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## Test 1525: Case 2094 Powershift Diesel 12-Speed

Nebraska Tractor Test Lab

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# NEBRASKA TRACTOR TEST 1525 — CASE 2094 POWERSHIFT DIESEL 12 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—998 rpm)								
110.50 (82.40)	2100	7.175 (27.157)	0.455 (0.276)	15.40 (3.034)	187 (86.1)	65 (18.5)	75 (23.8)	28.96 (97.80)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
97.14 (72.44)	2170	6.561 (24.837)	0.473 (0.288)	14.80 (2.916)	184 (84.2)	65 (18.3)	74 (23.3)	..... .....
0.00 (0.00)	2302	2.310 (8.744)	..... .....	..... .....	174 (78.9)	66 (18.9)	75 (23.9)	..... .....
49.97 (37.26)	2236	4.341 (16.434)	0.608 (0.370)	11.51 (2.267)	181 (82.8)	66 (18.6)	76 (24.2)	..... .....
111.42 (83.09)	2100	7.230 (27.368)	0.454 (0.276)	15.41 (3.036)	187 (86.1)	66 (18.6)	75 (23.6)	..... .....
25.33 (18.89)	2266	3.373 (12.767)	0.932 (0.567)	7.51 (1.480)	175 (79.4)	65 (18.3)	74 (23.1)	..... .....
73.99 (55.17)	2205	5.366 (20.311)	0.508 (0.309)	13.79 (2.716)	183 (83.6)	66 (18.9)	75 (23.9)	..... .....
Av 59.64 Av (44.47)	2213	4.864 (18.410)	0.571 (0.347)	12.26 (2.416)	181 (82.5)	66 (18.6)	75 (23.7)	28.94 (97.73)

## 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 8th (3-2) Gear												
98.66 (73.57)	5851 (26.02)	6.32 (10.18)	2099	4.45	7.143 (27.039)	0.507 (0.308)	13.81 (2.721)	192 (88.6)	70 (21.1)	76 (24.2)	29.03 (98.01)	
75% of Pull at Maximum Power—Ten Hours 8th (3-2) Gear												
79.36 (59.18)	4443 (19.76)	6.70 (10.78)	2195	3.26	6.136 (23.226)	0.541 (0.329)	12.93 (2.548)	190 (87.6)	70 (20.9)	74 (23.2)	28.86 (97.44)	
50% of Pull at Maximum Power—Two Hours 8th (3-2) Gear												
54.15 (40.38)	2962 (13.18)	6.86 (11.03)	2219	2.05	4.807 (18.197)	0.621 (0.378)	11.27 (2.219)	188 (86.4)	73 (22.8)	82 (27.5)	28.87 (97.47)	
50% of Pull at Reduced Engine Speed—Two Hours 10th (4-1) Gear												
54.20 (40.41)	2962 (13.18)	6.86 (11.04)	1456	2.09	3.850 (14.574)	0.497 (0.302)	14.08 (2.773)	189 (86.9)	73 (22.5)	83 (28.1)	28.83 (97.34)	

## MAXIMUM POWER IN SELECTED GEARS

90.78 (67.69)	11910 (52.98)	2.86 (4.60)	2126	14.83	4th (2-1) Gear			189 (87.2)	68 (20.0)	70 (21.1)	29.00 (97.93)
98.04 (73.11)	8979 (39.94)	4.09 (6.59)	2101	7.18	5th (2-2) Gear			191 (88.3)	70 (21.1)	74 (23.3)	28.91 (97.62)
99.08 (73.88)	7975 (35.47)	4.66 (7.50)	2101	6.08	6th (3-1) Gear			192 (88.6)	70 (21.1)	74 (23.3)	28.91 (97.62)
98.50 (73.45)	7068 (31.44)	5.23 (8.41)	2101	5.33	7th (2-3) Gear			192 (88.9)	70 (21.1)	75 (23.9)	28.91 (97.62)
100.12 (74.66)	5924 (26.35)	6.34 (10.20)	2100	4.34	8th (3-2) Gear			192 (88.9)	70 (21.1)	75 (23.9)	28.90 (97.59)
98.64 (73.55)	4619 (20.54)	8.01 (12.89)	2099	3.25	9th (3-3) Gear			193 (89.2)	70 (21.1)	75 (23.9)	28.90 (97.59)

## LUGGING ABILITY IN 8th (3-2) GEAR

Crankshaft Speed rpm		2100	1892	1683	1472	1255	1053
Pull—lbs (kN)		5924 (26.35)	6436 (28.85)	6756 (30.28)	6827 (30.60)	6689 (29.98)	6349 (28.46)
Increase in Pull %		0	9	14	15	13	7
Power—Hp (kW)		100.12 (74.66)	97.50 (72.71)	90.84 (67.74)	80.18 (59.79)	67.10 (50.03)	53.52 (39.91)
Speed—Mph (km/h)		6.34 (10.20)	5.68 (9.14)	5.04 (8.12)	4.40 (7.09)	3.76 (6.05)	3.16 (5.09)
Slip %		4.34	4.80	4.95	5.10	4.95	4.80

