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## Test 1358: John Deere 4640 Power Shift Diesel 8-Speed

Nebraska Tractor Test Lab

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# NEBRASKA TRACTOR TEST 1358 — JOHN DEERE 4640 POWER SHIFT DIESEL 8 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—1015 rpm)									
155.96 (116.30)	2200	9.942 (37.635)	0.450 (0.274)	15.68 (3.090)	192 (88.9)	62 (16.8)	75 (23.9)	28.960 (97.794)	
Standard Power Take-off Speed (1000 rpm)—One Hour									
157.01 (117.08)	2167	9.894 (37.453)	0.445 (0.271)	15.87 (3.126)	192 (88.8)	61 (16.2)	75 (23.9)	28.965 (97.810)	
VARYING POWER AND FUEL CONSUMPTION—Two Hours									
137.51 (102.54)	2281	9.336 (35.341)	0.480 (0.292)	14.73 (2.901)	189 (87.2)	62 (16.4)	75 (23.9)	..... .....	
0.00 (0.00)	2380	3.190 (12.075)	..... .....	..... .....	178 (81.1)	62 (16.4)	75 (23.9)	..... .....	
70.17 (52.33)	2331	6.261 (23.700)	0.630 (0.383)	11.21 (2.208)	185 (85.0)	62 (16.7)	75 (23.9)	..... .....	
157.16 (117.19)	2200	10.007 (37.881)	0.450 (0.274)	15.70 (3.094)	193 (89.4)	62 (16.7)	76 (24.2)	..... .....	
35.39 (26.39)	2351	4.821 (18.249)	0.962 (0.585)	7.34 (1.446)	179 (81.7)	62 (16.7)	75 (23.9)	..... .....	
104.32 (77.79)	2310	7.849 (29.712)	0.531 (0.323)	13.29 (2.618)	188 (86.7)	62 (16.7)	75 (23.9)	..... .....	
Av Av	84.09 (62.71)	2309	6.911 (26.161)	0.580 (0.353)	12.17 (2.397)	185 (85.2)	62 (16.6)	75 (23.9)	28.947 (97.749)

## 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 4th Gear											
132.44 (98.76)	10368 (46.12)	4.79 (7.71)	2198	7.55	9.787 (37.047)	0.522 (0.317)	13.53 (2.666)	196 (90.8)	66 (18.6)	80 (26.4)	29.075 (98.182)
75% of Pull at Maximum Power—Ten Hours 4th Gear											
109.02 (81.30)	8008 (35.62)	5.11 (8.22)	2290	5.36	8.690 (32.894)	0.563 (0.342)	12.55 (2.472)	194 (89.8)	68 (20.2)	85 (29.6)	28.997 (97.919)
50% of Pull at Maximum Power—Two Hours 4th Gear											
74.76 (55.75)	5334 (23.73)	5.26 (8.46)	2318	3.81	6.938 (26.262)	0.655 (0.399)	10.78 (2.123)	190 (87.5)	67 (19.2)	82 (27.5)	29.050 (98.097)
50% of Pull at Reduced Engine Speed—Two Hours 6th Gear											
74.47 (55.53)	5306 (23.60)	5.26 (8.47)	1353	3.69	5.221 (19.763)	0.495 (0.301)	14.26 (2.810)	191 (88.3)	66 (18.6)	84 (28.9)	29.035 (98.047)

## MAXIMUM POWER IN SELECTED GEARS

96.94 (72.28)	15989 (71.12)	2.27 (3.66)	2306	14.86	2nd Gear			187 (86.1)	65 (18.3)	76 (24.4)	28.870 (97.490)
131.38 (97.97)	13935 (61.99)	3.54 (5.69)	2201	11.36	3rd Gear			196 (91.1)	64 (17.8)	77 (25.0)	29.080 (98.199)
137.04 (102.19)	10694 (47.57)	4.81 (7.73)	2201	7.32	4th Gear			195 (90.3)	63 (17.2)	73 (22.8)	29.050 (98.097)
134.77 (100.50)	7798 (34.69)	6.48 (10.43)	2202	5.25	5th Gear			193 (89.4)	66 (18.9)	78 (25.6)	28.870 (97.490)
134.62 (100.39)	5924 (26.35)	8.52 (13.71)	2198	3.97	6th Gear			194 (90.0)	67 (19.4)	80 (26.7)	28.870 (97.490)

## LUGGING ABILITY IN 4th GEAR

Crankshaft Speed rpm	2201	1966	1754	1546	1320	1090
Pull—lbs (kN)	10694 (47.57)	12063 (53.66)	12991 (57.79)	13747 (61.15)	13795 (61.36)	11799 (52.48)
Increase in Pull %	0	13	21	29	29	10
Power—Hp (kW)	137.04 (102.19)	136.35 (101.68)	129.54 (96.60)	119.45 (89.07)	102.11 (76.15)	73.91 (55.12)
Speed—Mph (km/h)	4.81 (7.73)	4.24 (6.82)	3.74 (6.02)	3.26 (5.24)	2.78 (4.47)	2.35 (3.78)
Slip %	7.32	8.59	9.46	10.59	10.73	8.44

## Department of Agricultural Engineering

**Dates of Test:** August 18-28, 1980, Cab sound test No. 80-4 November 19, 1980

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

**FUEL, OIL AND TIME:** Fuel No. 2 Diesel Cetane No. 47.9 (rating taken from oil company's inspection data) Specific gravity converted to 60°/60° (15°/15°) 0.8482 Fuel weight 7.063 lbs/gal (0.846 kg/l) Oil SAE 30 API service classification CD, CC and SD To motor 5.662 gal (21.431 l) Drained from motor 5.484 gal (20.757 l) Transmission and final drive lubricant John Deere Hy-Gard Total time engine was operated 36.0 hours

