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Test 1469: John Deere 2150 Diesel 16-Speed

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1469 — JOHN DEERE 2150 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—567 rpm)								
46.47 (34.65)	2500	3.214 (12.166)	0.485 (0.295)	14.46 (2.848)	187 (86.3)	53 (11.7)	75 (23.8)	28.930 (97.692)
Standard Power Take-off Speed (540 rpm)—One Hour								
46.13 (34.40)	2383	3.123 (11.822)	0.475 (0.289)	14.77 (2.910)	188 (86.6)	55 (12.8)	75 (23.7)	28.880 (97.523)

VARYING POWER AND FUEL CONSUMPTION—Two Hours

41.10 (30.65)	2604	2.952 (11.175)	0.504 (0.306)	13.92 (2.743)	185 (85.0)	53 (11.7)	74 (23.1)	.....
0.00 (0.00)	2670	1.279 (4.842)	.....	.....	178 (81.1)	55 (12.8)	76 (24.2)	.....
20.80 (15.51)	2634	1.964 (7.435)	0.662 (0.403)	10.59 (2.086)	180 (82.5)	52 (11.4)	76 (24.7)	.....
46.56 (34.72)	2500	3.243 (12.276)	0.488 (0.297)	14.36 (2.828)	188 (86.7)	54 (12.5)	76 (24.4)	.....
10.56 (7.87)	2672	1.613 (6.106)	1.071 (0.652)	6.55 (1.289)	179 (81.7)	51 (10.6)	72 (22.5)	.....
31.23 (23.29)	2634	2.422 (9.168)	0.544 (0.331)	12.90 (2.540)	183 (83.9)	54 (11.9)	76 (24.2)	.....
Av Av	25.04 (18.67)	2.245 (8.498)	0.629 (0.383)	11.15 (2.197)	182 (83.5)	53 (11.8)	75 (23.8)	28.838 (97.380)

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 9th (5L) Gear											
38.11 (28.42)	2879 (12.80)	4.97 (7.99)	2500	6.45	3.209 (12.147)	0.590 (0.359)	11.88 (2.340)	189 (87.2)	53 (11.7)	61 (15.8)	28.875 (97.507)
75% of Pull at Maximum Power—Ten Hours 9th (5L) Gear											
30.93 (23.07)	2203 (9.80)	5.27 (8.47)	2612	5.03	2.752 (10.419)	0.624 (0.379)	11.24 (2.214)	188 (86.6)	61 (16.2)	74 (23.2)	28.303 (95.575)
50% of Pull at Maximum Power—Two Hours 9th (5L) Gear											
21.27 (15.86)	1469 (6.53)	5.43 (8.74)	2649	3.34	2.246 (8.503)	0.740 (0.450)	9.47 (1.865)	184 (84.4)	49 (9.2)	53 (11.7)	28.805 (97.270)
50% of Pull at Reduced Engine Speed—Two Hours 12th (6H) Gear											
21.16 (15.78)	1470 (6.54)	5.40 (8.69)	1497	3.31	1.551 (5.871)	0.514 (0.313)	13.65 (2.688)	187 (86.1)	62 (16.7)	79 (25.8)	28.575 (96.493)

MAXIMUM POWER IN SELECTED GEARS

34.99 (26.09)	4875 (21.68)	2.69 (4.33)	2568	14.75	5th (3L) Gear			186 (85.6)	48 (8.9)	51 (10.6)	28.680 (96.848)
36.42 (27.16)	3891 (17.31)	3.51 (5.65)	2502	10.33	6th (3H) Gear			190 (87.8)	56 (13.3)	66 (18.9)	28.750 (97.084)
37.29 (27.81)	3727 (16.58)	3.75 (6.04)	2502	9.44	7th (4L) Gear			189 (87.2)	56 (13.3)	66 (18.9)	28.760 (97.118)
37.63 (28.06)	2868 (12.76)	4.92 (7.92)	2498	6.57	8th (4H) Gear			189 (86.9)	55 (12.8)	64 (17.8)	28.760 (97.118)
38.68 (28.84)	2937 (13.06)	4.94 (7.95)	2498	6.74	9th (5L) Gear			188 (86.7)	53 (11.7)	61 (16.1)	28.760 (97.118)
38.44 (28.66)	2248 (10.00)	6.41 (10.32)	2502	5.12	10th (5H) Gear			190 (87.5)	57 (13.9)	68 (20.0)	28.750 (97.084)
38.69 (28.85)	2077 (9.24)	6.98 (11.24)	2500	4.56	11th (6L) Gear			189 (87.2)	57 (13.9)	68 (20.0)	28.740 (97.051)
37.41 (27.90)	1557 (6.93)	9.01 (14.50)	2502	3.43	12th (6H) Gear			190 (87.5)	58 (14.4)	70 (21.1)	28.740 (97.051)

Department of Agricultural Engineering

Dates of Test: April 15 to May 9, 1983

Manufacturer: JOHN DEERE WERKE MANN-HEIM, Mannheim, West Germany

FUEL, OIL AND TIME: Fuel No. 2 Diesel Cetane No. 47.0 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° (15°/15°)** 0.8421 **Fuel weight** 7.012 lbs/gal (0.840 kg/l) **Oil** SAE 15W-40 **API service classification** CD, CC, SD **To motor** 1.484 gal (5.617 l) **Drained from motor** 1.278 gal (4.840 l) **Transmission and final drive lubricant** John Deere Hy-Gard transmission and hydraulic fluid **Total time engine was operated** 45.0 hours.

