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Test 1967: John Deere 8245R

Nebraska Tractor Test Lab

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NEBRASKA OECD TRACTOR TEST 1967–SUMMARY 728

JOHN DEERE 8245R DIESEL

16 SPEED

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

Dates of tests: April 8 - 30, 2010

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) 0.8433 Fuel weight 7.022 lbs/gal (0.842 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: 32.0 hours

ENGINE: Make John Deere Diesel Type six cylinder vertical with turbocharger and air to air aftercooler Serial No.*RG6090L069558* 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: 78.7 - 85.1 lb/h (35.7 - 38.6 kg/h) High idle: 2175 - 2225 rpm Turbo boost: nominal 21.0 - 25.4 psi (145 - 175 kPa) as measured 22.2 psi (153 kPa)

CHASSIS: Type front wheel assist Serial No.*1RW8245RT9P003399* Tread width rear 60.0" (1524 mm) to 132.5" (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 1.12 (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 2004 engine rpm Unladen tractor mass 21655 lb (9822 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—1048 rpm)					
208.55 (155.52)	2100	11.30 (42.77)	0.380 (0.231)	18.46 (3.64)	
Standard Power Take-off Speed(1000 rpm)					
224.84 (167.66)	2004	11.88 (44.97)	0.371 (0.226)	18.93 (3.73)	
Maximum Power (1 hour)					
234.79 (175.08)	1800	12.12 (45.88)	0.362 (0.220)	19.37 (3.82)	

VARYING POWER AND FUEL CONSUMPTION

208.55 (155.52)	2100	11.30 (42.77)	0.380 (0.231)	18.46 (3.64)	Air temperature
181.70 (135.49)	2152	10.32 (39.06)	0.399 (0.243)	17.61 (3.47)	75°F (24°C)
137.05 (102.20)	2163	8.52 (32.27)	0.437 (0.266)	16.08 (3.17)	Relative humidity
91.92 (68.55)	2173	6.65 (25.17)	0.508 (0.309)	13.82 (2.72)	24%
46.23 (34.48)	2184	4.71 (17.84)	0.716 (0.436)	9.81 (1.93)	Barometer
1.64 (1.23)	2195	3.34 (12.64)	14.263 (8.676)	0.49 (0.10)	28.71" Hg (97.22 kPa)

Maximum torque - 759 lb.-ft. (1029 Nm) at 1401 rpm
Maximum torque rise - 45.4%
Torque rise at 1700 engine rpm - 38%
Power increase at 1800 rpm - 12.6%

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									
182.55 (136.13)	14908 (66.32)	4.59 (7.39)	2099	5.2	0.433 (0.263)	16.21 (3.19)	185 (85)	64 (18)	28.86 (97.73)
75% of Pull at Maximum Power—8th Gear									
142.57 (106.31)	11155 (49.62)	4.79 (7.71)	2155	3.5	0.475 (0.289)	14.80 (2.92)	185 (85)	74 (23)	28.88 (97.80)
50% of Pull at Maximum Power—8th Gear									
97.50 (72.70)	7475 (33.25)	4.89 (7.87)	2167	2.0	0.541 (0.329)	12.97 (2.56)	175 (79)	75 (24)	28.88 (97.80)
75% of Pull at Reduced Engine Speed—11th Gear									
142.37 (106.17)	11150 (49.60)	4.79 (7.71)	1391	3.5	0.402 (0.245)	17.45 (3.44)	178 (81)	74 (23)	28.88 (97.80)
50% of Pull at Reduced Engine Speed—11th Gear									
97.41 (72.63)	7444 (33.11)	4.91 (7.89)	1408	2.1	0.436 (0.265)	16.12 (3.17)	175 (79)	75 (24)	28.88 (97.80)