Department of Agricultural Engineering

Dates of Test: May 30 to June 16, 1984

Manufacturer: J. I. CASE COMPANY, 700 State Street, Racine, Wisconsin 53404

**FUEL, OIL AND TIME:** Fuel No. 2 Diesel Cetane No. 46.0 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° (15°/15°)** 0.8408 **Fuel weight** 7.000 lbs/gal (0.839 kg/l) **Oil SAE 30 API service classification** SF, CD **To motor** 4.354 gal (16.481 l) **Drained from motor** 4.085 gal (15.463 l) **Transmission and final drive lubricant** Case Powergard PTF transmission fluid **Total time engine was operated** 40.0 hours.

**ENGINE:** Make Case Diesel **Type** six cylinder vertical **Serial No.** \*10356640\* **Crankshaft** lengthwise **Rated rpm** 2100 **Bore and stroke** 4.625" × 5.0" (117.5 mm × 127 mm) **Compression ratio** 16.0 to 1 **Displacement** 504 cu in (8259 ml) **Starting system** 12 volt **Lubrication pressure** **Air cleaner** two paper elements **Oil filter** one full flow cartridge **Oil cooler** radiator for hydraulic and transmission oil **Fuel filter** two paper cartridges and prestrainer **Muffler** vertical **Cooling medium temperature control** two thermostats.

**CHASSIS:** Type standard with duals **Serial No.** \*9932956\* **Tread width** rear 60" (1524 mm) to 124" (3150 mm) front 60" (1524 mm) to 88" (2235 mm) **Wheel base** 110" (2794 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 25.7" (652 mm) Vertical distance above roadway 40.7" (1034 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 (3) range operator controlled powershift **Advertised speeds mph (km/h)** first 1.9 (3.1) second 2.5 (4.0) third 3.2 (5.2) fourth 3.2 (5.2) fifth 4.3 (6.9) sixth 4.9 (7.9) seventh 5.4 (8.7) eighth 6.5 (10.5) ninth 8.1 (13.0) tenth 9.9 (15.9) eleventh 13.2 (21.2) twelfth 18.1 (29.1) reverse 3.2 (5.2), 5.4 (8.7), 8.1 (13.0) **Clutch** wet multiple disc hydraulically power actuated by foot pedal **Brakes** wet multiple disc hydraulically power actuated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 161.8" (4.11 m) left 161.8" (4.11 m) (on concrete surface without brake) right 182.2" (4.63 m) left 182.2" (4.63 m) **Turning space diameter** (on concrete surface with brake applied) right 338" (8.59 m) left 338" (8.59 m) (on concrete surface without brake) right 382.2" (9.71 m) left 382.2" (9.71 m) **Power take-off** 534 rpm at 2100 engine rpm and 998 rpm at 2100 engine rpm.

<b>TRACTOR SOUND LEVEL WITH CAB</b>	<b>dB(A)</b>
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	77.5
50% of Pull at Reduced Engine Speed—Two Hours	74.5
Bystander in 12th (4-3) gear	88.0

<b>TIRES, BALLAST AND WEIGHT</b>		<b>With Ballast</b>	<b>Without Ballast</b>
<b>Rear Tires</b>	—No., size, ply & psi (kPa)	Inner Two 18.4-38; 8; 14 (95)	Inner Two 18.4-38; 8; 14 (95)
		Outer Two 18.4-38; 6; 14 (95)	Outer Two 18.4-38; 6; 14 (95)
Ballast	—Liquid (each)	None	None
	—Test Equip (each)	78 lb (35 kg)	None
<b>Front Tires</b>	—No., size, ply & psi (kPa)	Two 11.00-16; 8; 40 (275)	Two 11.00-16; 8; 40 (275)
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	125 lb (57 kg)	None
<b>Height of Drawbar</b>		19.5 in (495 mm)	19.5 in (495 mm)
<b>Static Weight with Operator—Rear</b>		11230 lb (5094 kg)	10920 lb (4953 kg)
—Front		3520 lb (1597 kg)	3270 lb (1483 kg)
—Total		14750 lb (6691 kg)	14190 lb (6436 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 and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 180°F (82.2°C). Six 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 No. 1525, July 19, 1984.

LOUIS I. LEVITICUS  
Engineer-in-Charge

K. VON BARGEN  
W. E. SPLINTER  
L. L. BASHFORD  
Board of Tractor Test Engineers



**Case 2094 Powershift Diesel**