

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F.
Larsen

2011

Test 2001A: John Deere 8235R MY12

Nebraska Tractor Test Laboratory

University of Nebraska-Lincoln, tractortestlab@unl.edu

Follow this and additional works at: <https://digitalcommons.unl.edu/tractormuseumlit>



Part of the [Energy Systems Commons](#), [History of Science, Technology, and Medicine Commons](#), [Other Mechanical Engineering Commons](#), [Physical Sciences and Mathematics Commons](#), [Science and Mathematics Education Commons](#), and the [United States History Commons](#)

Laboratory, Nebraska Tractor Test, "Test 2001A: John Deere 8235R MY12" (2011). *Nebraska Tractor Tests*. 2405.

<https://digitalcommons.unl.edu/tractormuseumlit/2405>

This Article is brought to you for free and open access by the Tractor Test and Power Museum, The Lester F. Larsen at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Nebraska Tractor Tests by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

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) | |
|---------------------|--------------------------------|------------------------|---------------------------------|-----------|---|--------------------------------------|--------------------|-------------------------------|------------------|
| | | | | | 4th Gear | | | | |
| 164.16 (122.41) | 23593 (104.95) | 2.61 (4.20) | 2114 | 10.2 | 0.515 (0.314) | 13.58 (2.68) | 192 (89) | 67 (19) | 28.80 (97.53) |
| | | | | | 5th Gear | | | | |
| 175.39 (130.79) | 21769 (96.83) | 3.02 (4.86) | 2100 | 6.7 | 0.479 (0.291) | 14.63 (2.88) | 192 (89) | 68 (20) | 28.80 (97.53) |
| | | | | | 6th Gear | | | | |
| 177.65 (132.47) | 18831 (83.76) | 3.54 (5.70) | 2100 | 5.1 | 0.475 (0.289) | 14.73 (2.90) | 193 (89) | 67 (19) | 28.80 (97.53) |
| | | | | | 7th Gear | | | | |
| 180.15 (134.33) | 16294 (72.48) | 4.15 (6.68) | 2100 | 4.3 | 0.468 (0.285) | 14.96 (2.95) | 200 (93) | 72 (22) | 28.76 (97.39) |
| | | | | | 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) |
| | | | | | 9th Gear | | | | |
| 178.49 (133.10) | 11979 (53.28) | 5.59 (9.00) | 2101 | 3.2 | 0.473 (0.287) | 14.81 (2.92) | 212 (100) | 80 (27) | 28.73 (97.29) |
| | | | | | 10th Gear | | | | |
| 177.35 (132.25) | 10285 (45.75) | 6.47 (10.41) | 2100 | 2.8 | 0.483 (0.294) | 14.49 (2.85) | 210 (99) | 82 (28) | 28.72 (97.26) |
| | | | | | 11th Gear | | | | |
| 173.02 (129.02) | 8590 (38.21) | 7.56 (12.16) | 2102 | 2.4 | 0.493 (0.300) | 14.21 (2.80) | 211 (99) | 83 (28) | 28.71 (97.22) |
| | | | | | 12th Gear | | | | |
| 169.09 (126.09) | 7249 (32.25) | 8.75 (14.07) | 2100 | 2.0 | 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) | 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 | 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) |
| | three outlet sets combined | |
| 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) |
| | single outlet set | |
| 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

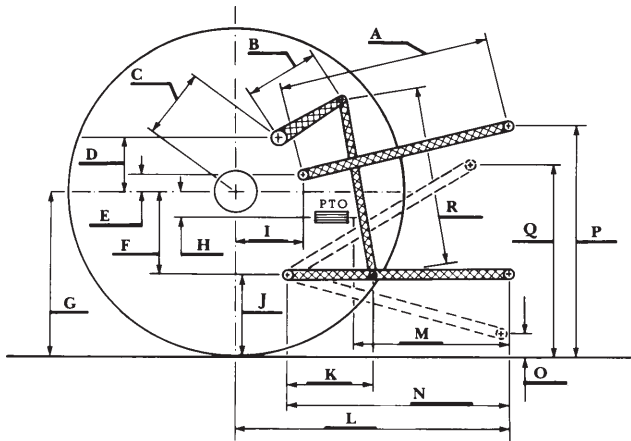
Maximum force exerted through whole range:

| | 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