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2011

## Test 2003: John Deere 8285R

Nebraska Tractor Test Lab

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# NEBRASKA OECD TRACTOR TEST 2003 - SUMMARY 786

## JOHN DEERE 8285R DIESEL

### 16 SPEED

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

**Dates of tests:** September 27 -October 5, 2011

**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 CJ-4 Transmission and hydraulic lubricant John Deere Hy-Gard fluid Front axle lubricant John Deere Hy-Gard fluid Total time engine was operated: 23.5 hours

**ENGINE: Make** John Deere Diesel **Type** six cylinder vertical with two turbochargers and air to air aftercooler **Serial No.** \*RG6090R001362\* **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 4.661" x 5.354" (118.4 mm x 136.0 mm) **Compression ratio** 16.0 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 **Exhaust** regenerative particulate filter integrated within a vertical muffler **Cooling medium temperature control** 2 thermostats and variable speed fan

**ENGINE OPERATING PARAMETERS:** Fuel rate: 95.4 - 103.4 lb/h (43.3 - 46.9 kg/h) High idle: 2150 - 2250 rpm Turbo boost: nominal 29.1 - 31.9 psi (200 - 220 kPa) as measured 30.2 psi (208 kPa)

**CHASSIS: Type** front wheel assist with duals **Serial No.** \*1RW8285RTBP042572\* **Tread width** rear 60.0" (1524 mm) to 132.6" (3368 mm) front 60.0" (1524 mm) to 88.0" (2235 mm) **Wheelbase** 118.9" (3020 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 1.17 (1.88) second 1.57 (2.52) third 2.09 (3.36) fourth 2.80 (4.50) fifth 3.14 (5.05) sixth 3.62 (5.82) seventh 4.20 (6.76) eighth 4.84 (7.79) ninth 5.59 (9.00) tenth 6.45 (10.38) eleventh 7.49 (12.06) twelfth 8.64 (13.90) thirteenth 10.17 (16.38) fourteenth 13.63 (21.94) fifteenth 18.15 (29.21) sixteenth 24.31 (39.13) reverse 1.09 (1.76), 2.93 (4.72), 3.70 (5.96), 6.80 (10.95) @ 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 2004 engine rpm **Unladen tractor mass** 25330 lb (11489 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
MAXIMUM POWER AND FUEL CONSUMPTION					
Rated Engine Speed—(PTO speed—1049 rpm)					
257.34 (191.90)	2099	14.49 (54.85)	0.394 (0.240)	17.76 (3.50)	
Standard Power Take-off Speed (1000 rpm)					
276.45 (206.15)	2003	15.18 (57.46)	0.384 (0.234)	18.21 (3.59)	
Maximum Power (1 hour)					
287.52 (214.40)	1700	15.51 (58.71)	0.378 (0.230)	18.54 (3.65)	

#### VARYING POWER AND FUEL CONSUMPTION

257.34 (191.90)	2099	14.49 (54.85)	0.394 (0.240)	17.76 (3.50)	Air temperature
224.54 (167.44)	2154	13.01 (49.24)	0.406 (0.247)	17.26 (3.40)	74°F (23°C)
168.88 (125.93)	2164	10.31 (39.02)	0.427 (0.260)	16.38 (3.23)	Relative humidity
113.21 (84.42)	2175	7.75 (29.34)	0.479 (0.292)	14.61 (2.88)	21%
57.02 (42.52)	2185	5.33 (20.18)	0.655 (0.398)	10.70 (2.11)	Barometer
3.96 (2.95)	2193	4.67 (17.68)	8.265 (5.027)	0.85 (0.17)	28.99" Hg (98.17 kPa)
Maximum Torque - 926 lb.-ft. (1256 Nm) at 1551 rpm					
Maximum Torque Rise - 43.8%					
Torque rise at 1700 engine rpm - 38%					
Power increase at 1700 rpm - 11.7%					

