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Test 1436: John Deere 8450 Diesel 16-Speed

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1436 — JOHN DEERE 8450 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)								
186.98 (139.43)	2100	11.915 (45.103)	0.444 (0.270)	15.69 (3.091)	186 (85.5)	63 (17.3)	75 (23.9)	28.793 (97.231)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
161.70 (120.58)	2139	10.550 (39.936)	0.454 (0.276)	15.33 (3.019)	181 (82.8)	63 (17.2)	75 (23.9)	..... .....
0.00 (0.00)	2239	3.063 (11.595)	..... .....	..... .....	174 (78.9)	63 (17.2)	76 (24.2)	..... .....
82.93 (61.84)	2193	6.875 (26.025)	0.577 (0.351)	12.06 (2.376)	179 (81.7)	63 (17.2)	75 (23.9)	..... .....
187.65 (139.93)	2100	11.984 (45.364)	0.445 (0.271)	15.66 (3.085)	186 (85.6)	64 (17.5)	76 (24.2)	..... .....
41.80 (31.17)	2208	5.049 (19.113)	0.841 (0.512)	8.28 (1.631)	175 (79.4)	63 (17.2)	74 (23.3)	..... .....
122.65 (91.46)	2163	8.698 (32.926)	0.494 (0.300)	14.10 (2.778)	181 (82.8)	63 (17.2)	74 (23.6)	..... .....
Av 99.46 Av (74.17)	2174	7.703 (29.159)	0.539 (0.328)	12.91 (2.544)	179 (81.8)	63 (17.3)	75 (23.8)	28.773 (97.163)

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											
173.52 (129.39)	10904 (48.50)	5.97 (9.60)	2100	2.86	12.008 (45.456)	0.482 (0.293)	14.45 (2.847)	185 (84.7)	63 (17.2)	68 (19.7)	28.580 (96.510)
75% of Pull at Maximum Power—Ten Hours 7th (C1) Gear											
137.24 (102.34)	8325 (37.03)	6.18 (9.95)	2161	2.21	10.145 (38.403)	0.515 (0.313)	13.53 (2.665)	182 (83.1)	62 (16.7)	63 (16.9)	28.700 (96.916)
50% of Pull at Maximum Power—Two Hours 7th (C1) Gear											
93.34 (69.60)	5551 (24.69)	6.31 (10.15)	2190	1.56	8.023 (30.372)	0.599 (0.364)	11.63 (2.292)	181 (82.8)	61 (16.1)	62 (16.7)	28.905 (97.608)
50% of Pull at Reduced Engine Speed—Two Hours 10th (D1) Gear											
93.05 (69.39)	5552 (24.70)	6.29 (10.11)	1347	1.61	6.803 (25.752)	0.509 (0.310)	13.68 (2.695)	183 (83.9)	62 (16.4)	63 (16.9)	28.890 (97.557)
MAXIMUM POWER IN SELECTED GEARS											
142.38 (106.17)	26567 (118.18)	2.01 (3.23)	2128	14.90	1st (A1) Gear			183 (83.6)	59 (15.0)	61 (16.1)	28.550 (96.409)
163.32 (121.79)	22888 (101.81)	2.68 (4.31)	2099	7.89	2nd (A2) Gear			184 (84.4)	62 (16.7)	64 (17.8)	28.580 (96.510)
173.56 (129.42)	16221 (72.15)	4.01 (6.46)	2097	4.57	3rd (A3) Gear			185 (85.0)	61 (16.1)	63 (17.2)	28.580 (96.510)
175.73 (131.04)	14646 (65.15)	4.50 (7.24)	2099	3.93	4th (B1) Gear			185 (85.0)	61 (16.1)	63 (17.2)	28.570 (96.477)
170.45 (127.11)	12584 (55.98)	5.08 (8.17)	2101	3.36	5th (A4) Gear			185 (85.0)	61 (16.1)	63 (17.2)	28.570 (96.477)
172.49 (128.63)	11402 (50.72)	5.67 (9.13)	2100	3.03	6th (B2) Gear			185 (85.0)	60 (15.6)	62 (16.7)	28.570 (96.477)
175.02 (130.51)	10995 (48.91)	5.97 (9.61)	2101	3.03	7th (C1) Gear			185 (85.0)	60 (15.6)	62 (16.7)	28.570 (96.477)
170.66 (127.26)	8543 (38.00)	7.49 (12.06)	2098	2.28	8th (C2) Gear			185 (85.0)	62 (16.7)	64 (17.8)	28.580 (96.510)
170.60 (127.21)	7698 (34.24)	8.31 (13.38)	2101	1.86	9th (B3) Gear			184 (84.4)	62 (16.7)	65 (18.3)	28.580 (96.510)

Department of Agricultural Engineering

Dates of Test: May 12-27, 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 classi-**
fication CD CC SD **To motor** 4.584 gal (17.353 l)
Drained from motor 4.087 gal (15.471 l) **Trans-**
mission and final drive lubricant John Deere Hy-
Gard transmission and hydraulic oil **Total time**
engine was operated 49.0 hours.

