)** first 1.35 (2.18) second 1.73 (2.79) third 2.21 (3.55) fourth 2.81 (4.53) fifth 3.41 (5.49) sixth 3.85 (6.19) seventh 4.36 (7.01) eighth 4.92 (7.91) ninth 5.54 (8.92) tenth 6.26 (10.07) eleventh 7.08 (11.40) twelfth 7.99 (12.86) thirteenth 10.17 (16.36) fourteenth 12.99 (20.91) fifteenth 16.53 (26.61) sixteenth 21.13 (34.01) reverse 1.18 (1.90), 2.98 (4.79), 3.36 (5.40), 6.45 (10.38) 1600 engine rpm **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** 1000 rpm at 2180 engine rpm **Unladen tractor mass** 19056 lb (8644 kg)

**DRAWBAR PERFORMANCE AT 2000 RPM
(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/kWh)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)	
5th Gear									
156.34 (116.59)	19112 (85.01)	3.07 (4.94)	2250	14.25	0.499 (0.304)	13.96 (2.75)	192 (89)	55 (13)	28.80 (97.53)
6th Gear									
171.49 (127.88)	18376 (81.74)	3.50 (5.63)	2191	10.96	0.474 (0.288)	14.71 (2.90)	198 (92)	58 (14)	28.78 (97.46)
7th Gear									
181.14 (135.07)	17796 (79.16)	3.82 (6.14)	2078	9.58	0.455 (0.277)	15.32 (3.02)	200 (93)	58 (14)	28.78 (97.46)
8th Gear									
195.44 (145.74)	17267 (76.81)	4.24 (6.83)	2003	7.50	0.432 (0.263)	16.13 (3.18)	201 (94)	59 (15)	28.78 (97.46)
9th Gear									
197.38 (147.19)	15171 (67.48)	4.88 (7.85)	2002	5.67	0.427 (0.260)	16.34 (3.22)	203 (95)	62 (17)	28.77 (97.43)
10th Gear									
198.00 (147.65)	13351 (59.39)	5.56 (8.95)	1998	4.64	0.426 (0.259)	16.38 (3.23)	205 (96)	63 (17)	28.76 (97.39)
11th Gear									
197.75 (147.46)	11681 (51.96)	6.35 (10.22)	2000	3.94	0.425 (0.259)	16.39 (3.23)	205 (96)	64 (18)	28.75 (97.36)
12th Gear									
196.80 (146.75)	10258 (45.63)	7.19 (11.58)	1997	3.50	0.429 (0.261)	16.27 (3.21)	205 (96)	66 (19)	28.73 (97.29)
13th Gear									
192.78 (143.76)	7824 (34.80)	9.24 (14.87)	1999	2.51	0.435 (0.265)	16.02 (3.16)	205 (96)	67 (19)	28.72 (97.26)

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. The pull in 3rd gear (ballasted tractor) was limited to avoid excessive tractor bouncing. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 193°F (90°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. **1690**, Summary 176, July 12, 1995.

LOUIS I. LEVITICUS
Engineer-in-Charge

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

TRACTOR SOUND LEVEL WITH CAB

dB(A)

Maximum sound level in 8th gear	76.5
Transport speed no load 16th gear	78.0
Bystander in 16th gear	89.0

TIRES, BALLAST AND WEIGHT

	With Ballast	Without Ballast
Rear Tires No., size, ply & psi (kPa)	Four 20.8R42; **, 8 (55)	Two 20.8R42; **, 13 (90)
Ballast Duals (total)	1972 lb (895 kg)	None
Cast Iron (total)	3236 lb (1468 kg)	None
Front Tires —No., size, ply & psi (kPa)	Two 16.9R30; **, 23 (160)	Two 16.9R30; **, 17 (120)
Ballast —Liquid (total)	None	None
—Cast Iron (total)	1900 lb (862 kg)	None
Height of Drawbar	20.0 in (510 mm)	20.0 in (510 mm)
Static Weight with Operator		
Rear	15800 lb (7167 kg)	11460 lb (5198 kg)
Front	10430 lb (4730 kg)	7662 lb (3473 kg)
Total	26230 lb (11897 kg)	19122 lb (8673 kg)