#### 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									
222.70 (166.06)	17487 (77.79)	4.78 (7.68)	2100	5.6	0.457 (0.278)	15.33 (3.02)	211 (99)	67 (20)	29.12 (98.61)
75% of Pull at Maximum Power—8th Gear									
174.68 (130.26)	13119 (58.35)	4.99 (8.03)	2158	3.9	0.479 (0.291)	14.63 (2.88)	196 (91)	72 (22)	29.05 (98.37)
50% of Pull at Maximum Power—8th Gear									
118.78 (88.57)	8761 (38.97)	5.09 (8.18)	2170	2.6	0.534 (0.325)	13.11 (2.58)	188 (87)	72 (22)	29.05 (98.37)
75% of Pull at Reduced Engine Speed—11th Gear									
174.80 (130.35)	13135 (58.43)	4.99 (8.03)	1394	3.9	0.423 (0.257)	16.55 (3.26)	209 (98)	72 (22)	29.05 (98.37)
50% of Pull at Reduced Engine Speed—11th Gear									
118.97 (88.71)	8726 (38.81)	5.11 (8.22)	1410	2.6	0.442 (0.269)	15.83 (3.12)	195 (91)	72 (22)	29.05 (98.37)

**REPAIRS AND ADJUSTMENTS:** No repairs or adjustments.

**NOTE 1:** During testing the engine was operated for 23.5 hours. During this period, the tractor experienced one active exhaust filter cleaning while operated in Auto Filter Cleaning Mode. This occurred after 17.0 hours of operation.

**REMARKS:** All test results were determined from observed data obtained in accordance with official OECD, SAE and Nebraska test procedures. This tractor did not meet the manufacturer's initial claims of 44% torque rise nor 12% power bulge. For the maximum power tests the fuel temperature at the injection pump inlet was maintained at 110°F (43°C). The pull in 5<sup>th</sup> gear was limited to avoid excessive tractor power hop. The performance figures on this summary were taken from a test conducted under the OECD Code 2 test code procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **2003**, Nebraska Summary 786, December 14, 2011.

M.F. Kocher  
D.R. Keshwani  
P.J. Jasa  
Board of Tractor Test Engineers

### Tested Without Ballast

Four 480/80R50;\*\*\*;12(85)

Two 420/85R34;\*\*\*;23(160)

21.0 in (535 mm)

15475 lb (7019 kg)  
10030 lb (4550 kg)  
25505 lb (11569 kg)

**DRAWBAR PERFORMANCE**  
**UNBALLASTED-FRONT DRIVE ENGAGED - 1700 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)	
5th Gear									
182.67 (136.22)	22662 (100.81)	3.02 (4.86)	2154	10.0	0.495 (0.301)	14.14 (2.79)	192 (89)	63 (17)	29.14 (98.68)
6th Gear									
204.63 (152.59)	22111 (98.35)	3.48 (5.59)	2134	9.5	0.486 (0.296)	14.41 (2.84)	198 (92)	64 (18)	29.14 (98.68)
7th Gear									
223.79 (166.88)	21393 (95.16)	3.92 (6.31)	2062	8.8	0.464 (0.282)	15.09 (2.97)	205 (96)	66 (19)	29.13 (98.65)
8th Gear									
240.44 (179.30)	21029 (93.54)	4.29 (6.90)	1946	8.5	0.449 (0.273)	15.59 (3.07)	213 (100)	68 (20)	29.11 (98.58)
9th Gear									
247.21 (184.34)	20082 (89.33)	4.62 (7.44)	1791	7.6	0.435 (0.264)	16.12 (3.17)	213 (101)	69 (21)	29.10 (98.54)
10th Gear									
248.95 (185.64)	18236 (81.12)	5.12 (8.24)	1700	6.4	0.439 (0.267)	15.94 (3.14)	214 (101)	70 (21)	29.09 (98.51)
11th Gear									
251.35 (187.43)	15624 (69.50)	6.04 (9.71)	1700	4.8	0.435 (0.264)	16.11 (3.17)	213 (101)	70 (21)	29.08 (98.48)
12th Gear									
250.75 (186.98)	13403 (59.62)	7.02 (11.29)	1700	4.2	0.434 (0.264)	16.15 (3.18)	214 (101)	71 (22)	29.06 (98.41)
13th Gear									
248.32 (185.17)	11198 (49.81)	8.32 (13.39)	1700	3.4	0.437 (0.266)	16.01 (3.15)	215 (101)	72 (22)	29.06 (98.41)

