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Test 1434: John Deere 8850 Diesel 16-Speed

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1434 — JOHN DEERE 8850 DIESEL 16 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption		Temperature °F (°C)			Barometer inch Hg (kPa)	
		gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Cooling medium	Air wet bulb		Air dry bulb
MAXIMUM POWER AND FUEL CONSUMPTION								
*	Rated Engine Speed—Two Hours (PTO Speed—996 rpm)							
303.99 (226.69)	2100	19.311 (73.100)	0.442 (0.269)	15.74 (3.101)	188 (86.9)	65 (18.4)	76 (24.4)	28.730 (97.017)

VARYING POWER AND FUEL CONSUMPTION—Two Hours

263.80 (196.72)	2141	17.417 (65.931)	0.460 (0.280)	15.15 (2.984)	186 (85.3)	66 (18.9)	78 (25.8)		.....
0.00 (0.00)	2240	5.075 (19.211)	.....	.....	170 (76.7)	66 (18.6)	77 (25.0)		.....
134.65 (100.41)	2194	11.343 (42.938)	0.587 (0.357)	11.87 (2.338)	176 (79.7)	65 (18.3)	76 (24.7)		.....
302.56 (225.62)	2100	19.312 (73.104)	0.445 (0.270)	15.67 (3.086)	190 (87.5)	67 (19.4)	76 (24.2)		.....
68.17 (50.83)	2220	8.142 (30.821)	0.832 (0.506)	8.37 (1.649)	174 (78.6)	66 (18.9)	74 (23.3)		.....
200.14 (149.24)	2172	14.332 (54.253)	0.499 (0.303)	13.96 (2.751)	180 (81.9)	67 (19.4)	76 (24.2)		.....
Av 161.55 Av (120.47)	2178	12.603 (47.708)	0.543 (0.331)	12.82 (2.525)	179 (81.6)	66 (18.9)	76 (24.6)		28.717 (96.972)

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption		Temp. °F (°C)			Barom. inch Hg (kPa)	
					gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Cool- ing med	Air wet bulb		Air dry bulb
Maximum Available Power—Two Hours 7th (C1) Gear											
269.77 (201.17)	19317 (85.92)	5.24 (8.43)	2101	3.99	19.188 (72.634)	0.495 (0.301)	14.06 (2.770)	187 (85.8)	66 (18.9)	78 (25.6)	28.800 (97.253)
75% of Pull at Maximum Power—Ten Hours 7th (C1) Gear											
213.27 (159.03)	14735 (65.54)	5.43 (8.73)	2153	2.94	15.982 (60.499)	0.522 (0.317)	13.34 (2.629)	180 (82.4)	66 (19.0)	75 (23.7)	28.762 (97.125)
50% of Pull at Maximum Power—Two Hours 7th (C1) Gear											
147.39 (109.91)	9951 (44.26)	5.55 (8.94)	2190	2.19	12.654 (47.902)	0.598 (0.364)	11.65 (2.294)	177 (80.6)	62 (16.4)	63 (17.2)	28.815 (97.304)
50% of Pull at Reduced Engine Speed—Two Hours 10th (D1) Gear											
147.62 (110.08)	9948 (44.25)	5.56 (8.96)	1350	1.99	10.698 (40.496)	0.505 (0.307)	13.80 (2.718)	176 (80.0)	62 (16.7)	68 (19.7)	28.820 (97.321)

MAXIMUM POWER IN SELECTED GEARS

210.04 (156.63)	35330 (157.16)	2.23 (3.59)	2140	14.51	2nd (A2) Gear		178 (80.8)	61 (16.1)	64 (17.8)	28.760 (97.118)
265.87 (198.26)	28981 (128.91)	3.44 (5.54)	2101	7.31	3rd (A3) Gear		183 (83.6)	62 (16.7)	69 (20.6)	28.850 (97.422)
268.28 (200.06)	25707 (114.35)	3.91 (6.30)	2101	5.91	4th (B1) Gear		186 (85.3)	64 (17.8)	74 (23.3)	28.830 (97.355)
259.95 (193.84)	22123 (98.41)	4.41 (7.09)	2100	4.76	5th (A4) Gear		187 (85.8)	64 (17.8)	74 (23.3)	28.830 (97.355)
265.33 (197.86)	20026 (89.08)	4.97 (8.00)	2099	4.22	6th (B2) Gear		186 (85.6)	64 (17.8)	73 (22.8)	28.830 (97.355)
274.25 (204.51)	19646 (87.39)	5.23 (8.42)	2101	3.99	7th (C1) Gear		186 (85.3)	64 (17.8)	71 (21.7)	28.850 (97.422)
272.91 (203.51)	15530 (69.08)	6.59 (10.61)	2098	3.04	8th (C2) Gear		186 (85.6)	64 (17.8)	74 (23.3)	28.820 (97.321)
272.94 (203.53)	13990 (62.23)	7.32 (11.77)	2100	2.72	9th (B3) Gear		186 (85.6)	64 (17.8)	74 (23.3)	28.820 (97.321)
272.53 (203.22)	11818 (52.57)	8.65 (13.92)	2101	2.24	10th (D1) Gear		186 (85.6)	65 (18.3)	75 (23.9)	28.820 (97.321)