**DRAWBAR PERFORMANCE AT 2000 RPM
(Ballasted—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/kWh)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)	
3rd Gear									
144.15 (107.49)	25576 (113.77)	2.11 (3.40)	2257	8.79	0.489 (0.298)	14.25 (2.81)	186 (86)	54 (12)	29.02 (98.27)
4th Gear									
172.90 (128.93)	24432 (108.68)	2.65 (4.27)	2202	8.15	0.468 (0.284)	14.91 (2.94)	189 (87)	55 (13)	29.02 (98.27)
5th Gear									
191.94 (143.13)	23943 (106.50)	3.01 (4.84)	2044	7.50	0.437 (0.266)	15.97 (3.15)	193 (89)	57 (14)	29.01 (98.24)
6th Gear									
196.76 (146.72)	21894 (97.39)	3.37 (5.42)	1999	6.01	0.430 (0.261)	16.23 (3.20)	198 (92)	58 (14)	29.01 (98.24)
7th Gear									
198.77 (148.22)	19250 (85.63)	3.87 (6.23)	2002	4.73	0.425 (0.258)	16.41 (3.23)	202 (94)	59 (15)	29.00 (98.21)
8th Gear									
199.06 (148.44)	17001 (75.62)	4.39 (7.07)	1998	4.20	0.422 (0.256)	16.54 (3.26)	199 (93)	60 (16)	29.00 (98.21)
9th Gear									
198.56 (148.07)	14898 (66.27)	5.00 (8.04)	2005	3.59	0.425 (0.259)	16.39 (3.23)	202 (94)	61 (16)	28.99 (98.17)
10th Gear									
197.89 (147.57)	13141 (58.45)	5.65 (9.09)	2000	3.32	0.425 (0.258)	16.41 (3.23)	198 (92)	62 (17)	28.98 (98.14)
11th Gear									
196.19 (146.30)	11483 (51.08)	6.41 (10.31)	1997	2.96	0.428 (0.260)	16.30 (3.21)	202 (94)	62 (17)	28.98 (98.14)
12th Gear									
194.92 (145.35)	10065 (44.77)	7.26 (11.69)	2001	2.60	0.433 (0.263)	16.11 (3.17)	201 (94)	63 (17)	28.97 (98.10)
13th Gear									
189.15 (141.05)	7640 (33.98)	9.28 (14.94)	2000	2.23	0.446 (0.271)	15.64 (3.08)	201 (94)	63 (17)	28.97 (98.10)

**DRAWBAR PERFORMANCE AT 2200 RPM
(Ballasted—Front Drive Engaged)
MAXIMUM POWER IN SELECTED GEARS**

3rd Gear									
143.30 (106.86)	25469 (113.29)	2.11 (3.40)	2257	9.11	0.491 (0.299)	14.19 (2.80)	184 (84)	54 (12)	29.02 (98.27)
4th Gear									
172.77 (128.84)	24168 (107.50)	2.68 (4.31)	2208	7.58	0.469 (0.285)	14.88 (2.93)	189 (87)	55 (13)	29.02 (98.27)
5th Gear									
180.88 (134.88)	20429 (90.87)	3.32 (5.34)	2199	5.16	0.447 (0.272)	15.60 (3.07)	192 (89)	56 (13)	29.01 (98.24)
6th Gear									
180.41 (134.53)	17916 (79.69)	3.78 (6.08)	2200	4.46	0.448 (0.272)	15.58 (3.07)	193 (89)	58 (14)	29.01 (98.24)
7th Gear									
180.58 (134.66)	15764 (70.12)	4.30 (6.91)	2198	3.85	0.445 (0.270)	15.68 (3.09)	197 (92)	59 (15)	29.01 (98.24)
8th Gear									
178.97 (133.46)	13760 (61.21)	4.88 (7.85)	2203	3.32	0.449 (0.273)	15.53 (3.06)	196 (91)	60 (16)	29.00 (98.21)
9th Gear									
178.85 (133.37)	12166 (54.11)	5.51 (8.87)	2199	2.96	0.449 (0.273)	15.52 (3.06)	199 (93)	60 (16)	29.00 (98.21)
10th Gear									
176.29 (131.46)	10591 (47.11)	6.24 (10.05)	2200	2.60	0.458 (0.279)	15.22 (3.00)	194 (90)	61 (16)	28.99 (98.17)
11th Gear									
174.41 (130.06)	9217 (41.00)	7.10 (11.42)	2202	2.51	0.460 (0.280)	15.17 (2.99)	198 (92)	62 (17)	28.98 (98.14)
12th Gear									
171.13 (127.61)	8000 (35.59)	8.02 (12.91)	2201	2.23	0.470 (0.286)	14.83 (2.92)	198 (92)	63 (17)	28.97 (98.10)

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: III

Quick Attach: yes

Maximum Force Exerted Through Whole Range: 10827 lbs (48.2 kN)
15147 lbs (67.4 kN) (with lift cylinders (2) 100 mm)

- i) Opening pressure of relief valve: NA
Sustained pressure with pump stalled: 2920 psi (201 bar)
- ii) Pump delivery rate at minimum pressure: 30.3 GPM (114.7 l/min)
- iii) Pump delivery rate at maximum
hydraulic power: 28.0 GPM (106.0 l/min)
Delivery pressure: 2650 psi (183 bar)
Power: 43.3 HP (32.3 kW)

THREE POINT LIFT PERFORMANCE

Observed Maximum Pressure psi (bar) 2920 (201)
Location remote outlet
Hydraulic oil Temperature °F (°C) 150 (65)
Location pump inlet
Category III
Quick Attach yes