## HYDRAULIC PERFORMANCE

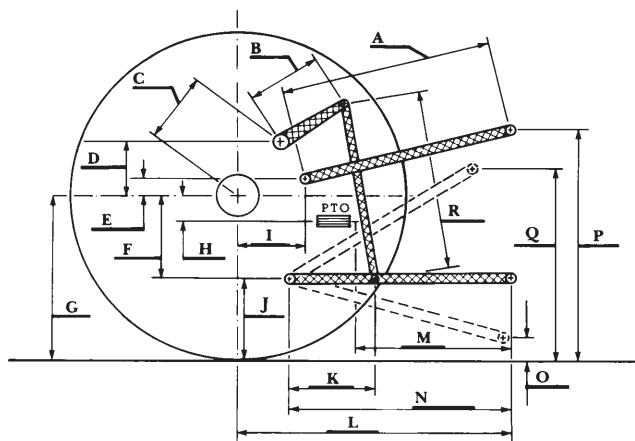
CATEGORY: III/IVN

Quick Attach: Yes

OECD Static test

	<u>Lift cylinders</u>	<u>Category</u>
Maximum force exerted through whole range:	14191 lbs (63.1 kN) 1x90 mm & 1x100 mm	III
	17719 lbs (78.8 kN) 1x100 mm & 1x112 mm	III
	18326 lbs (81.5 kN) 2x100 mm	IVN

	<u>63 cc pump</u>	<u>85 cc pump</u>
i) Sustained pressure at compensator cutoff:	2898 psi (200 bar)	2924 psi (202 bar)
	<b>three outlet sets combined</b>	
ii) Pump delivery rate at minimum pressure and rated engine speed:	48.0 GPM (181.7 l/min)	64.0 GPM (242.3 l/min)
iii) Pump delivery rate at maximum hydraulic power:	47.8 GPM (180.9 l/min)	64.1 GPM (242.8 l/min)
Delivery pressure:	2590 psi (179 bar)	2404 psi (166 bar)
Power:	72.2 HP (53.9 kW)	90.0 HP (67.1 kW)
	<b>single outlet set</b>	
ii) Pump delivery rate at minimum pressure and rated engine speed:	38.0 GPM (143.9 l/min)	36.7 GPM (138.9 l/min)
iii) Pump delivery rate at maximum hydraulic power:	37.4 GPM (141.7 l/min)	36.6 GPM (138.4 l/min)
Delivery pressure:	2131 psi (147 bar)	2183 psi (150 bar)
Power:	46.5 HP (34.7 kW)	46.6 HP (34.7 kW)



### HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	mm	inch	mm
A	29.3	744	27.1	689
B	20.5	520	20.5	520
C	20.9	532	20.9	532
D	18.9	480	18.9	480
E	12.0	304	12.0	304
F	14.4	365	14.4	365
G	35.6	905	37.0	940
H	7.9	200	7.9	200
I	21.9	555	21.9	555
J	21.2	540	22.6	575
K	28.7	730	28.9	733
L	49.3	1252	56.6	1438
*L'	53.4	1357	62.5	1588
M	22.4	569	29.7	755
N	42.6	1081	45.7	1162
O	9.0	230	9.0	230
P	43.2	1099	49.7	1262
Q	39.4	1001	40.7	1035
R	42.8	1087	43.5	1106

\*L' to Quick Attach ends



JOHN DEERE 8285R DIESEL