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Test 1323: John Deere 8440 Diesel 16-Speed

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NEBRASKA TRACTOR TEST 1323 — JOHN DEERE 8440 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—993 rpm)								
179.83 (134.10)	2100	11.340 (42.926)	0.443 (0.269)	15.86 (3.124)	169 (76.1)	66 (19.1)	75 (24.0)	28.887 (97.546)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
157.13 (117.17)	2158	10.390 (39.332)	0.464 (0.282)	15.12 (2.979)	167 (75.0)	67 (19.4)	75 (23.9)	.....
0.00 (0.00)	2311	3.462 (13.105)	.....	.....	154 (67.5)	66 (18.6)	73 (22.8)	.....
81.17 (60.53)	2234	6.975 (26.405)	0.603 (0.367)	11.64 (2.292)	160 (71.4)	66 (18.9)	74 (23.6)	.....
180.04 (134.26)	2101	11.343 (42.940)	0.442 (0.269)	15.87 (3.127)	171 (77.2)	67 (19.4)	75 (23.9)	.....
41.43 (30.89)	2272	5.355 (20.273)	0.907 (0.552)	7.74 (1.524)	156 (68.9)	66 (18.9)	74 (23.3)	.....
119.98 (89.47)	2196	8.655 (32.763)	0.506 (0.308)	13.86 (2.731)	164 (73.3)	66 (18.6)	74 (23.3)	.....
Av Av	96.62 2212	7.697 (29.136)	0.559 (0.340)	12.55 (2.473)	162 (72.2)	66 (19.0)	74 (23.5)	28.910 (97.625)

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 6th (C-1) Gear											
160.58 (119.74)	10051 (44.71)	5.99 (9.64)	2100	3.04	11.237 (42.538)	0.491 (0.299)	14.29 (2.815)	157 (69.4)	54 (11.9)	66 (18.6)	29.030 (98.030)
75% of Pull at Maximum Power—Ten Hours 6th (C-1) Gear											
127.31 (94.93)	7601 (33.81)	6.28 (10.11)	2185	2.35	9.745 (36.889)	0.537 (0.327)	13.06 (2.574)	156 (68.9)	50 (10.0)	60 (15.9)	29.176 (98.522)
50% of Pull at Maximum Power—Two Hours 6th (C-1) Gear											
86.98 (64.86)	5070 (22.55)	6.43 (10.35)	2220	1.61	7.729 (29.258)	0.624 (0.379)	11.25 (2.217)	145 (62.8)	54 (12.2)	68 (19.7)	29.010 (97.962)
50% of Pull at Reduced Engine Speed—Two Hours 9th (B-3) Gear											
86.60 (64.58)	5048 (22.46)	6.43 (10.35)	1469	1.61	6.215 (23.527)	0.504 (0.306)	13.93 (2.745)	149 (64.7)	54 (12.2)	68 (20.0)	29.000 (97.929)
MAXIMUM POWER IN SELECTED GEARS											
138.33 (103.15)	25383 (112.91)	2.04 (3.29)	2146	14.65	1st (A-1) Gear			159 (70.3)	45 (7.2)	48 (8.9)	29.140 (98.401)
150.68 (112.36)	21080 (93.77)	2.68 (4.31)	2102	8.59	2nd (A-2) Gear			155 (68.3)	53 (11.7)	62 (16.7)	29.040 (98.064)
160.17 (119.44)	14892 (66.24)	4.03 (6.49)	2100	4.67	3rd (A-3) Gear			153 (66.9)	52 (11.1)	58 (14.4)	29.040 (98.064)
163.26 (121.75)	12314 (54.77)	4.97 (8.00)	2098	3.78	4th (B-1) Gear			153 (67.2)	51 (10.6)	57 (13.9)	29.030 (98.030)
156.14 (116.44)	11486 (51.09)	5.10 (8.20)	2100	3.62	5th (A-4) Gear			152 (66.7)	51 (10.6)	56 (13.3)	29.030 (98.030)
161.90 (120.73)	10131 (45.06)	5.99 (9.64)	2100	2.96	6th (C-1) Gear			149 (64.7)	50 (10.0)	53 (11.7)	29.020 (97.996)
159.31 (118.80)	9535 (42.41)	6.27 (10.08)	2100	2.87	7th (B-2) Gear			153 (66.9)	52 (11.1)	59 (15.0)	29.040 (98.064)
159.42 (118.88)	7938 (35.31)	7.53 (12.12)	2100	2.29	8th (C-2) Gear			154 (67.8)	52 (11.1)	60 (15.6)	29.040 (98.064)
159.09 (118.63)	6513 (28.97)	9.16 (14.74)	2099	1.95	9th (B-3) Gear			153 (67.2)	53 (11.7)	61 (16.1)	29.040 (98.064)