As per current SAE test procedures

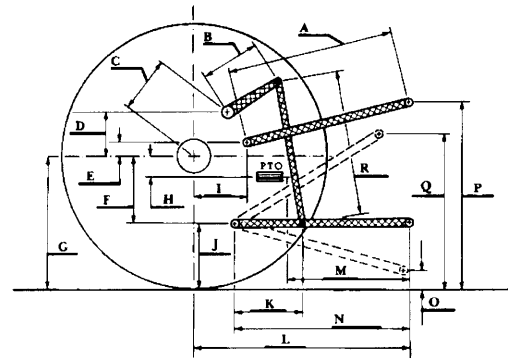
with lift cylinders (2) 90 mm					
Hitch point distance to ground level in. (mm)	8.0 (203)	16.0 (406)	24.0 (610)	32.0 (813)	40.0 (1016)
Lift force on frame lb.	11637	12371	11957	11642	10755
" " " " (kN)	(51.8)	(55.0)	(53.2)	(51.8)	(47.8)

with lift cylinders (2) 100 mm					
Hitch point distance to ground level in. (mm)	8.0 (203)	16.0 (406)	24.0 (610)	32.0 (813)	40.0 (1016)
Lift force on frame lb.	16799	17262	16754	16430	15260
" " " " (kN)	(74.7)	(76.8)	(74.5)	(73.1)	(67.9)

As per current ASAE test procedures

with lift cylinders (2) 90 mm					
Hitch point distance to ground level in. (mm)	8.0 (203)	16.0 (406)	24.0 (610)	32.0 (813)	40.0 (1016)
Lift force on frame lb.	12821	13643	13196	12820	11852
" " " " (kN)	(57.0)	(60.7)	(58.7)	(57.0)	(52.7)

with lift cylinders (2) 100 mm					
Hitch point distance to ground level in. (mm)	8.0 (203)	16.0 (406)	24.0 (610)	32.0 (813)	40.0 (1016)
Lift force on frame lb.	18591	19018	18376	18070	16742
" " " " (kN)	(82.7)	(84.6)	(81.7)	(80.4)	(74.5)



HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	mm
A	28.3	718
B	19.5	495
C	21.7	550
D	19.5	495
E	4.8	123
F	13.8	350
G	35.6	905
H	7.8	197
I	20.3	515
J	21.8	555
K	28.2	716
L	48.9	1242
*L'	52.4	1331
M	22.0	558
N	38.1	967
O	9.0	229
P	43.8	1114
Q	40.1	1019
R	41.5	1054

*L' to end of Quick Attach



JOHN DEERE 8300 DIESEL

Agricultural Research Division
Institute of Agriculture and Natural Resources
University of Nebraska³Lincoln
Darrell Nelson, Dean and Director

SUPPLEMENT TO NEBRASKA OECD TRACTOR TEST 1690—SUMMARY 176
JOHN DEERE 8300 DIESEL
16 SPEED
CHASSIS SERIAL NUMBERS *RW8300P010001* AND HIGHER

POWER TAKE-OFF PERFORMANCE

Power HP kW	Crank shaft speed rpm	Gal/hr (l/h)	lb/hp.hr (kg/kWh)	Hp.hr/gal (kWh/l)	Mean Atmospheric Conditions
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MAXIMUM POWER AND FUEL CONSUMPTION

Rated Engine Speed—(PTO speed—1008 rpm)					
206.09 (153.68)	2200	11.68 (44.21)	0.397 (0.242)	17.65 (3.48)	
Maximum Power (2 hours)					
230.24 (171.69)	2000	12.18 (46.11)	0.371 (0.226)	18.90 (3.72)	

VARYING POWER AND FUEL CONSUMPTION

206.09 (153.68)	2200	11.68 (44.21)	0.397 (0.242)	17.65 (3.48)	Air temperature
179.30 (133.70)	2253	10.61 (40.16)	0.415 (0.252)	16.90 (3.33)	83°F (28°C)
135.38 (100.95)	2264	8.60 (32.55)	0.445 (0.271)	15.74 (3.10)	Relative humidity
90.77 (67.68)	2274	6.67 (25.26)	0.516 (0.314)	13.60 (2.68)	58%
45.35 (33.82)	2285	4.62 (17.49)	0.714 (0.435)	9.82 (1.93)	Barometer
1.00 (0.75)	2293	2.74 (10.37)	19.189 (11.673)	0.37 (0.07)	29.13" Hg (98.61 kPa)

Maximum Torque 702 lb.-ft. (951 Nm) at 1400 rpm
 Maximum Torque Rise 42.7%
 Torque rise at 1800 engine rpm 30%

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

Dates of Test: September 23, 1996

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

ENGINE: Make John Deere Diesel **Type** six cylinder vertical with turbocharger and air to air intercooler **Serial No.** *RG6081H007319* **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** (as specified) 4.56" × 5.06" (115.8 mm × 128.5 mm) **Compression ratio** 16.5 to 1 **Displacement** 495 cu in (8120 ml)

CHASSIS: Type front wheel assist **Serial No.** *RW8300P 010109*

NOTE : The performance figures presented here apply to tractor chassis serial numbers *RW8300P010001* and higher.

We, the undersigned, certify that this is a true and correct supplement to official Tractor Test No. **1690**, Summary 176, October 15, 1996.

LOUIS I. LEVITICUS
 Engineer-in-Charge

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