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2011

Test 2001A: John Deere 8235R MY12

Nebraska Tractor Test Lab

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NEBRASKA OECD TRACTOR TEST 2001A - SUMMARY 784A

JOHN DEERE 8235R DIESEL

16 SPEED

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

Dates of tests: October 5 - 12, 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: 18.5 hours

ENGINE: Make John Deere Diesel **Type** six cylinder vertical with two turbochargers and air to air aftercooler **Serial No.** *RG6090R002835* **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: 78.1 - 84.7 lb/h (35.4 - 38.4 kg/h) High idle: 2150 - 2250 rpm Turbo boost: nominal 21.0 - 23.9 psi (145 - 165 kPa) as measured 22.4 psi (154 kPa)

CHASSIS: Type front wheel assist with duals **Serial No.** *1RW8235REBP042569* **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** 25395 lb (11519 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)					
206.43 (153.93)	2100	11.93 (45.15)	0.405 (0.246)	17.31 (3.41)	
Standard Power Take-off Speed (1001 rpm)					
226.47 (168.88)	2003	12.54 (47.46)	0.388 (0.236)	18.06 (3.56)	
Maximum Power (1 hour)					
235.14 (175.34)	1751	12.53 (47.44)	0.373 (0.227)	18.76 (3.70)	

VARYING POWER AND FUEL CONSUMPTION

206.43 (153.93)	2100	11.93 (45.15)	0.405 (0.246)	17.31 (3.41)	Air temperature
180.08 (134.29)	2155	10.64 (40.29)	0.414 (0.252)	16.92 (3.33)	84°F (29°C)
135.77 (101.24)	2165	8.37 (31.67)	0.432 (0.263)	16.23 (3.20)	Relative humidity
90.94 (67.82)	2174	6.63 (25.10)	0.510 (0.310)	13.72 (2.70)	20%
45.66 (34.05)	2182	5.12 (19.39)	0.785 (0.478)	8.92 (1.76)	Barometer
5.83 (4.35)	2191	4.36 (16.52)	5.240 (3.187)	1.34 (0.26)	28.87" Hg (97.77 kPa)
Maximum Torque - 757 lb.-ft. (1027 Nm) at 1452 rpm					
Maximum Torque Rise - 46.7%					
Torque rise at 1701 engine rpm - 40%					
Power increase at 1751 rpm - 13.9%					

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									
180.59 (134.66)	14061 (62.55)	4.82 (7.75)	2100	3.7	0.469 (0.285)	14.94 (2.94)	202 (94)	77 (25)	28.75 (97.36)
75% of Pull at Maximum Power—8th Gear									
140.74 (104.95)	10578 (47.05)	4.99 (8.03)	2159	2.8	0.505 (0.307)	13.85 (2.73)	199 (93)	83 (28)	28.69 (97.16)
50% of Pull at Maximum Power—8th Gear									
94.99 (70.83)	7033 (31.28)	5.06 (8.14)	2169	2.0	0.584 (0.355)	11.99 (2.36)	189 (87)	82 (28)	28.70 (97.19)
75% of Pull at Reduced Engine Speed—11th Gear									
140.13 (104.49)	10578 (47.05)	4.97 (8.00)	1388	2.8	0.443 (0.270)	15.80 (3.11)	209 (98)	83 (28)	28.69 (97.16)
50% of Pull at Reduced Engine Speed—11th Gear									
95.39 (71.13)	7025 (31.25)	5.10 (8.20)	1411	2.0	0.471 (0.287)	14.86 (2.93)	195 (90)	81 (27)	28.70 (97.19)

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)	
164.16 (122.41)	23593 (104.95)	2.61 (4.20)	2114	10.2	4th Gear 0.515 (0.314)	13.58 (2.68)	192 (89)	67 (19)	28.80 (97.53)
175.39 (130.79)	21769 (96.83)	3.02 (4.86)	2100	6.7	5th Gear 0.479 (0.291)	14.63 (2.88)	192 (89)	68 (20)	28.80 (97.53)
177.65 (132.47)	18831 (83.76)	3.54 (5.70)	2100	5.1	6th Gear 0.475 (0.289)	14.73 (2.90)	193 (89)	67 (19)	28.80 (97.53)
180.15 (134.33)	16294 (72.48)	4.15 (6.68)	2100	4.3	7th Gear 0.468 (0.285)	14.96 (2.95)	200 (93)	72 (22)	28.76 (97.39)
180.59 (134.66)	14061 (62.55)	4.82 (7.75)	2100	3.7	8th Gear 0.469 (0.285)	14.94 (2.94)	202 (94)	77 (25)	28.75 (97.36)
178.49 (133.10)	11979 (53.28)	5.59 (9.00)	2101	3.2	9th Gear 0.473 (0.287)	14.81 (2.92)	212 (100)	80 (27)	28.73 (97.29)
177.35 (132.25)	10285 (45.75)	6.47 (10.41)	2100	2.8	10th Gear 0.483 (0.294)	14.49 (2.85)	210 (99)	82 (28)	28.72 (97.26)
173.02 (129.02)	8590 (38.21)	7.56 (12.16)	2102	2.4	11th Gear 0.493 (0.300)	14.21 (2.80)	211 (99)	83 (28)	28.71 (97.22)
169.09 (126.09)	7249 (32.25)	8.75 (14.07)	2100	2.0	12th Gear 0.506 (0.308)	13.84 (2.73)	214 (101)	83 (28)	28.70 (97.19)

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Engaged dB(A)	Disengaged dB(A)
At no load in 8th gear	71.0	71.0
Transport speed-no load- 16th gear		73.3
Bystander in 16th gear		82.3

TIRES 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

Four 480/80R50;***;10(70)

Two 420/85R34;***;20(140)

21.0 in (535 mm)

15440 lb (7003 kg)

10130 lb (4595 kg)

25570 lb(11598 kg)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

NOTE 1: During testing the engine was operated for 18.5 hours. During this period, the tractor experienced one active exhaust filter cleaning while operated in Auto Filter Cleaning Mode. This occurred after 11.5 hours of operation.