Department of Agricultural Engineering

Dates of Test: May 11-21, 1982

Manufacturer: JOHN DEERE TRACTOR
WORKS, Waterloo, Iowa 50704

FUEL, OIL AND TIME: Fuel No. 2 Diesel Cetane No. 46.6 (rating taken from oil company's inspection data) Specific gravity converted to 60°/60° (15°/15°) 0.8364 Fuel weight 6.964 lbs/gal (0.835 kg/l) Oil SAE 15W40 API service classification CD CC SD To motor 11.254 gal (42.600 l) Drained from motor 10.284 gal (38.928 l) Transmission and final drive lubricant John Deere Hy-Gard transmission and hydraulic oil Total time engine was operated 43.0 hours.

ENGINE: Make John Deere Diesel Type eight cylinder vee with turbocharger and intercooler Serial No. 8955AR-01 001842 RG Crankshaft lengthwise Rated rpm 2100 Bore and stroke 5.51" × 5.00" (140 mm × 127 mm) Compression ratio 14.5 to 1 Displacement 955 cu in (15649 ml) Starting system 12 volt Lubrication pressure Air cleaner two paper elements with aspirator Oil filter two full flow cartridges and one bypass cartridge Oil cooler engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil Muffler vertical Cooling medium temperature control four thermostats and variable speed fan.

CHASSIS: Type four wheel drive with duals Serial No. *RW8850H 002113* Tread width rear 82" (2080 mm) to 140" (3570 mm) front 82" (2080 mm) to 140" (3570 mm) Wheel base 133" (3380 mm) Center of gravity (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 78.7" (1998 mm) Vertical distance above roadway 40.5" (1029 mm) Horizontal distance from center of rear wheel tread 0.2" (6 mm) to the right Hydraulic control system direct engine drive Transmission selective gear fixed ratio with partial (2) range operator controlled powershift Advertised speeds mph (km/h) first 2.1 (3.4) second 2.6 (4.2) third 3.8 (6.0) fourth 4.2 (6.8) fifth 4.7 (7.6) sixth 5.3 (8.5) seventh 5.5 (8.9) eighth 6.9 (11.1) ninth 7.6 (12.3) tenth 9.0 (14.4) eleventh 9.5 (15.3) twelfth 10.0 (16.1) thirteenth 11.2 (18.0) fourteenth 12.5 (20.0) fifteenth 16.2 (26.0) sixteenth 20.2 (32.5) reverse 4.0 (6.4), 4.9 (8.0), 8.0 (12.9), 10.0 (16.1), 10.5 (17.0), 13.2 (21.2) Clutch wet multiple disc hydraulically power actuated and operated by foot pedal Brakes wet disc hydraulically power actuated and operated by foot pedal Steering hydrostatic and articulated Turning radius (on concrete surface without brake) right 264" (6.71 m) left 264" (6.71 m) Turning space diameter (on concrete surface without brake) right 542" (13.77 m) left 542" (13.77 m) Power take-off 996 rpm at 2100 engine rpm.

LUGGING ABILITY IN 7th (C1) GEAR

Crankshaft Speed rpm	2101	1890	1677	1466	1259	1066
Pull—lbs (kN)	19646 (87.39)	23052 (102.54)	25340 (112.72)	25460 (113.25)	23918 (106.39)	21523 (95.74)
Increase in Pull %	0	17	29	30	22	10
Power—Hp (kW)	274.25 (204.51)	285.79 (213.11)	277.53 (206.95)	243.21 (181.36)	196.72 (146.69)	150.98 (112.59)
Speed—Mph (km/h)	5.23 (8.42)	4.65 (7.48)	4.11 (6.61)	3.58 (5.76)	3.08 (4.96)	2.63 (4.23)
Slip %	3.99	5.15	5.60	5.75	5.60	4.84

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power—Two Hours	78.0
75% of Pull at Maximum Power—Ten Hours	78.0
50% of Pull at Maximum Power—Two Hours	77.0
50% of Pull at Reduced Engine Speed—Two Hours	73.0
Bystander in 15th (D3) gear	88.5

TIRES, BALLAST AND WEIGHT		Tested Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Four 24.5-32; 10; 12 (85)
Ballast	—Liquid (each)	None
	—Cast Iron (each)	None
Front Tires	—No., size, ply & psi (kPa)	Four 24.5-32; 10; 12 (85)
Ballast	—Liquid (each)	None
	—Cast Iron (each)	None
Height of Drawbar		17 in (430 mm)
Static Weight with Operator—Rear		15340 lb (6958 kg)
—Front		22360 lb (10143 kg)
—Total		37700 lb (17101 kg)

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 167°F (74.9°C). Nine gears were chosen between 15% slip and 10 mph (16.1 km/h).

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1434**.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers



John Deere 8850 Diesel