**ENGINE:** Make John Deere Diesel Type six cylinder vertical with turbocharger and inter-cooler Serial No. 6466AR-08 139316RG Crankshaft lengthwise Rated rpm 2200 Bore and stroke 4.56" × 4.75" (115.8 mm × 120.7 mm) Compression ratio 15.0 to 1 Displacement 466 cu in (7636 ml) Starting system 12 volt Lubrication pressure Air cleaner two paper elements Oil filter one paper cartridge Oil cooler engine coolant heat exchanger for crankcase oil, radiator for transmission and hydraulic oil Fuel filter two snap-on paper cartridges Muffler vertical Cooling medium temperature control two thermostats.

**CHASSIS:** Type standard with duals Serial No. 4640P-18823R Tread width rear 60" (1524 mm) to 131.6" (3342 mm) front 60.8" (1543 mm) to 84.9" (2156 mm) Wheel base 118.5" (3009 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 33.0" (838 mm) Vertical distance above roadway 43.5" (1106 mm) Horizontal distance from center of rear wheel tread 0.2" (6 mm) to the left Hydraulic control system direct engine drive Transmission selective gear fixed ratio with full range power shift Advertised speeds mph (km/h) first 1.8 (2.9) second 2.6 (4.1) third 4.0 (6.4) fourth 5.2 (8.4) fifth 6.8 (11.0) sixth 8.9 (14.3) seventh 11.4 (18.3) eighth 19.5 (31.3) reverse 2.3 (3.7), 3.3 (5.3), 5.1 (8.2), 6.7 (10.7) Clutch wet multiple disc hydraulically power actuated and operated by foot pedal Brakes wet disc hydraulically power actuated and operated by two foot pedals which can be locked together Steering hydrostatic Turning radius (on concrete surface with brake applied) right 161" (4.09 m) left 161" (4.09 m) (on concrete surface without brake applied) right 182" (4.62 m) left 182" (4.62 m) Turning space diameter (on concrete surface with brake applied) right 336" (8.53 m) left 336" (8.53 m) (on concrete surface without brake) right 377" (9.58 m) left 377" (9.58 m) Power take-off 1000 rpm at 2167 engine rpm

**REPAIRS and ADJUSTMENTS:** No repairs or adjustments.

<b>TRACTOR SOUND LEVEL</b>	<b>With Cab dB(A)</b>	<b>W/O Cab dB(A)</b>
Maximum Available Power—Two Hours	77.0	94.5
75% of Pull at Maximum Power—Ten Hours	78.0	95.0
50% of Pull at Maximum Power—Two Hours	77.5	96.0
50% of Pull at Reduced Engine Speed—Two Hours	75.5	90.0
Bystander in 8th gear	87.5	86.5

<b>TIRES, BALLAST AND WEIGHT</b>		<b>With Ballast</b>	<b>Without Ballast</b>
<b>Rear Tires</b>	—No., size, ply & psi (kPa)	Four 18.4-42; 10; 14 (95)	Four 18.4-42; 10; 14 (95)
	—Liquid (each inner)	None	None
	—Cast Iron (each)	686 lb (311 kg)	None
<b>Front Tires</b>	—No., size, ply & psi (kPa)	Two 14L-16.1; 10; 44 (305)	Two 14L-16.1; 10; 44 (305)
	—Liquid (each)	None	None
	—Cast Iron (each)	30 lb (14 kg)	None
<b>Height of Drawbar</b>		24 in (610 mm)	24 in (610 mm)
<b>Static Weight with Operator—Rear</b>		14175 lb (6430 kg)	11430 lb (5185 kg)
—Front		4410 lb (2000 kg)	4350 lb (1973 kg)
—Total		18585 lb (8430 kg)	15780 lb (7158 kg)

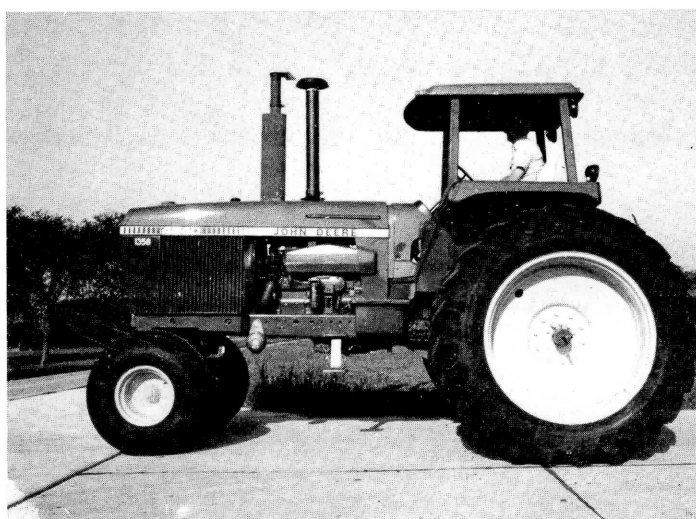
**REMARKS:** All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump return was 154°F (67.8°C). Five gears were chosen between 15% slip and 10 mph (16.1 km/h).

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1358**.

LOUIS I. LEVITICUS  
Engineer-in-Charge

G. W. STEINBRÜEGGE, Chairman  
W. E. SPLINTER  
K. VON BARGEN

Board of Tractor Test Engineers



**John Deere 4640 Power Shift Diesel**