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)	Hp.hr/gal (kW.h/l)	Temp.°F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
6th Gear									
163.42 (121.86)	19350 (86.07)	3.17 (5.10)	2113	13.9	0.481 (0.293)	14.60 (2.88)	185 (85)	71 (22)	28.90 (97.87)
7th Gear									
179.13 (133.58)	17232 (76.65)	3.90 (6.27)	2100	7.6	0.444 (0.270)	15.82 (3.12)	191 (89)	74 (23)	28.90 (97.87)
8th Gear									
182.55 (136.13)	14908 (66.32)	4.59 (7.39)	2099	5.2	0.433 (0.263)	16.21 (3.19)	185 (85)	64 (18)	28.86 (97.73)
9th Gear									
182.71 (136.25)	12809 (56.98)	5.35 (8.61)	2099	4.2	0.432 (0.263)	16.27 (3.20)	188 (87)	66 (19)	28.87 (97.77)
10th Gear									
182.41 (136.02)	10982 (48.85)	6.23 (10.03)	2099	3.2	0.433 (0.264)	16.21 (3.19)	189 (87)	68 (20)	28.87 (97.77)
11th Gear									
181.24 (135.15)	9350 (41.59)	7.27 (11.70)	2100	2.7	0.438 (0.266)	16.05 (3.16)	190 (88)	69 (21)	28.87 (97.77)
12th Gear									
177.84 (132.61)	7914 (35.20)	8.43 (13.56)	2100	2.1	0.446 (0.271)	15.76 (3.10)	190 (88)	71 (22)	28.87 (97.77)

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 113°F(45°C). 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. **1967**, Nebraska Summary 728, July 27,2010.

Roger M. Hoy
Director

M.F. Kocher
D.R. Keshwani
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	71.4	71.4
Transport speed-no load-16th gear		74.0
Bystander in 16th gear		85.1

TIRES, BALLAST AND WEIGHT	With Ballast	Without Ballast
Rear Tires - No., size, ply & psi(kPa)	Four 480/80R46;***,14(95)	Two 480/80R46;***,19(130)
Ballast - Duals (total)	1770 lb (803 kg)	None
- Cast Iron (total)	3215 lb (1458 kg)	None
Front Tires - No., size, ply & psi(kPa)	Two 16.9R30;***,29(200)	Two 16.9R30;***,23(160)
Ballast - Liquid (total)	None	None
- Cast Iron (total)	875 lb (397 kg)	None
Height of Drawbar	19.0 in (485 mm)	18.0 in (455 mm)
Static Weight with operator - Rear	17250 lb (7825 kg)	12720 lb (5770 kg)
- Front	10440 lb (4735 kg)	9110 lb (4132 kg)
- Total	27690 lb(12560 kg)	21830 lb (9902 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		Temp. °F(°C)	Air dry bulb	Barom. inch Hg (kPa)
					lb/hp.hr (kg/kW.h)	Hp.lhr/gal (kW.h/l)	cool- ing med		
6th Gear									
165.28 (123.25)	19469 (86.60)	3.18 (5.12)	2108	13.4	0.478 (0.291)	14.68 (2.89)	184 (84)	70 (21)	28.90 (97.87)
7th Gear									
182.48 (136.07)	18372 (81.72)	3.73 (5.99)	2057	9.8	0.448 (0.273)	15.67 (3.09)	196 (91)	75 (24)	28.90 (97.87)
8th Gear									
197.28 (147.11)	17613 (78.34)	4.20 (6.76)	1974	8.0	0.425 (0.258)	16.53 (3.26)	192 (89)	65 (18)	28.86 (97.73)
9th Gear									
205.70 (153.39)	16392 (72.91)	4.71 (7.57)	1888	6.5	0.413 (0.251)	17.01 (3.35)	199 (93)	66 (19)	28.87 (97.77)
10th Gear									
208.40 (155.40)	14961 (66.55)	5.22 (8.40)	1797	5.3	0.409 (0.249)	17.19 (3.39)	201 (94)	68 (20)	28.87 (97.77)
11th Gear									
207.31 (154.59)	12630 (56.18)	6.16 (9.91)	1799	4.0	0.409 (0.249)	17.16 (3.38)	199 (93)	71 (22)	28.87 (97.77)
12th Gear									
207.27 (154.56)	10855 (48.29)	7.16 (11.52)	1801	3.1	0.410 (0.250)	17.12 (3.37)	199 (93)	72 (22)	28.88 (97.80)
13th Gear									
205.59 (153.31)	9102 (40.49)	8.47 (13.63)	1797	2.7	0.412 (0.250)	17.06 (3.36)	199 (93)	73 (23)	28.88 (97.80)