ENGINE: Make John Deere Diesel **Type** three cylinder vertical **Serial No.** 3179DDL11551101CD **Crankshaft** lengthwise **Rated rpm** 2500 **Bore and stroke** 4.19" x 4.33" (106.5 mm x 110 mm) **Compression ratio** 16.8 to 1 **Displacement** 179 cu in (2934 ml) **Starting system** 12 volt **Lubrication pressure** **Air cleaner** two paper elements **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 one mesh strainer **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: **Type** standard **Serial No.** *L02150T466895* **Tread width** rear 55.1" (1400 mm) to 78.7" (1999 mm) front 49.5" (1257 mm) to 79.5" (2019 mm) **Wheel base** 74.4" (1890 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 30.8" (781 mm) Vertical distance above roadway 31.0" (787 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 1.6 (2.5) second 2.0 (3.2) third 2.2 (3.5) fourth 2.8 (4.4) fifth 3.1 (5.0) sixth 4.0 (6.4) seventh 4.2 (6.8) eighth 5.3 (8.6) ninth 5.4 (8.7) tenth 6.8 (11.0) eleventh 7.4 (12.0) twelfth 9.5 (15.2) thirteenth 10.7 (17.2) fourteenth 13.6 (21.8) fifteenth 14.4 (23.2) sixteenth 18.3 (29.5) reverse 2.4 (3.9), 3.1 (4.9), 3.3 (5.4), 4.2 (6.8), 4.8 (7.7), 6.1 (9.8), 6.5 (10.4), 8.2 (13.2) **Clutch** single dry disc operated by foot pedal **Brakes** wet disc hydraulically actuated and operated by two foot pedals which can be locked together **Steering** power assist **Turning radius** (on concrete surface with brake applied) right 110" (2.80 m) left 110" (2.80 m) (on concrete surface without brake) right 122" (3.10 m) left 122" (3.10 m) **Turning space diameter** (on concrete surface with brake applied) right 244" (6.20 m) left 244" (6.20 m) (on concrete surface without brake) right 268" (6.81 m) left 268" (6.81 m) **Power take-off** 540 rpm at 2383 engine rpm.

LUGGING ABILITY IN 9th (5L) GEAR

Crankshaft Speed rpm	2498	2250	2013	1753	1508	1261
Pull—lbs (kN)	2937 (13.06)	3217 (14.31)	3419 (15.21)	3640 (16.19)	3887 (17.29)	3873 (17.23)
Increase in Pull %	0	10	16	24	32	32
Power—Hp (kW)	38.68 (28.84)	37.84 (28.21)	35.69 (26.61)	32.79 (24.45)	29.79 (22.21)	24.84 (18.52)
Speed—Mph (km/h)	4.94 (7.95)	4.41 (7.10)	3.91 (6.30)	3.38 (5.44)	2.87 (4.63)	2.40 (3.87)
Slip %	6.74	7.68	8.26	9.16	10.05	10.05

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power—Two Hours	93.0
75% of Pull at Maximum Power—Ten Hours	93.0
50% of Pull at Maximum Power—Two Hours	92.0
50% of Pull at Reduced Engine Speed—Two Hours	89.5
Bystander in 16th (8H) gear	85.5

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Two 16.9-28; 6; 16 (110)	Two 16.9-28; 6; 16 (110)
Ballast	—Liquid (each)	385 lb (175 kg)	None
	—Cast Iron (each)	None	None
Front Tires	—No., size, ply & psi (kPa)	Two 7.50-16; 6; 44 (305)	Two 7.50-16; 6; 44 (305)
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	25 lb (11 kg)	None
Height of Drawbar		19.5 in (495 mm)	19.5 in (495 mm)
Static Weight with Operator—Rear		3840 lb (1742 kg)	3070 lb (1393 kg)
	—Front	2090 lb (948 kg)	2040 lb (925 kg)
	—Total	5930 lb (2690 kg)	5110 lb (2318 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 was maintained at 140°F (60.0°C). Eight 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 1469.

LOUIS I. LEVITICUS

Engineer-in-Charge

K. VON BARGEN

W. E. SPLINTER

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Board of Tractor Test Engineers



John Deere 2150 Diesel

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