

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

---

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F. Larsen

---

9-10-1979

## Test 1323: John Deere 8440 Diesel 16-Speed

Nebraska Tractor Test Lab

University of Nebraska-Lincoln, [tractortestlab@unl.edu](mailto:tractortestlab@unl.edu)

Follow this and additional works at: <https://digitalcommons.unl.edu/tractormuseumlit>



Part of the [Energy Systems Commons](#), [History of Science, Technology, and Medicine Commons](#), [Other Mechanical Engineering Commons](#), [Physical Sciences and Mathematics Commons](#), [Science and Mathematics Education Commons](#), and the [United States History Commons](#)

---

Nebraska Tractor Test Lab, "Test 1323: John Deere 8440 Diesel 16-Speed" (1979). *Nebraska Tractor Tests*. 1642.

<https://digitalcommons.unl.edu/tractormuseumlit/1642>

This Article is brought to you for free and open access by the Tractor Test and Power Museum, The Lester F. Larsen at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Nebraska Tractor Tests by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

# 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 (72.05)	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 classifi-**  
**cation SD-CC/CD To motor** 4.802 gal (18.176 l)  
**Drained from motor** 4.352 gal (16.474 l) **Trans-**  
**mission 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 ele-  
ments with aspirator **Oil filter** one paper car-  
tridge **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) four-  
teenth 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** multi-  
ple 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**

<b>Rear Tires</b>	—No., size, ply & psi (kPa)	Four 20.8-38; 8; 12 (85)
<b>Ballast</b>	—Liquid (each)	None
	—Cast Iron (each)	None
<b>Front Tires</b>	—No., size, ply & psi (kPa)	Four 20.8-38; 8; 12 (85)
<b>Ballast</b>	—Liquid (each)	None
	—Cast Iron (each)	None
<b>Height of Drawbar</b>		16.5 in (420 mm)
<b>Static Weight with Operator—Rear</b>		12770 lb (5792 kg)
<b>Front</b>		13820 lb (6269 kg)
<b>Total</b>		26590 lb (12061 kg)

## **Tested Without Ballast**

**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**

The Agricultural Experiment Station  
Institute of Agriculture and Natural Resources  
University of Nebraska-Lincoln  
H. W. Ottoson, Director