DRAWBAR PERFORMANCE
BALLASTED - FRONT DRIVE ENGAGED - 1800 RPM
MAXIMUM POWER IN SELECTED GEARS

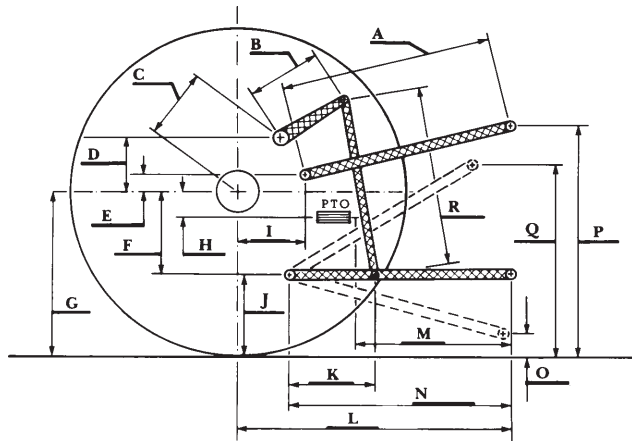
Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp.°F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
4th Gear									
171.65 (128.00)	26025 (115.77)	2.48 (3.98)	2081	11.0	0.468 (0.284)	15.02 (2.96)	178 (81)	44 (7)	29.03 (98.31)
5th Gear									
185.24 (138.13)	24587 (109.37)	2.83 (4.55)	2057	7.9	0.441 (0.269)	15.91 (3.13)	179 (82)	46 (8)	29.03 (98.31)
6th Gear									
197.04 (146.93)	23200 (103.20)	3.19 (5.13)	1981	6.3	0.424 (0.258)	16.57 (3.27)	181 (83)	48 (9)	29.03 (98.31)
7th Gear									
206.77 (154.18)	22298 (99.18)	3.48 (5.60)	1850	5.5	0.409 (0.249)	17.17 (3.38)	185 (85)	50 (10)	29.03 (98.31)
8th Gear									
211.27 (157.54)	20022 (89.06)	3.96 (6.37)	1801	4.5	0.400 (0.243)	17.56 (3.46)	185 (85)	52 (11)	29.02 (98.27)
9th Gear									
212.26 (158.28)	17218 (76.59)	4.63 (7.44)	1805	3.4	0.399 (0.243)	17.59 (3.47)	190 (88)	54 (12)	29.02 (98.27)
10th Gear									
212.00 (158.08)	14860 (66.10)	5.35 (8.61)	1802	2.7	0.399 (0.243)	17.59 (3.47)	194 (90)	56 (13)	29.02 (98.27)
11th Gear									
209.66 (156.34)	12600 (56.05)	6.24 (10.04)	1801	2.2	0.404 (0.246)	17.38 (3.42)	196 (91)	58 (14)	29.01 (98.24)
12th Gear									
209.29 (156.07)	10861 (48.31)	7.23 (11.63)	1804	1.6	0.403 (0.245)	17.42 (3.43)	191 (88)	60 (16)	29.01 (98.24)
13th Gear									
207.06 (154.40)	9086 (40.42)	8.55 (13.75)	1804	1.2	0.412 (0.251)	17.04 (3.36)	199 (93)	62 (17)	29.01 (98.24)

HYDRAULIC PERFORMANCE

CATEGORY:	III	III	IVN
Quick Attach: Yes			
OECD Static test			
Lift cylinders:	<u>2 x 90 mm</u>	<u>2x100 mm</u>	<u>2x112 mm</u>
Maximum force exerted through whole range:	12588 lbs (56.0 kN)	15683 lbs (69.8 kN)	18326 lbs (81.5 kN)

	<u>63 cc pump</u>	<u>85 cc pump</u>
i) Sustained pressure at compensator cutoff:	2940 psi (203 bar)	2912 psi (201 bar)
	three outlet sets combined	
ii) Pump delivery rate at minimum pressure and rated engine speed:	46.4 GPM (175.7 l/min)	63.6 GPM (240.9 l/min)
iii) Pump delivery rate at maximum hydraulic power:	46.0 GPM (174.1 l/min)	63.4 GPM (240.1 l/min)
Delivery pressure:	2690 psi (185 bar)	2450 psi (169 bar)
Power:	72.2 HP (53.8 kW)	90.7 HP (67.6 kW)
	single outlet set	
ii) Pump delivery rate at minimum pressure and rated engine speed:	40.8 GPM (154.6 l/min)	40.5 GPM (153.3 l/min)
iii) Pump delivery rate at maximum hydraulic power:	40.4 GPM (153.0 l/min)	39.7 GPM (150.3 l/min)
Delivery pressure:	2119 psi (146 bar)	2097 psi (145 bar)
Power:	50.0 HP (37.3 kW)	48.6 HP (36.2 kW)

HITCH DIMENSIONS AS TESTED—NO LOAD



	Category III		Category IVN	
	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 8245R DIESEL

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