ENGINE: Make John Deere Diesel **Type** six
cylinder vertical with turbocharger and
intercooler **Serial No.** 6466AR-13 209127RG
Crankshaft lengthwise **Rated rpm** 2100 **Bore**
and stroke 4.5625" × 4.75" (115.8 mm × 120.6
mm) **Compression ratio** 15.5 to 1 **Displacement**
466 cu in (7636 ml) **Starting system** 12 volt **Lub-**
rication pressure **Air cleaner** two paper elements
with aspirator **Oil filter** one full flow cartridge
Oil cooler engine coolant heat exchanger for
crankcase oil, radiator for hydraulic and transmis-
sion oil **Fuel filter** two paper elements **Muffler**
vertical **Cooling medium temperature control**
two thermostats.

CHASSIS: **Type** four wheel drive with duals
Serial No. *RW8450H 001185* **Tread width** rear
72" (1820 mm) to 129" (3280 mm) front 72" (1820
mm) to 129" (3280 mm) **Wheel base** 125" (3175
mm) **Center of gravity** (without operator or bal-
last, with minimum tread, with fuel tank filled and
tractor serviced for operation) Horizontal distance
forward from center-line of rear wheels 64.0"
(1626 mm) Vertical distance above roadway 41.3"
(1049 mm) Horizontal distance from center of rear
wheel tread 0.5" (13 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 2.3 (3.7) second 2.8 (4.6)
third 4.1 (6.6) fourth 4.6 (7.4) fifth 5.2 (8.3) sixth
5.7 (9.2) seventh 6.0 (9.7) eighth 7.5 (12.1) ninth
8.3 (13.4) tenth 9.8 (15.7) eleventh 10.4 (16.7)
twelfth 10.9 (17.5) thirteenth 12.2 (19.6) four-
teenth 13.6 (21.9) fifteenth 17.6 (28.4) sixteenth
22.0 (35.4) reverse 4.5 (7.2), 5.6 (9.0), 9.0 (14.5),
11.2 (18.0), 11.8 (19.0), 14.7 (23.7) **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
243" (6.17 m) left 243" (6.17 m) **Turning space**
diameter (on concrete surface without brake)
right 495" (12.57 m) left 495" (12.57 m) **Power**
take-off 993 rpm at 2100 engine rpm.

LUGGING ABILITY IN 7th (C1) GEAR

Crankshaft Speed rpm	2101	1888	1685	1465	1261	1041
Pull—lbs (kN)	10995 (48.91)	12467 (55.46)	13594 (60.47)	13950 (62.05)	13193 (58.69)	12004 (53.40)
Increase in Pull %	0	13	24	27	20	9
Power—Hp (kW)	175.02 (130.51)	177.70 (132.51)	172.34 (128.51)	153.50 (114.47)	125.18 (93.34)	94.36 (70.37)
Speed—Mph (km/h)	5.97 (9.61)	5.35 (8.60)	4.75 (7.65)	4.13 (6.64)	3.56 (5.73)	2.95 (4.74)
Slip %	3.03	3.36	3.52	3.68	3.52	3.36

TRACTOR SOUND LEVEL WITH CAB

dB(A)

Maximum Available Power—Two Hours	77.5
75% of Pull at Maximum Power—Ten Hours	77.0
50% of Pull at Maximum Power—Two Hours	76.0
50% of Pull at Reduced Engine Speed—Two Hours	73.0
Bystander in 15th (D3) gear	87.0

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		17.5 in (445 mm)
Static Weight with Operator—Rear		14230 lb (6455 kg)
—Front		14920 lb (6768 kg)
—Total		29150 lb (13223 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 150°F (65.7°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 1436.

LOUIS I. LEVITICUS

Engineer-in-Charge

K. VON BARGEN

W. E. SPLINTER

L. L. BASHFORD

Board of Tractor Test Engineers



John Deere 8450 Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
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