Department of Agricultural Engineering

Dates of Test: September 10-15, 1979

Manufacturer: JOHN DEERE WATERLOO TRACTOR WORKS, P.O. Box 270, Waterloo, Iowa 50704

FUEL, OIL AND TIME: Fuel No. 2 Diesel Cetane No. 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60° (15°/15°)** 0.8430 **Fuel weight** 7.019 lbs/gal (0.841 kg/l) **Oil SAE 30 API service classification SD-CC/CD To motor** 4.802 gal (18.176 l) **Drained from motor** 4.352 gal (16.474 l) **Transmission and final drive lubricant** John Deere Hy-Gard **Total time engine was operated** 34.0 hours

ENGINE: Make John Deere Diesel **Type** six cylinder vertical with turbocharger and inter-cooler **Serial No.** 6466AR-01083158RG **Crankshaft** lengthwise **Rated rpm** 2100 **Bore and stroke** 4.5625" × 4.75" (115.9 mm × 120.6 mm) **Compression ratio** 15.5 to 1 **Displacement** 466 cu in (7636 ml) **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** one paper cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper cartridges **Muffler** vertical **Cooling medium temperature control** two thermostats.

CHASSIS: **Type** Four wheel drive with duals **Serial No.** 8440H-001637R **Tread width** rear 63" (1600 mm) to 130" (3302 mm) front 63" (1600 mm) to 130" (3302 mm) **Wheel base** 125" (3175 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 65.0" (1650 mm) Vertical distance above roadway 40.5" (1029 mm) Horizontal distance from center of rear wheel tread 0" (0 mm) to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled powershift **Advertised speeds mph (km/h)** first 2.2 (3.5) second 2.8 (4.6) third 3.9 (6.3) fourth 4.9 (7.8) fifth 5.1 (8.2) sixth 5.7 (9.2) seventh 6.3 (10.2) eighth 7.4 (11.9) ninth 8.8 (14.2) tenth 9.3 (14.9) eleventh 10.3 (16.6) twelfth 11.4 (18.4) thirteenth 12.0 (19.4) fourteenth 13.4 (21.5) fifteenth 16.7 (26.9) sixteenth 21.7 (35.0) reverse 4.1 (6.6), 5.3 (8.6), 9.2 (14.8), 10.7 (17.3), 11.9 (19.2), 14.0 (22.5) **Clutch** multiple wet disc hydraulically operated by foot pedal **Brakes** single wet disc hydraulically operated by foot pedal **Steering** hydrostatic and articulated **Turning radius** (on concrete surface without brake applied) right 248" (6.29 m) left 248" (6.29 m) **Turning space diameter** (on concrete surface without brake applied) right 516" (13.10 m) left 516" (13.10 m) **Power take-off** 993 rpm at 2100 engine rpm.

LUGGING ABILITY IN RATED 6th (C-1) GEAR

Crankshaft Speed rpm	2100	1882	1683	1472	1256	1046
Pull—lbs (kN)	10131 (45.06)	11505 (51.18)	12125 (53.93)	12990 (57.78)	13651 (60.72)	12077 (53.72)
Increase in Pull %	0	14	20	28	35	19
Power—Hp (kW)	161.90 (120.73)	164.02 (122.31)	154.31 (115.07)	144.18 (107.51)	128.82 (96.06)	95.48 (71.20)
Speed—Mph (km/h)	5.99 (9.64)	5.35 (8.60)	4.77 (7.68)	4.16 (6.70)	3.54 (5.69)	2.96 (4.77)
Slip %	2.96	3.45	3.62	3.94	4.27	3.78

TRACTOR SOUND LEVEL WITH CAB dB(A)

Maximum Available Power—Two Hours	79.0
75% of Pull at Maximum Power—Ten Hours	79.0
50% of Pull at Maximum Power—Two Hours	78.0
50% of Pull at Reduced Engine Speed—Two Hours	76.0
Bystander in 15th (D-3) gear	88.0

TIRES, BALLAST AND WEIGHT		Tested Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Four 20.8-38; 8; 12 (85)
Ballast	—Liquid (each)	None
	—Cast Iron (each)	None
Front Tires	—No., size, ply & psi (kPa)	Four 20.8-38; 8; 12 (85)
Ballast	—Liquid (each)	None
	—Cast Iron (each)	None
Height of Drawbar		16.5 in (420 mm)
Static Weight with Operator—Rear		12770 lb (5792 kg)
	Front	13820 lb (6269 kg)
	Total	26590 lb (12061 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 code or official Nebraska test procedure. Temperature at injection pump return was 153°F (67.2°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 **1323**.

LOUIS I. LEVITICUS
Engineer-in-Charge

G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers



John Deere 8440 Diesel