NOTE 2: The manufacturer declared that the active exhaust filter cleanings consume an average of 0.04 gal/hr (0.15 l/hr) across total tractor use. Fuel consumed during the active exhaust filter cleanings will normally be less than 1% of the total fuel consumed. The manufacturer declared that no active exhaust filter cleanings occurred during 12 hours of continuous operation of the tractor in the Auto Filter Cleaning Mode at 30% loading and the engine speed at which the maximum torque occurs.

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 106°F (41°C). The performance figures on this summary were taken from a test conducted under the OECD Code 2 test code procedure.

Report reissued. Three point lift data for tractors denoted Model Year 12 added July, 2012.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **2001A**, Nebraska Summary 784A, August 6, 2012.

Roger M. Hoy
Director

M.A. Hanna
P.J. Jasa
J.D. Luck
Board of Tractor Test Engineers

DRAWBAR PERFORMANCE
UNBALLASTED-FRONT DRIVE ENGAGED - 1750 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.lhr/gal (kW.h/l)	Temp.°F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
4th Gear									
164.17 (122.42)	23632 (105.12)	2.61 (4.19)	2112	10.2	0.516 (0.314)	13.58 (2.68)	192 (89)	67 (19)	28.80 (97.53)
5th Gear									
177.34 (132.24)	22328 (99.32)	2.98 (4.79)	2084	7.4	0.481 (0.293)	14.55 (2.87)	192 (89)	67 (19)	28.80 (97.53)
6th Gear									
191.15 (142.54)	21415 (95.26)	3.35 (5.38)	2020	6.6	0.464 (0.282)	15.10 (2.97)	195 (91)	67 (19)	28.81 (97.56)
7th Gear									
202.92 (151.31)	20353 (90.53)	3.74 (6.02)	1927	6.1	0.445 (0.270)	15.75 (3.10)	204 (95)	74 (23)	28.77 (97.43)
8th Gear									
203.32 (151.62)	19449 (86.51)	3.92 (6.31)	1750	5.8	0.438 (0.267)	15.97 (3.15)	212 (100)	79 (26)	28.74 (97.33)
9th Gear									
205.86 (153.51)	16826 (74.84)	4.59 (7.38)	1750	4.6	0.433 (0.264)	16.15 (3.18)	212 (100)	81 (27)	28.73 (97.29)
10th Gear									
205.92 (153.55)	14462 (64.33)	5.34 (8.59)	1750	3.9	0.431 (0.262)	16.25 (3.20)	213 (101)	82 (28)	28.72 (97.26)
11th Gear									
203.48 (151.74)	12250 (54.49)	6.23 (10.03)	1749	3.3	0.442 (0.269)	15.86 (3.12)	213 (101)	82 (28)	28.71 (97.22)
12th Gear									
201.85 (150.52)	10482 (46.63)	7.22 (11.62)	1750	2.8	0.443 (0.270)	15.80 (3.11)	214 (101)	83 (28)	28.71 (97.22)
13th Gear									
199.00 (148.39)	8740 (38.88)	8.54 (13.74)	1752	2.4	0.449 (0.273)	15.59 (3.07)	214 (101)	83 (28)	28.70 (97.19)

HYDRAULIC PERFORMANCE

CATEGORY: III/IVN

Quick Attach: Yes

OECD Static test

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

The following data applies to tractor chassis S/N's 1RW8235RPBP053110 and higher

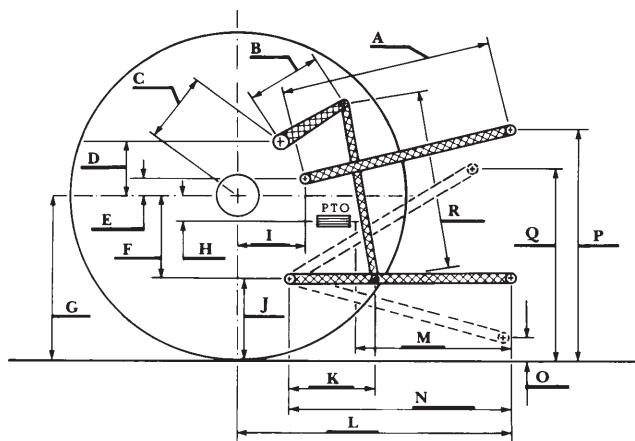
Maximum force exerted through whole range:

Lift cylinders	Category
14590 lbs (64.9 kN) 1x90 mm & 1x100 mm	III
18839 lbs (83.8 kN) 1x100 mm & 1x115 mm	III
20000 lbs (89.0 kN) 2x115 mm	IVN

HITCH DIMENSIONS AS TESTED—NO LOAD

	category III		category IVN	
	inch	mm	inch	mm
A	28.9	735	27.9	710
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	37.4	950	37.4	950
H	7.9	200	7.9	200
I	21.9	555	21.9	555
J	23.0	585	23.0	585
K	28.9	733	28.9	734
L	49.3	1252	49.7	1262
*L'	53.4	1357	55.6	1412
M	22.4	569	22.8	579
N	38.4	976	38.8	986
O	9.0	230	9.0	230
P	50.1	1272	50.1	1272
Q	42.1	1070	43.1	1095
R	45.3	1150	44.9	1140

*L' to Quick Attach ends



JOHN DEERE 8235R DIESEL